THE AMERICAN CLEAN ENERGY SECURITY ACT OF 2009

HEARINGS

BEFORE THE

SUBCOMMITTEE ON ENERGY AND ENVIRONMENT

OF THE

COMMITTEE ON ENERGY AND COMMERCE

HOUSE OF REPRESENTATIVES

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

APRIL 21, 22, 23, & 24, 2009

Serial No. 111–29

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[1] Mr. Chu did not respond to submitted questions for the record.
[2] Mr. Cavaney did not respond to submitted questions for the record.
[3] Mr. Rogers did not respond to submitted questions for the record.
[4] Mr. Ackerman did not respond to submitted questions for the record.

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WITNESSES

SUBMITTED MATERIAL

THE AMERICAN CLEAN ENERGY SECURITY ACT OF 2009—DAY 1

TUESDAY, APRIL 21, 2009

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The committee met, pursuant to call, at 3:06 p.m., in Room 2123, Rayburn House Office Building, Hon. Edward J. Markey [chairman of the subcommittee] presiding.

Present: Representatives Waxman, Dingell, Markey, Gordon, Stupak, Green, Doyle, Harman, Gonzalez, Inslee, Baldwin, Ross, Matheson, Butterfield, Melancon, Barrow, Hill, Matsui, Christensen, Sarbanes, Space, Sutton, Braley, Welch, Barton, Hall, Stearns, Whitfield, Pitts, Walden, Murphy of Pennsylvania, Burgess, Blackburn and Scalise.

Staff Present: Matt Weiner, Special Assistant; Alexandra Teitz, Senior Counsel; Greg Dotson, Chief Energy Counsel; Lorie Schmidt, Senior Counsel; Cara Anchman, Communications Associate; Lindsay Vidal, Press Assistant; Phil Barnett, Staff Director; Kristen Amerling, General Counsel; Melissa Bez, Professional Staff; Mitch Smiley, Special Assistant; Matt Eisenberg, Staff Assistant; William Carty, Minority Professional Staff; and Garrett Golding, Minority Legislative Analyst.

OPENING STATEMENT OF HON. EDWARD J. MARKEY, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF MASSACHUSETTS

Mr. MARKEY [presiding]. The committee will come to order. Today we will begin our legislative hearings on the American Clean Energy and Security Act discussion draft, which Chairman Waxman and I released 3 weeks ago. This bill provides a comprehensive approach to solving our economic energy and climate crisis. The time for delay and denial and inaction has come to an end. It is time to put Americans back to work in the jobs needed to bring about the age of the clean energy economy.

We have an ambitious but achievable schedule before us. The markup process will begin next week, and we expect to report the bill from the full committee before the Memorial Day break.

In my 33 years on the Energy and Commerce Committee, I cannot remember a week of hearings quite like this one. We are fortunate to have three Cabinet-level officials: former Vice President Al Gore; national security statesman, Republican Senator John Warner; dozens of executives from Fortune 500 companies; and many

environmental leaders. We have already heard from more than 60 other witnesses at the subcommittee's previous hearings this year in addition to nearly 160 witnesses who appeared at the 24 hearings held by the subcommittee in the last Congress.

The Waxman-Markey discussion draft uses many of the ideas put forth in the hearings held last year and this year and represents a solid start towards a consensus product. This legislation presents us with an historic opportunity. Of all the committees in Congress, I believe this committee is best suited to handle the challenge of passing strong energy legislation that will help grow our economy, create millions of green jobs and address the global warming crisis.

We will now begin to hear from Members who wish to give their opening statements. And I will turn and begin by recognizing the gentleman from Oregon, Mr. Walden.

OPENING STATEMENT OF HON. GREG WALDEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

Mr. WALDEN. Thank you very much, Mr. Chairman. And I especially appreciate your comments about the need for jobs. Oregon is now second only to Michigan in its unemployment rate, and I dare say the district I represent that is home to 10 or 11 of our Nation's national forests unfortunately comes in with some of the highest unemployment rates in the country and in the State.

Unfortunately, the draft bill which I have begun to work my way through doesn't help us if you are in a forested timber community. And, in fact, there is no scientific basis for the definition that is used in here to describe biomass and prohibit the use of any biomass off Federal forestlands and most likely off private forestlands to account toward renewable energy, when, in fact, there is enormous opportunity for renewable energy to be produced off our Federal forestlands and our private forestlands. For some reason the definition on page 8 of this bill specifically prohibits any biomass off Federal land from being included as renewable.

There is no scientific basis for that definition whatsoever, and I hope it can be changed. I plan to offer an amendment to change and delete it, frankly.

My district is also home to enormous growth in wind energy, and I have been a big advocate of wind energy. One of the great synergisms that occurs in the Northwest is between using the hydroelectric system to be the battery by storing water to balance out the curve when it comes to wind power, because as anybody in the wind energy side knows, wind is not firm power. And, in fact, in the Northwest you will find times, this January specifically, where there was 10 days when there was no wind, which meant no energy release. Other times within an hour you could have a 1,000-megawatt difference between the output of the wind energy up or down.

That means that energy has to be firmed up. Hydro systems are terrific for firming up energy. Yet in this legislation hydro that predates 2001 is not considered as renewable, and yet hydro after that is, unless hydro is on a facility that on page 11 of the definition shows that if the water surface elevation at any given location or time changes because of that hydro, then suddenly it is not considered renewable.

Can somebody explain to me how that works? Unless you simply have in-stream hydro, which really isn't a reality in most cases, although we have some in irrigation canals, which is fine, but to do big hydro or new hydro, you are most likely going to affect the elevation at some point and at some time if you are going to use hydro that stores the battery, the energy, that then is used to fill in when wind energy does not occur.

So, Mr. Chairman, there are enormous challenges with the draft of this legislation when it comes to the definitions. Some of these definitions defy both logic and science. And yet there is enormous opportunity to develop renewable energy.

I participated in a Science Committee field hearing yesterday morning in Vancouver, Washington, that was put on by our colleague Mr. Baird. And at that hearing one of the scientists from the University of Washington indicated that there is plenty of renewable wood fiber in the Northwest to, in fact, she said, provide replacement fuel for all gasoline consumption in the State of Oregon using something called methanol. Methanol, by the way, is what we use today in race cars. It is a proven technology, it is a proven fuel, and yet it is discriminated against when we talk about alternative fuels. Meanwhile our forests go up in smoke at unprecedented rates.

With temperature change and global warming, we need to be better stewards of our Nation's forests, and yet you have got enormous fires. According to the California Forestry Association, wildfires burning more than 8 million acres spew as much carbon dioxide into the air as all the cars and factories in the U.S. combined in the same months. From 2004 to 2008, an average of 8.9 million acres burned in wildfires each year.

Our forests are going up in smoke, drought, bug infestation, mortality, 400 million boardfeet a year mortality alone in the Northwest. There is enormous opportunity to turn that woody biomass into a fuel source to use it for heat source with very little emission to improve the habitat and environment of the forest, and to thin them out to protect some of the old growth and all that people would like to do, and yet the very definitions in this bill fail that stewardship.

So, Mr. Chairman, I look forward to the markup. I look forward to future hearings on the substance of this measure so that we can fix it and make it workable. Thank you, Mr. Chairman.

Mr. MARKEY. I thank the gentleman.

The Chair recognizes the gentleman from Tennessee, Mr. Gordon.

OPENING STATEMENT OF HON. BART GORDON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE

Mr. GORDON. Thank you, Mr. Markey.

You have a lot of people to make statements today, so I will be very quick.

Climate change is real. We need to do something about it. It is the right thing for our country, it is the right thing for the world. Business needs reasonable, I think, rules of the road so they can make a business plan and have certainty, and I think, as you have

pointed out, we need to legislate this rather than have it done by regulation.

I want to thank the committee and its staff for working with the staff of the Science Committee on some areas of joint jurisdiction and also some unique jurisdiction. We look forward to seeing the mark so we will know how to better move in that direction.

There is one area that I do want to point out that I think we need to do some more fine-tuning, and that is the renewable electricity standard. I think that we do need to have a broad use of the NES. I think that it is important for us as we start to move toward more energy independence. But it should not be punitive to different parts of the country.

And I would ask the committee staff please to put a chart up if you have it. There we go.

So if you can see that chart, and it is not mine, it is the National Renewable Energy Laboratory, and what you will see there is the green area is where current technology can be used for biomass. The blue is for wind, and the red is for solar. And as you see, there is some broad swaths of the country—you know, we are all sitting here for our own constituents, so you can see parochially if you look down on the east side of the Texas all the way up through the Southeast, up toward Bart Stupak's up there, there really are very few types of alternative energies that we can use and that are appropriate for those communities.

So hopefully, again, we do not want something that is going to be punitive, and I have some suggestions in that area. First of all, we should allow real credit for energy-efficiency improvements. Expanding the definition of what is renewable power, I think, is important, including giving the Secretary of Energy some authority for future technologies. If we are going to get from here to there, we can't do it on today's technology. And so there is going to be different types of, I think, renewable power in the future that we need to recognize in that regard.

I think it is important that we don't apply the mandates to small and midsize municipalities and cooperative utilities. I think it is also important that we consider the use of nuclear power and coal through CCS, and also reducing the alternative compliance payments.

So while we have begun a conversation or continue that with you, I suggest any other Members here that would like to be a part of that, we would welcome you to join in that. And again, thank you for this hearing and all the hearings you have this week.

Mr. MARKEY. We thank the gentleman very much.

The Chair recognizes the gentleman from Texas, Mr. Hall.

OPENING STATEMENT OF HON. RALPH M. HALL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. HALL. Thank you, Mr. Chairman. And today we are embarking on what I would call a mad dash to examine almost 650 pages of text, which includes various mandates and an incomplete cap and trade proposal containing no specifics on how CO_2 emissions allowances would be allocated in the unprecedented expansion of environmental litigation placed and based on perceived risk.

Despite the amount of paper it is printed on, the discussion draft lacks detailed information on the disposition of allowances. Will the allowances be distributed or auctioned? Would there be 100 percent auction? If auctioned, what are the cost-control mechanisms, and where would the proceeds be directed?

This lack of clarity, Mr. Chairman, leaves the Congressional Budget Office absolutely unable to properly score the bill to start with, and American businesses and consumers in the dark to suggest how much this bill is going to cost. The entire promise and the premise on which the climate change debate hinges is on the idea that we can accurately measure, monitor and verify greenhouse gas emissions coming from all sectors of the country.

Second, a cap implies that we know where we currently stand. We are betting the U.S. economy on the assumption that verifiable data collection and monitoring is as simple as you indicate it to be. Without U.S. regulation of greenhouse gases, what impact would we have if other major carbon-emitting countries do not follow suit? And would this reality put America in the position of shouldering the burden of cleaning up the world and having our citizens bear the high cost? What would regulations mean for electricity rates? Are these costs we are willing to accept given the uncertainty about whether regulations would even help at all?

Recently Energy Secretary Chu mentioned that under the administration's bill, the price of energy would increase. These costs will be passed on to the consumers, and the United States would be at a disadvantage to other nations. Just last month China's top climate negotiator proffered that any fair international agreement to curb gases blamed for global warming would not require China to reduce emissions caused by or manufactured to meet demands elsewhere in the world. If China, the world's largest emitter, is not willing to play, are we comfortable putting America's economic security in further jeopardy by moving forward with this legislation?

The key question facing all of us here in Congress is, quote, what is the appropriate policy for the United States to move our Nation toward affordable, reliable and clean energy sources? It is not an easy question to answer. We must discuss what the U.S. could accomplish with the right investments in energy research and development. For example, many, including myself, hope that carbon capture and sequestration technologies will make it possible for coal-fired power plants to limit their emissions while providing affordable electricity. Technologies researched and developed by the oil and gas industry in partnership with universities and national labs and utilized for enhanced oil recovery make for—the potential for carbon capture and sequestration make that possible.

This innovation should be nurtured and not stymied. However, on top of a cap-and-trade system, this bill places a command-and-control regime on coal-fired power plants. Mandating that after 2009 no new coal-fired plants without CCS technology in place may be built sets an unreasonable deadline. Even Energy Secretary Chu recently acknowledged that such CCS technologies will take many years to develop and even longer to be put into practice. What is to be gained by such a short time line?

The elimination of the use of one of the most abundant domestic energy resources, while at the same time increasing the demand

for electricity, what energy source will be used to replace fossil fuels to meet the increased electricity demanded and triggered by the various mandates in this bill? If not clean coal, what about nuclear power? Unfortunately, nuclear is never featured among the almost 650 pages of your text.

Mr. Chairman, I yield back my time. I am very concerned about this bill, the effect it is going to have on this country, the effect it is going to have on taxpayers in the future, the effect it is going to have on those of us who rely on energy and right now relying on countries that we don't trust and don't trust us for the energy we have. Surely there is a better way to go.

I thank you, and I yield back the balance of my time if I have any.

Mr. MARKEY. We thank the gentleman.

[The prepared statement of Mr. Hall follows:]

OPENING STATEMENT
HONORABLE RALPH HALL
COMMITTEE ON ENERGY & COMMERCE
SUBCOMMITTEE ON ENERGY & ENVIRONMENT

Hearing on:
The American Clean Energy Security Act of 2009
Tuesday, April 21, 2009

Thank you Mr. Chairman. Today we embark on a mad dash to examine almost 650 pages of text which includes various mandates, an incomplete cap and trade proposal containing no specifics on how CO2 emissions allowances would be allocated and the unprecedented expansion of environmental litigation based on "perceived" risk.

Despite the amount of paper it is printed on the discussion draft lacks detailed information on the disposition of allowances. Will the allowances be distributed or auctioned? Would there be a 100 percent auction? If auctioned what are the cost control mechanisms and where would the proceeds be directed? This lack of clarity leaves the Congressional Budget Office unable to properly score the bill. And American business and consumers in the dark as to just how much this will all cost.

The entire premise of the climate change debate hinges on the idea that we can accurately measure, monitor and verify greenhouse gas emissions coming from all sectors of the economy. Setting a cap implies that we know where we currently stand. We are betting the entire U.S. economy on the assumption that verifiable data collection and monitoring is as simple as wanting it to be.

With U.S. regulation of greenhouse gases, what impact would we have if other major carbon emitting countries do not follow suit?

Would this reality put America in the position of shouldering the burden of cleaning up the world and having our citizens bear the high costs? What would regulations mean for electricity rates? Are these costs we are willing to accept given the uncertainty about whether regulations could help?

Recently, Energy Secretary Chu mentioned that under the Administration's plan the price of energy will increase, these costs will be passed on to the consumers, and the United States will be at a disadvantage to other nations.

Just last month China's top climate negotiator proffered that any fair international agreement to curb gases blamed for global warming would not require China to reduce emissions caused by goods manufactured to meet demand elsewhere in the world. If China, the world's largest emitter, is not willing to play are we comfortable putting America's economic security in further jeopardy by moving forward with this legislation.

The key question facing all of us here in Congress is what is the appropriate policy for the United States to move our nation towards affordable, reliable and clean energy sources?

It is not an easy question to answer. We must discuss what the U.S. could accomplish with the right investments in energy research and development. For example, many, including myself, hope that carbon capture and sequestration (CCS) technologies will make it possible for coal fired power plants to limit their emissions while providing affordable electricity. Technologies researched and developed by the oil and gas industry in partnership with universities and national labs and utilized for Enhanced Oil Recovery (EOR) make the potential for CCS possible. This innovation should be nurtured not stymied.

However, on top of a cap and trade system this bill places a command and control regime on coal fired power plants. Mandating that after 2009 no new coal fired plants without CCS technology in place may be built sets an unreasonable deadline. Even Energy Secretary Chu recently acknowledged that such CCS technologies will take many years to develop and even longer to be put into practice. What is to be gained by such a short timeline? The elimination of the use of one of the most abundant domestic energy resources while at the same time increasing the demand for electricity?

What energy source will be used to replace fossil fuels to meet the increased electricity demand triggered by the various mandates in this bill? If not clean coal what about nuclear power? Unfortunately, nuclear is never featured among the almost 650 pages of text.

It is the promotion of wise investments in energy technology research and development, investments that tap into American's innovative spirit that will lead us to a future where our energy supply is affordable, reliable and clean and we remain competitive.

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I yield back the balance of my time.

Mr. MARKEY. The Chair recognizes the gentleman from Texas, Mr. Green.

OPENING STATEMENT OF HON. GENE GREEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. GREEN. Thank you, Mr. Chairman. And the following week will now be historic for the Energy and Commerce Committee. After years of debate on the root causes, impacts and potential solutions to address global climate change, our committee will soon consider comprehensive legislation that seeks to reduce greenhouse gas emissions both home and abroad.

Both the full committee Chair and you, Chairman Markey, have worked quickly on a discussion draft which sets the markup for action on climate in the House of Representatives. It is an understatement to say that all Americans in the entire world are closely watching how this debate unfolds. That is why I am pleased you have set an aggressive hearing schedule this week with distinguished panelists to learn more about the American Clean Energy and Security Act, or ACES, released shortly before the April recess.

Since the draft's release, the Environmental Protection Agency has issued a finding that greenhouse gas emissions pose a threat to public health and welfare. If Congress does not act, greenhouse gas emissions could be regulated administratively without input from Members that represent diverse constituencies nationwide.

While I commend Chairman Waxman and your work, Chairman Markey, on the draft, and I hope to support the final product, I have serious concerns with the impact ACES may have on my constituents and job base in the overall economy. First, we must protect our U.S. Energy-intensive domestic industries, including refineries, so we do not simply export those jobs abroad to nations without carbon controls and lax environmental regulations.

I represent the Houston Ship Channel, a petrochemical complex that stretches along the Texas Gulf Coast and is home to thousands of chemical industry and petroleum refining jobs. These energy-intensive industries we left vulnerable to foreign competitors not facing carbon regulations if we do not carefully craft transitional policies to prevent job leakage. We cannot allow the petrochemical and refining industries to migrate out of America. They are vital to our economy and to our national security.

I want to thank Congressman Inslee and Congressman Doyle for putting forward a proposal to provide free allowances of certain energy-intensive industries regulated under a climate program. I urge the committee to provide ample allowances sufficient for all exposed industries, including domestic refineries, which will place our refineries on an equal footing with their competitors in the European Union, which are considered energy-intensive, trade-exposed industries. Border adjustment policies must level the playing field in the global market for all trade-exposed products, and our export and import polices under the cap-and-trade program must not place our domestic industries at a competitive disadvantage.

None of these proposals, however, can substitute for the need for a strong international agreement with binding carbon reductions amongst the world's largest emitters, including developing countries.

Second, our transportation fuel policy must be based on sound science, and avoid duplicative regulation, and enhance our broader national energy security. The draft discussion includes a low carbon fuel standard, which does not reflect the consensus-based principles issued by the U.S. Climate Action Partnership, and raises more questions than answers. Under the cap-and-trade program, refiners must already purchase emission allowances for all fuels produced, with the total volume in the nationwide emission allowances declining over time. Layering an additional regulatory scheme on fuels may be the least efficient way to reduce carbon emissions and must be weighed against the impact the proposal would have on consumer gasoline prices.

Third, complementary policies addressing renewable electricity and energy efficiency standards must reflect State and regional capabilities, avoid overlap, and not unduly burden low-income Americans with higher home energy bills. A mechanism must be in place to adjust targets if energy prices escalate, or if transmission capacity is inadequate.

Fourth, a final proportion of allowances must be allocated for consumer assistance programs. Assisting with higher electricity prices is one piece of the puzzle. An effective rebate program must also address higher gasoline prices as well as the price of all goods that rely on energy inputs. If our climate policy leads to energy supply disruptions and price spikes without effective remediations, consumers and voters will begin to question that policy, and they will respond.

Finally, the overall design of the cap-and-trade program must be improved. Any final bill should include realistic emission reduction targets, more effective cost-containment mechanisms, and enhance carbon market oversight provisions. I hope to work with Chairman Waxman, Chairman Markey and all the members of our committee on other concerns to craft a climate policy that protects both our environment and our economy.

Mr. Chairman, I yield back my time. Thank you.

[The prepared statement of Mr. Green follows:]

Congressman Gene Green
Energy and Commerce Committee
Full Committee Legislative Hearing on
"The American Clean Energy and Security Act of 2009"
April 21, 2009

Mr. Chairman, the following weeks will no doubt be historic for the Energy and Commerce Committee.

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If Congress does not act, greenhouse gas emissions could be regulated administratively without input from Members that represent diverse constituencies nationwide.

While I commend Chairman Waxman and Markey's work on the draft -- and I hope to support the final product -- I have serious concerns with the impact ACES may have on my constituents, job base, and the overall economy.

First, we must protect all U.S. energy-intensive domestic industries, including refineries, so we do not simply export these jobs abroad to nations without carbon controls and lax environmental regulations.

I represent the Houston Ship Channel, a petrochemical complex that stretches along the Texas Gulf Coast and is home to thousands of chemical industry and petroleum refining jobs.

These energy-intensive industries will be left vulnerable to foreign competitors not facing carbon regulations if we do not carefully craft transitional policies to prevent job leakage.

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I want to commend Congressman Inslee and Congressman Doyle for putting forward a proposal to provide free allowances to certain energy-intensive industries regulated under a climate program.

I urge the Committee to provide ample allowances sufficient for all exposed industries, including domestic refineries, which will place our refineries on an equal footing with their competitors in the E.U. which are considered energy-intensive and trade exposed industries.

Border adjustment policies must "level the playing field" in the global market for all trade-exposed products, and our export and import polices under the cap and trade program must not place our domestic industries at a competitive disadvantage.

None of these proposals, however, can substitute the need for a strong international agreement with binding carbon reductions amongst the world's largest emitters, including developing countries.

Second, our transportation fuels policy must be based on sound science, avoid duplicative regulation, and enhance our broader national energy security.

The discussion draft includes a Low Carbon Fuel Standard which does not reflect the consensus-based principles issued by the U.S. Climate Action Partnership and raises more questions than it answers.

Under the cap and trade program, refiners must already purchase emission allowances for all fuels produced, with the total volume of nationwide emission allowances declining over time.

Layering an additional regulatory scheme on fuels may be the least efficient way to reduce carbon emissions and must be weighed against the impact the proposal will have on consumer gasoline prices.

Third, "complementary policies" addressing renewable electricity and energy efficiency standards must reflect state and regional capacities, avoid overlap, and not unduly burden low-income Americans with higher home energy bills.

Mechanisms must be in place to adjust targets if energy prices escalate or if transmission capacity is inadequate.

Fourth, a substantial proportion of allowances must be allocated for consumer assistance programs. Assisting with higher electricity prices is only one piece of the puzzle. Effective rebate programs must also address higher gasoline prices as well as the price of all goods that rely on energy inputs.

If our climate policy leads to energy supply disruptions and price spikes – without effective remediation – consumers and voters will begin to question that policy.

Finally, the overall design of the cap and trade program must be improved. Any final bill should include realistic emission reduction targets, more effective cost-containment mechanisms, and enhanced carbon market oversight provisions.

I hope to work with Chairman Waxman, Markey, and all Members of this Committee on these and other concerns to craft a climate policy that protects both our environment and our economy.

Thank you Mr. Chairman, I yield back my time.

Mr. MARKEY. The gentleman's time has expired. The Chair recognizes the gentleman from Texas, Mr. Burgess.

OPENING STATEMENT OF HON. MICHAEL C. BURGESS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. BURGESS. I thank the Chairman, and I thank the Chairman for the opportunity to have this day of opening statements as we begin a week of doing these hearings with several dozen witnesses. And I am assuming that we will hear over and over again witnesses tell this committee that the draft bill under consideration is the answer to all of our energy and security problems, as well as a vehicle that our economy needs to carry us through this economic downturn.

I would argue that in its current form, this bill may do more harm to our economy than any bill that is likely to come before Congress the rest of this year, perhaps during my natural lifetime. That is because this cap-and-trade proposal will increase the daily overhead cost for businesses, increase the cost of running our families to work and school and in jobs of businesses unless they are explicitly protected in the language.

Let me say that again: unless they are explicitly protected in the language. In other words, we will have a system of earmarks for what businesses we favor. Once again, Congress, in full transactional mode, will be able to pick winners and losers.

Credit allocations are conspicuously absent from the language in this bill.

I would also argue that some of the witnesses the committee has put together should be scrutinized for their support of this bill. I believe that some merely see a business opportunity to create strategic alliances in order to gain a greater share of future energy market. Certainly we have dealt with problems in the futures market and energy last summer when oil went up so high, and interestingly enough, Thomas Friedman, writing in an article a week, week and a half ago, said if we are going to be honest about it, let's just tax carbon; let's not play this elaborate game of hide the ball from the American public. The American public deserves to know what we are doing, and we are only going to create a system where the buying and selling of carbon futures are going to mimic that of energy futures last summer.

Now, I would like to highlight the fact that some of the largest corporation industries affected by this draft bill are absent despite the seemingly unending list of witnesses that we have had before us this spring and are going to have this week. I have also noticed for the second time in two attempts the witnesses representing the U.S. Climate Action Partnership have avoiding hearing opening statements from members of the committee. Now, I know they are boring, and I know that people don't like to pay attention to them, but this is an historic time, and they should be here.

I am looking forward to hearing from Secretary Chu, Secretary LaHood, Administrator Jackson at tomorrow's hearings. As members of this committee, we really haven't had an opportunity to hear from them. In fact, we have created our whole budget without any input from the Secretary of Energy or the Secretary of Transportation. In the previous administration we would bring the En-

ergy Secretary in, we would bring the Secretary of Transportation in and get their views and estimates before we created the budget. We didn't get to do that this year, so maybe tomorrow will be a good opportunity to ask about the views and estimates for their budget and how this bill will be incorporated into each agency's responsibility and roles in government over the coming years. That opportunity for Members to question agencies about their budget is an important role of Congress, and I will appreciate the opportunity to exercise that tomorrow.

I would also point out that it is up to the Congress to—we hold the pursestrings, and if indeed the Environmental Protection Agency is producing regulations that are damaging to the economy, we do have the ability to withhold funding for their activities during the appropriations process, and perhaps some clever person can draft an amendment that will do just that.

Now, fortunately, this draft legislation today is only a draft. We still have time to make changes to this bill, and I hope some of our witnesses will offer suggestions, constructive suggestions, for how we can do this without further damaging the economy. For example, if the goal is to reduce emissions, 1 ton saved through energy efficiency should receive the same treatment as 1 ton saved through technology transfer, fuel switching or renewable production. I think energy efficiency is the real common ground in this energy discussion because it reduces consumption and saves money.

And finally, the aggregate cost of this bill is a very serious concern. The current draft makes it nearly impossible to estimate the eventual cost because we are still not sure how the allowances will be distributed. But comparing this draft to similar bills that have already been scored brings this bill to well over $1 trillion. One trillion dollars is still what it used to be even in the recent time of $1 billion and $1 trillion bailouts.

I have said it before in this committee: Strong and growing economies are more likely to develop the technology breakthroughs we needed to spur the next wave in energy innovation. That is something we can address without imposing a cap on carbon or establishing a trading platform where sophisticated investors can work up exotic carbon options to trade or mandate the use of nonreliant or unavailable technology.

So I certainly look forward to questioning the witnesses, Mr. Chairman, and I yield back the balance of my time.

Mr. MARKEY. Let me thank the gentleman.

The Chair now recognizes the Chairman emeritus of the committee, the gentleman from Michigan, Mr. Dingell.

OPENING STATEMENT OF HON. JOHN D. DINGELL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. DINGELL. Mr. Chairman, thank you for holding this hearing today. Climate change is one of the most serious issues facing the Nation. The effect the legislation discussed this week will have both on the environment and the economy cannot be overstated. The fact that the committee is dedicating such time in going through the regular order is of the utmost importance. And both you and Chairman Waxman are to be commended for your han-

dling of these matters within the regular order. You are also to be commended for the outreach you have done to the members of the committee to enable the committee and its members to understand the issues each of us faces in our unique and geographical and economically diverse districts.

In reading through the legislation, and in talking to stakeholders over the recess, I am impressed with the draft bill before us. Of course, the question of auction versus allocation still lies before us, and that is a very serious question, some might say deal breaker, for many Members.

I would note that this bill bears strong similarities to the recommendation of USCAP and also to language of legislation introduced by Mr. Boucher and I during the last session of the Congress.

I do remain concerned about the aggressive nature of the renewable electrical standard as written in the draft. While a strong renewable standard is critically important as we move forward, and would certainly go a long way in preventing the dash to gas, I worry that 25 percent in 15 years might be more than States can handle. One possible solution to this would be to back nuclear out of the baseline that has been done for waste energy and existing hydro. It is my sincere hope that we could work together to find a standard that is both workable and achievable and fair.

I would also like to work with you and Chairman Waxman on the provisions dealing with autos. Included in this legislation I would like to see a doubling of the authorization of the Department of Energy's section 136 Advanced Technologies Vehicle Manufacturing Incentive Program. I would note that this country has been in and out of programs like this, like Murphy's glass eye, and every new administration that comes along has changes which will give us better, they say, technology assistance to the auto-manufacturing industry. But this has left us with a very unstable and unreliable situation. The program that I refer to has proved wildly successful, and applications to date far outweigh current funding levels. And we are seeing how this kind of program will work and has worked in other countries like Japan, China and Korea, which are now exporting batteries to this country and other advanced technology in the automobile industry.

I would also propose dedicating 1 percent of the allowance values a direct funding source for section 136, and generally for retooling to help the domestic auto industry meet the higher fuel economy standard. In addition, I would like to see the inclusion of the so-called "cash for clunkers" bill.

Mr. Chairman, I look forward to working with you and other members of this committee as we work towards compromise language between the Sutton bill and the Inslee bill. Any compromise must favor automobiles built in the United States and not exacerbate the disadvantages our domestic auto industry already faces. It would indeed be curious if we were to spend money to stimulate the economy of the United States by supporting autos built in Japan, Korea or China.

I also want to applaud Representative Doyle for his work on ensuring that the United States manufacturing is not placed at a competitive disadvantage as a result of this legislation. His leader-

ship has been valuable, and, again, I commend him for it. I support your efforts also, Mr. Chairman, in this area and look forward to doing so.

Finally, Mr. Chairman, as we move forward, I am committed to securing a dedicated fund for natural resource adaptation. As we heard in the testimony before the subcommittee at a hearing on adaption, the forest assessment report of the Intergovernmental Panel on Climate Change noted, and I quote, observational evidence from all continents and most oceans shows that many natural systems are being affected by regional climate changes, particularly temperature increases, closed quote. In that same report we are warned that in the lifetime of a child born today, 20 percent to 30 percent of the world's plant and animal species will be on the brink of extinction if we don't take action now.

One of my great heroes, and a great conservationist, and the 26th President of the United States, Theodore Roosevelt, taught us that conservation is a great moral issue, and that it is our duty as it ensures the safety and the continuance of the Nation and mankind.

Mr. Chairman, I look forward to hearing from the many witnesses over the next several days and working with you as we continue to work to address climate change in a manner which protects the environment and which must protect jobs and the economy. I yield back the balance of my time.

Mr. MARKEY. We thank the gentleman from Michigan very much.

And we now turn and recognize the gentleman from Kentucky, Mr. Whitfield.

Mr. WHITFIELD. Chairman Markey, thank you very much. And before I give my opening statement, I would like to ask unanimous consent that the statement of Mr. Radanovich of California be submitted for the hearing record.

Mr. MARKEY. Without objection, it will be included.

[The prepared statement of Mr. Radanovich follows:]

Statement
By
The Honorable
George Radanovich
Before the
Committee on
Energy and Commerce

Mr. Chairman, thank you for calling these hearings on your draft climate change legislation, the American Climate and Energy Security Act.

While I am certainly skeptical about carbon dioxide's contribution to the warming or cooling of the Earth, I understand that this hearing is not intended to investigate the science behind global warming but rather to examine the legislation that Chairman Waxman and Chairman Markey have drafted.

I recognize that the Chair has been working very hard on this legislation; however I am concerned that we are holding this hearing slightly prematurely. I say this because in my opinion, the bill we are examining today is woefully incomplete. In fact, one of the most important elements of any cap and trade bill—language regarding allocations and auctions of carbon credits—is completely missing from ACES. I know that the EPA has run economic models on this legislation, but I am at a loss as to how those calculations were made without any mention of allocations and auctions in the bill text. I find myself absolutely unable to appropriately comment on the implications of a piece of legislation, particularly one of this magnitude, with such a gaping hole in the payment plan.

Further, as it is apparent that Congress and this Administration are determined to do something to limit carbon dioxide emitting sources of energy, the absence of a nuclear energy title represents another gaping hole in this legislation. If Congress and the Administration are truly serious about reducing greenhouse gasses, nuclear energy has to be part of the plan. Let me be clear, nuclear energy cannot be an after thought or something to address down the road; nuclear energy must be one of the focal points of any climate change legislation. Yet, its absence in the bill before us today is noticeably conspicuous.

One of the witnesses before the Committee today is Energy Secretary Chu, who last February made a statement regarding the future of CA agriculture. Dr. Chu cited a study that claimed global warming would destroy our natural water storage and claimed that up to 90 percent of the Sierra Nevada's snow pack could disappear. Specifically, Dr. Chu said, "We're looking at a scenario where there's no more agriculture in California."

What Dr. Chu probably didn't realize when he said that is that he was half right—California agriculture is already going extinct. In fact, the reason it's going extinct is the real impetus behind this entire hearing—not global warming, but environmental alarmism—in form of the Endangered Species Act. In addition to ESA, the most extreme and immediate threat to California agriculture isn't global warming, it's a cap and trade bill that will cause electricity and prices to necessarily skyrocket, as President Obama has previously stated.

Agriculture has absolutely no chance of surviving with $8 per gallon gas or electricity rates that have increased by 128 percent as some have predicted will happen under a cap and trade plan such as the Waxman-Markey bill.

Another section of this bill focuses on the need for America to invest, or rather subsidize, a new "green" economy. However, a recent study of Spain's green job program revealed that over the past decade 2.2 regular jobs were lost for every 1 green job manufactured and subsidized by the Spanish government. Even worse, only 1 in 10 of the jobs actually created through green

investment is permanent. On top of this, the U.S. Energy Information Administration (EIA) has show that Spain's annual emissions of carbon dioxide have increased by nearly 50 percent since the nation began its aggressive push for "green jobs."

Finally, and most importantly, my ultimate concern with this legislation is the cost to American families and businesses. I have seen numbers ranging from $1,300 to $3,100 in potential cost to each American household. I don't know many families in my district that could handle that type of a tax just for flipping on their light switch. This is especially concerning when we don't know where that money is going or what it is going to be used for in the future.

Mr. Chairman, again, thank you for calling this hearing and as you can tell, I, along with many of my colleagues have a lot of questions and concerns about this legislation and about imposing a national energy tax during one of the most serious recessions this country has ever known. Thank you and I yield back.

Mr. MARKEY. And any opening statements from any of the Members who cannot attend this session will be included by unanimous consent in the record.

[The prepared statements of Ms. Eshoo, Ms. Capps, and Messrs. Blunt, Sullivan, and Gingrey follow:]

Statement of Representative Anna G. Eshoo
The American Clean Energy and Security Act of 2009
March 31st Discussion Draft
Full Committee on Energy and Commerce
2123 Rayburn House Office Building
April 22, 2009

Thank you, Chairman Waxman for holding today's hearing. We've come a long way since the first Full Energy and Commerce Committee hearing on climate change of the 110th Congress held January 15th.

I'm very proud that you, and Chairman Markey, the Obama Administration, and the House Leadership are addressing the most pressing issues facing our nation head-on. You said on January 15th that the Energy and Commerce Committee would act swiftly and decisively to reduce global warming and end our dependence on foreign oil. Today is Earth Day, and just four months into the new Congress we're discussing a comprehensive bill that will bring us closer to a sustainable and secure energy future.

This is a key juncture of the climate change debate in the U.S and internationally. Given the economic crises we face, some might say it would be easier to walk away from this tremendous challenge, but our constituents and the world community expect us to rise to meet it and do what's necessary to create a clean energy foundation for generations to come.

I'm pleased that Chairmen Waxman and Markey have crafted a bill that incorporates the best ideas and suggestions of the Members of the Energy and Commerce Committee including my bill, H.R. 1742. This legislation promotes the regional deployment of the infrastructure needed to support the widespread use of electric drive vehicles – facilitating the integration of smart grid equipment and making electric charging stations or battery exchange locations as common as gas stations.

Passing a sensible and well-crafted *American Clean Energy and Security Act* may be one of the most important pieces of legislation in a generation and I'm eager to work with my colleagues on this effort. The consequences of "business as usual" are too great, and the price to the global environment, economy, and human welfare are too large to delay action any longer.

Thank you Chairmen Waxman and Markey, and the Administration officials with us today, for recognizing and acting on this principle.

Rep. Lois Capps
Hearings on "The American Clean Energy and Security Act of 2009"
April 21, 2009

Thank you, Chairman Waxman and Chairman Markey, for holding this critically important series of hearings.

Thank you also to our many esteemed witnesses for traveling here to testify.

The American Clean Energy and Security Act of 2009 is groundbreaking legislation. It seeks to address the biggest environmental and energy challenge of our time.

It tackles the energy crisis and climate change – two issues that seep into every facet of our daily lives, threatening the security of our country, our economic stability, and the health of our planet.

For this bill to succeed and for us to successfully cap greenhouse gas emissions, we must implement a nationwide Renewable Electricity Standard and the Energy Efficiency Resource Standard.

Investing in renewable energy resources and energy efficiency will create jobs, save consumers and businesses billions, bolster innovation, reduce our dependence on foreign energy sources, and cut greenhouse gas emissions.

By implementing a national energy efficiency standard, California alone is projected to net almost 21,000 jobs by 2020.

Clean energy is the future. But we have to get it right.

We need to maintain the provisions in this bill that protect the least among us, and ensure that those least responsible for the current crisis do not bear its burden.

We need to remember that this is a *global* crisis.

This legislation includes important language that provides assistance to vulnerable developing countries to help them adapt to climate change.

We also have to stop deforestation. It is estimated that roughly 20% of greenhouse gas emissions are a consequence of deforestation. The solution is simple: Stop indiscriminately cutting down trees. And this bill provides countries with incentives to accomplish that.

But despite our best efforts, the climate will change. And we need to be ready.

This legislation must provide the resources necessary to ensure that the natural world can adapt – that our oceans, our water resources, and our wildlife are all protected.

And we need to make sure that the research and resources are in place to protect and promote the health of all the world's citizens.

Now is the time to rise up and seize the unprecedented opportunity before us.

The legislation we pass will be the legacy we leave for our children and our grandchildren. To protect them, and all that come after us, we must pass a comprehensive energy and climate policy.

I yield back.

BLUNT STATEMENT FOR E&C SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT

April 21, 2009

Mr. Chairman,

Thank you for holding this hearing on "The American Clean Energy and Security Act of 2009". It will come as no surprise to you or others on this committee that I'm concerned about this legislation and hope that committee members have a chance to weigh the economic impact of a bill that severely limits energy production during a time of economic downturn.

Every credible study I've seen tells me that a cap-and-trade program will increase the cost of energy and hurt businesses and consumers throughout Missouri and the United States. I doubt there's ever a good time to burden American consumers with extra costs, but I believe that now is probably the worst time to implement an energy program that will pass the costs directly to the consumer every time we flip on a light switch, turn up the thermostat, fill up our gas tank or purchase an American-made product. This type of energy policy will be even more damaging to states like Missouri where almost 90 percent of electricity is coal generated and where consumers will pay even more than the average American under the proposed legislation.

And the damage this bill does to our economy doesn't stop with this hidden tax hike. American manufacturers could be forced out of business, in part because of the unfair cost advantage this bill will give foreign companies. The National Association of Manufacturers recently estimated that under similar climate change legislation, Missouri alone would be threatened with 23,000 to 76,000 job-losses. An MIT study found that under that same system, the average American family 's share of increased costs would be around $3,100 per year.

The way in which emission allowances are allocated, whether by auction or giving out allowances for free, is a critical component of cap and trade legislation. The discussion draft of this legislation does not contain a decision on permit allocations versus auctions. Without these critical facts, how can any of my colleagues can possibly claim to know what this bill will cost in terms of jobs and consumer price hikes? I am concerned that this bill is not ready to be fully discussed. I also believe that three days of hearings on the discussion draft are not sufficient and more hearings should be held that fully explore additional issues, such as defining what constitutes an allowable carbon offset and the role of nuclear power in carbon reduction.

There is nothing wrong with ultimate goal of protecting our environment, but we must look at the real ramifications this bill will have on our already struggling economy. Our nation does, in fact, need a new energy policy, but we need one similar to the " all of the above strategy " I advocated for last year – more conservation, more domestic production and more reliance on alternative fuels. We also need to focus on developing new technologies and exporting those technologies as well as promoting conservation, encouraging investment in next generation technologies, and providing tax incentives for businesses and homeowners who improve their energy efficiency. Telling Americans that the choices are this or to do nothing is a falsehood and no way to create a sustainable and common-sense energy policy.

I'm hopeful that this subcommittee can find ways to work together to avoid imposing an increased burden on consumers and on the cost of doing business in these tough economic times. To that end, I look forward to working with the chairman, Mr. Upton the ranking Republican, as well as my colleagues in the full committee to achieve good policy in a bipartisan way.

April 21, 2009

Opening Statement
Congressman John Sullivan
Legislative hearing on the American Clean Energy and Security Act of 2009
House Energy and Commerce Committee

Chairman Waxman,

Thank you for calling this hearing today to examine the American Clean Energy and Security Act of 2009.

Like all Americans, I want to work to ensure clean air, clean water and a healthy environment for today but also for future generations. We must be good stewards of our planet. Unfortunately, the incomplete discussion draft before us today will take our nation in the wrong direction.

By holding a marathon legislative hearing on a discussion draft lacking key carbon cost provisions, I do not believe we can have an honest discussion on the scope and cost of this legislation without these critical issues being addressed before conducting a hearing on the bill. Without filling in these critical blanks, American families and business in every sector will be left in the dark on how much their energy bills will go up under the draft legislation.

I feel that this discussion draft is a backdoor attempt to enact a national energy tax that will have a crushing impact on consumers, jobs and our economy- while doing little to protect the environment. Estimates vary but in its current form, it would increase American household utility bills by up to $3,100 per year. It does this by spending trillions of dollars to remove a small amount of carbon dioxide that is contained in our atmosphere, while placing the United States at a competitive disadvantage. The bill would place additional costs on Oklahoma oil and gas producers and refiners, American manufacturers of all sizes and will surrender our economic vitality to overseas competitors not subject to limits on greenhouse gas emissions.

Like most Americans, I support an' all of the above' energy plan that will promote the use of alternative fuels, encourage conservation and increase environmentally-safe production of American energy.

I urge the committee to recognize that families and small businesses in Oklahoma and all across the United States already are struggling during this recession, and increasing their energy costs will only make matters worse.

Again, I feel that this incomplete bill that takes our nation in the wrong direction by imposing a national energy tax and unreasonable rules and regulations on our nation's energy sectors that will ultimately result in the closure of businesses, loss of American workforce to other countries and stifled American productivity.

I yield back the balance of my time

U.S. Congressman Phil Gingrey
Opening Statement

Committee on Energy and Commerce
"The American Clean Energy Security Act of 2009"

April 21, 2009

Thank you, Mr. Chairman.

Today, this committee undertakes a process that our Chairman and the Speaker hope will yield a bill to significantly limit carbon dioxide emissions in the United States. What each and every one of us must honestly and deliberately determine is at what cost—and to what benefit?

Differences in scientific perspectives aside, the underlying draft requires us to make very serious value judgments at a time of historic economic peril. We have to truthfully ask ourselves: is the danger of carbon dioxide so great that we have no choice but to saddle upon every American household potentially an additional $3,000 per year in energy costs.

Is this Congress prepared to make people choose between feeding their family or

lighting their house? Is this Congress prepared to make a senior citizen choose between life-saving medication or having heat in the winter?

Mr. Chairman, I don't believe that any member of this Committee or this Congress would ever want to imperil Americans with such decisions, but that could be effect of this legislation if it is enacted.

Energy costs touch almost every aspect of our society and our economy. While decades of bad housing and financial sector policy was the foundation for the current economic downturn, one should not discount the role of staggering energy costs in exacerbating this crisis.

Many of my friends on the other side of the aisle may bristle at the term "Cap and Tax," but it is hard to ignore the reality that these increased costs in energy production will

have to come from somewhere—and that somewhere will be the pockets of consumers. Even if we were to institute some type of limited subsidy, the funding for these subsidies will likewise have to come from somewhere—and that somewhere will eventually be the pockets of taxpayers. These facts are inescapable.

We are therefore faced with a value judgment. Though I believe each of us wants a cleaner environment to pass on to

our children, grandchildren, and future generations, we have a similar obligation to pass on to them an economic future just as bright. And if we destroy our economy by crippling our citizens with regulation and energy taxes, America will not be able to be a global leader on anything—including environmental stewardship.

As the Representative for the people of Northwest Georgia, I am extremely concerned about the impact that this

proposal's renewable energy standard will have on the Southeast. The Southeast is neither in the Wind Belt nor the Sun Belt, and this draft's exclusion of nuclear energy and new hydropower sources will lead to additional significant increases in the cost of energy for Americans living in the Southeast.

Mr. Chairman, while I always seek opportunities for bipartisan cooperation, I will not be able in good conscience to stand

behind any proposal that raises energy costs for every American and puts those I represent at a particular disadvantage.

I urge all my colleagues to proceed cautiously and thoughtfully as we move forward on this proposal. I yield back.

Mr. MARKEY. If the Chair is recognized, we will put it back at 5 minutes.

The gentleman from Kentucky, Mr. Whitfield, is recognized for his opening statement.

OPENING STATEMENT OF HON. ED WHITFIELD, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF KENTUCKY

Mr. WHITFIELD. Thank you very much, Chairman Markey.

And I would like to say that while climate change may be one of the most urgent problems facing our country, the way that this bill affects our production of electricity and the production of the fuel we use for our transportation needs in America may very well dwarf the climate change problem. Now, why do I say that? I say that because it is essential, as we move forward to produce cleaner energy, that we balance the need of cleaner energy versus the need of protecting jobs in the U.S. and keeping the U.S. competitive in the global marketplace.

Now, President Obama and others have said that the jobs created as this country moves into clean energy will far offset the jobs that we lose with our traditional energy sources. I have read a lot of studies, and there are some studies that say that that is actually the case. But you can find just as many studies that say the jobs created as we move into a greener economy will not offset the jobs of the traditional economy, and so I think we have to look very carefully at that as we move forward.

I would also point out that recently we met with a group of Chinese, and they were very emphatic when they met with us. And they indicated that every 2 weeks they are bringing on a new coal-powered plant in China. And also the same type of activities taking place in India. And I might say that those coal plants in China and India frequently do not have scrubbers, they certainly don't have carbon capture and sequestration, and those countries are utilizing coal because it still is the most economical way to produce electricity. And they want to maintain low transportation costs, they want to maintain low electrical costs, they want to maintain low labor costs, because they want to be the most competitive country in the world. And if we move unilaterally to address some of these issues as is set out in this legislation, I think there is a real danger that we are going to be less competitive in the global marketplace.

Renewables under this legislation, we want to produce 20 percent of our electricity by renewables by the year 2025. And I think Mr. Barton in his testimony showed very clearly that in States like Missouri, Kentucky, Tennessee, Alabama, Mississippi, Ohio, Florida, Georgia, you simply cannot produce that much electricity by wind power and solar power. It simply cannot be done, and yet this legislation will provide a penalty for those utilities that are unable to do so.

I would also point out that we know that we produce 51 percent of our electricity by coal, and in order to continue to do that, and also to help using coal around the world, that we have to perfect capture and storage technology. Recently I have had some conversations with Dr. Curt Halice, who is one of the few people that I know that actually wrote and received a doctoral degree on car-

bon capture and sequestration. He has looked at this legislation, and he is also involved with a company that right now is featured in the New York Times on Saturday that they are contemplating building a $5 billion carbon capture and sequestration plant that will store carbon dioxide on the ocean floor. But when he made comments on this legislation, and I think this is very constructive comments that we should look at as we move forward—and I would also ask unanimous consent that I be able to submit for the record his comments on the carbon capture and sequestration part of this bill. So if there is no objection, I hope that that would be admitted.

Mr. MARKEY. Without objection, it will be admitted.

[The information was unavailable at the time of printing.]

Mr. WHITFIELD. But one of the suggestions that he made, and this is the only one that I will talk about, and I think it is something we should think about, was to reduce the bill's floor for the amount of CO_2 that a plant emits before it can qualify for funding from this act. He suggests lowering it from 250,000 tons of CO_2 to 100,000 tons of CO_2.

He also has some other, I think, very constructive recommendations on the carbon capture part of this bill which will play a vital role if we are going to continue to utilize coal and be competitive in the global marketplace.

So I want to commend the Chairman and the others who have worked on this bill, and we look forward to working with you as we move forward.

Mr. MARKEY. We thank the gentleman very much.

And now we turn and recognize the gentlelady from California, Ms. Harman.

OPENING STATEMENT OF HON. JANE HARMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Ms. HARMAN. Thank you, Mr. Chairman, and thank you for holding what will be 24/7 hearings for the next few days.

There are some young people in the audience that are wearing green shirts. Those shirts say "Power Shift 2009," and their hard hats say, "Green Jobs." Now, I just want to say, Mr. Chairman, that what we do here with this legislation is about you folks. It is about the kind of world you will inherit and the kind of jobs you will perform. We can get it right, or we can blow it. I am for getting it right.

I would suggest that your legislation, Mr. Chairman, and Mr. Waxman's legislation, is very thoughtful, has a few holes to fill in, but it is based on a sound foundation, and that foundation is the USCAP blueprint for legislative action. I know it was no accident that you had USCAP appear here as our first witness in this session of Congress to talk about climate change legislation. I would just like to read the list of its partnership members, or some of them: Alcoa, BP America, Caterpillar, the Chrysler Group, Duke Energy, the Environmental Defense Fund, General Electric, Natural Resources Defense Council, The Nature Conservancy, Shell Oil, Siemens, Xerox.

Now, this is not your average advocacy group, I would say. This is a, I assume, bipartisan, very bipartisan, and very unusual group of folks who probably had extremely different positions when they

formed the group, but have now been able to arrive at consensus principles. It is a sound foundation for the legislation, and it is a bipartisan foundation for the legislation. And I think the fact, as the Chairman emeritus said, that we are moving in the regular order speaks to the fact that this committee, with a great history, will build on a sound foundation and bipartisanship and produce a great bill.

I would just like to point out two of its more brilliant provisions. One is section 211 that relates to outdoor lighting efficiency. Everyone should know that Congressman Upton and I introduced this as a stand-alone bill. It is based on the way we were able to achieve success with respect to indoor lighting, and it set tough standards over a series of years to increase lighting efficiency.

That would be one of the brilliant provisions, and the other might be section 214, which is about cash for clunkers. It is a system of incentives to get Americans to replace their older, energy-wasting washing machines, refrigerators and other household appliances, to trade them in so that they no longer consume excess energy and get replacements that are efficient.

This is the kind of material in this very thoughtful bill. It will need, as I said, us to come together on some of the tough details, but it is built on a sound foundation. And I predict to you kids out there that we are going to do the right thing, and that you can feel that you were part of a very impressive project which the 111th Congress is about to undertake.

Thank you very much, Mr. Chairman, and I yield back.

Mr. MARKEY. We thank the gentlelady.

The Chair recognizes the gentleman from Louisiana, Mr. Scalise.

OPENING STATEMENT OF HON. STEVE SCALISE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF LOUISIANA

Mr. SCALISE. Thank you, Mr. Chairman.

I appreciate the hearings you have scheduled this week; however, I am very concerned about how we plan to mark up this bill while the details of how the administration intends to issue exemptions versus auctioning permits off is not included in the draft of this bill. Similarly, we cannot know the true cost of this bill until the permit issue has been decided.

While the debate on the causes of climate change are far from settled, as well as the cost of this bill, what has not been disputed is the fact that a cap-and-trade energy tax will cost this country millions of good jobs and will force the average American family to pay thousands of dollars in increased energy costs. This bill is expected to raise over $640 billion in new taxes on energy. Even the Congressional Budget Office notes regardless of how the allowances were distributed, most of the cost of meeting a cap on CO_2 emissions would be borne by consumers who would face persistently higher prices for products such as electricity and gasoline.

The President has acknowledged that his plan will lead to higher electricity prices when he stated, quote, under my plan of a cap-and-trade system, electricity rates would necessarily skyrocket, unquote. According to the President's Budget Director Peter Orszag, the average annual household cost increase would be about $1,300 a year for a 15 percent cut in CO_2 emissions, which is 80 percent

less than the cut sought in the President's proposed budget. In fact, Peter Orszag testified last year before Congress that price increases borne by consumers are essential to the success of their cap-and-trade energy program.

Rather than a national energy tax, we need a comprehensive national energy policy that takes an "all of the above" strategy. We need to encourage conservation, we need to pursue an increase in technologies and renewable sources of energy like wind and solar, but we also need to explore our own natural resources like oil, natural gas and even clean-coal technologies; but we also need to make nuclear power part of a renewable energy portfolio standard, because clearly nuclear power is a reliable and successful and efficient source of energy that most of Europe is using, and it emits no carbon. This bill doesn't include nuclear in part of that strategy.

This cap-and-trade energy tax will send millions of our energy-intensive manufacturing jobs overseas to countries like China and India. According to the National Association of Manufacturers, an estimated 3 to 4 million net American jobs will be lost under cap-and-trade energy tax. Some estimates on job losses go even higher, well over 7 million jobs that would be lost in our American economy. Surely at a time when we need to be creating jobs, this bill goes in the opposite direction.

Moving into a cap-and-trade tax system would place the United States' economy at a distinct competitive disadvantage because it would place additional costs on American manufacturers and cede market share to overseas competitors that are not subject to the limits on greenhouse gas emissions. What this bill will do is redistribute wealth from American families and consumers to special interests. As we speak, deals are being cut right now with special-interest groups to grant them free allowances in exchange for their support on this legislation.

Is that really the change in the way of doing business that so many Americans were promised? That is why so many of the details of this cap-and-trade bill are not yet available to us on the committee, as well as to the public, and so there is a clear lack of transparency in this legislation in part because of the deals that are currently being cut, with those details that are conveniently left out.

Furthermore, government-run cap-and-trade systems smother innovation since companies are artificially constrained in their economic activities, and this will dampen the incentive to create new products and services.

For those who are concerned about reducing carbon emissions, this cap-and-trade energy tax will ironically increase the worldwide carbon emissions, because many of the millions of American jobs that will be shipped overseas due to a cap-and-trade energy tax will be, in fact, sent to countries who do not follow the environmental standards that are in place here in America. So while those jobs will be shipped overseas, and we will lose that economic opportunity here in our country, the countries that don't participate in cap and trade, like China, India and others, actually emit more carbon in the way that they produce the same goods.

Again, I appreciate the opportunity to discuss this issue in a broad context this week; however, without the details on some of

the most significant portions of the bill, this committee is doing a disservice to the American people by purporting to have a hearing on a bill that is incomplete.

Thank you, and I yield back.

Mr. MARKEY. The gentleman's time has expired. The Chair recognizes the gentleman from Washington State, Mr. Inslee.

OPENING STATEMENT OF HON. JAY INSLEE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

Mr. INSLEE. Thank you.

It is Earth Day tomorrow, but I want to point out this is not just a green bill one way, it is a green bill two ways. It is not just about decreasing pollution, it is about increasing jobs. And with this bill we are on the launching pad for the single most ambitious, the single most promising job-creation program since the launch of the Apollo project under the leadership of John F. Kennedy.

And I think we ought to approach this with three basic American attributes, the first being confidence. And I just want to share some reasons why I am confident that we will fulfill America's destiny of being the clean energy arsenal to the world.

Last week I was at home for a couple of weeks, and I just want to share some of the people that I talked to in one week. I talked to the people at the SAFIRE energy company which just announced yesterday that they intend to have an algae-based biodiesel biofuels, zero CO_2 emission, up and running by 2011 at twice the levels that they originally predicted, using only sunlight and salt water and no feedstock.

I talked to the A123 Battery Company that is ready to manufacture a lithium-ion domestically produced battery to drive American-produced electric cars. We ought to have confidence we are not going to allow China to dominate the world economy in electric cars and lithium-ion batteries. This bill is going to make sure that that industry stays here.

I talked to the Infinia Company in the Tri-Cities, Washington, which has a sterling solar-powered engine, which is now selling well in Spain and we want to start selling well here, and this bill will make sure that that happens.

I talked to the Ramgen Company. A lot of people have talked to coal—about the need to sequester coal CO_2. We have a technology at the Ramgen Company that leads the world in the ability to compress CO_2 so we can bury it permanently and create jobs in this country.

I talked to the AltaRock Company, which is one of the world's leading companies to do engineered geothermal, which we can do perhaps in 50 percent of the United States.

The list goes on and on and on. But what these Americans need is a policy jump-start so that these jobs get created in America, and fundamentally this is what this bill does. So we ought to have confidence.

Second, we ought to act as a union, recognizing the very disparate nature of our country, and that is I am very pleased to be working with Mike Doyle, to have—and I appreciate Chairman Waxman and Mr. Markey's including our provision that will prevent job leakage and not give an advantage to our international

competitors by, in fact, giving some free permits to domestic high-energy-intensive industry. It is the right thing to do, and it is our answer to the international situation.

But further, I want to mention one thing that I hope we will address as we go forward in the bill. To truly act as a union, we have to unify the electrical grid system of the United States. If you look at the map that Mr. Gordon put up about the disparate access to very renewable sources, we have to have a grid system that is fitting for this century. And I hope that we will find a solution to site these grid systems and finance these grid systems. It is both necessary and possible to do so. Can you imagine what the Interstate Freeway System would look like if we just did it county by county? We need to have a backstop so that Uncle Sam can help out local communities site these systems.

The third thing we need to do in this bill is be smart, and I want to mention a couple of things in that regard. The smartest thing we can do is to learn from the lessons of Europe. Europe essentially used a cap-and-trade system that we invented here to deal with sulfur dioxide. It has been extremely successful in our American experience. We have tamed sulfur dioxide at probably half the cost that was originally anticipated. I believe there is a possibility to do the same with carbon dioxide.

But there are some lessons from Europe. I just want to mention one of them. When they started the cap-and-trade system in Europe, they gave away all the permits. And the reason they did that is it created less controversy to simply give away the permits. And it was a spectacular disaster when they did that because it ended up consumers bore the cost, rather than utilities, of the cost of this program, and there were scandals galore in Europe about that. And they did not achieve in the first 3 years of their program what they wanted because they gave away the permits and did not create an incentive to go to low-carbon fuels.

We ought to be like the guy who putts second. You always follow the putt of the guy who went first. And we ought to learn from the lessons of Europe and have a more reasonable disposition of these permits. And when we do that—I want to make one important point here—this is going to be the largest recycling program in American history because a huge amount of these dollars are going to be recycled right back to the American consumers to help with their utility bills. You can make sure we are going to grow jobs, help consumers and get this job done. Thank you.

Mr. MARKEY. We thank the gentleman.

The gentleman's time is expired. The Chair recognizes the gentleman from Pennsylvania, Mr. Pitts.

OPENING STATEMENT OF HON. JOSEPH R. PITTS, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF PENNSYLVANIA

Mr. PITTS. Thank you, Mr. Chairman. Thank you for holding this hearing.

Like all of us, I believe we should work to decrease the amount of greenhouse gas emissions in our atmosphere and be good stewards of this Earth and its resources. However, I don't see how these 3 days of marathon hearings will shed light on how the discussion

draft of the Cap and Trade Act proposes to actually decrease greenhouse gas emissions and not cause devastating harm to our economy. The discussion draft is incomplete. The most important provision regarding the allocation of allowances has yet to be decided or even written. Because of this, CBO said they cannot score the bill. And industries, and thus consumers, cannot truly define how the bill would impact them. How then can we have legislative hearings and engage in fruitful dialogue and debate about a bill that is incomplete?

Even though the most critical portion of the bill is not included, we can talk about the numerous ways in which this bill will inevitably increase energy costs and negatively impact working families across America. The last major cap-and-trade provision considered in Congress was the Warner-Lieberman Climate Security Act. As far as decreasing greenhouse emissions, according to the Institute for Energy Research, Warner-Lieberman would have only reduced global temperatures by 18/100ths of 1 degree by 2050. As far as economic impact, according to the Heritage Foundation, in the first 20 years alone, the ramifications of that bill would have resulted in aggregate real GDP losses of nearly $5 trillion. In the first 20 years, it would have destroyed 900,000 jobs and caused nearly 3 million job losses in the manufacturing sector by 2029, many jobs driven overseas. In my State of Pennsylvania, it was projected that over 94,000 jobs would have been lost in the manufacturing sector by 2030.

Yet the Waxman-Markey draft is far more sweeping than Warner-Lieberman, and thus economic consequences will be even worse. The bill imposes a tax on every energy producer for their carbon emissions. This tax will most certainly be passed on to consumers. President Obama acknowledged this in a meeting with the editorial board of the San Francisco Chronicle in January of 2008 when he said, quote, under my plan of a cap-and-trade system, electricity rates would necessarily skyrocket. That will cost money. They will pass that money on to the consumers, end quote.

In Pennsylvania, 56 percent of energy demand that relies on coal, with the advent of a harsh energy tax that discriminates against coal-powered electric utilities, hard-working families will have to devote a larger proportion of their income to increasing energy prices.

Every American realizes that we are in a time of economic trouble, so we must ask the question, is it prudent to pass a cap-and-trade bill which will increase the cost of energy and conceivably cause 3.75 million job losses? Is it prudent to pass legislation that will make matters even worse by levying a new national energy tax that could cost families over $3,100 per year per family?

Mr. Chairman, we need to carefully consider the negative impact that a cap-and-trade bill will have upon our economy. I do not believe it is in the best interest of American families to pass a bill that will make their way of life harder and more challenging by job losses and higher energy costs.

In addition, despite the harmful economic consequences, the bill is even short-sighted in what it considers alternative and renewable energy. Nuclear energy, a prime source of clean energy, is entirely excluded from this bill, as is waste energy, which has been

successfully used in my district for decades to produce energy from municipal solid waste. Therefore, Mr. Chairman, I hope that these hearings will be substantive, clarify several aspects of the discussion draft that are puzzling at best and harmful to the consumers at worst. I look forward to hearing from our witnesses over the next 3 days, and I yield back.

[The prepared statement of Mr. Pitts follows:]

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Opening Statement for Energy and Environment Subcommittee Hearing:

Legislative Hearing on the "The American Clean Energy and Security Act of 2009"

April 21, 2009

Thank you Mr. Chairman, for holding this hearing.

Mr. Chairman, like all of us, I believe we should work to decrease the amount of greenhouse gas emissions in our atmosphere and we should be good stewards of this earth and its resources.

However, I don't see how these three days of marathon hearings will shed light on how the discussion draft of the cap and trade bill proposes to actually decrease greenhouse gas emissions and not cause devastating harm to our economy.

The discussion draft is incomplete—the most important provision regarding the allocation of allowances has yet to be decided or even written. Because of this, CBO said they cannot score the bill. And industries, and thus consumers, cannot truly define how the bill would impact them.

How, then, can we have legislative hearings and engage in fruitful dialogue and debate about a bill that is incomplete?

Even though the most critical portion of the bill is not included, we can talk about the numerous ways in which this bill will inevitably increase energy costs and negatively impact working families across America.

The last major cap and trade provision considered in Congress was the Warner-Lieberman Climate Security Act.

As far as decreasing greenhouse gas emissions, according to the Institute for Energy Research, Warner-Lieberman would have only reduced global temperatures by eighteen one hundredths of one degree by 2050.

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In the first 20 years, it would have destroyed 900,000 jobs, and caused nearly 3 million job losses in the manufacturing sector by 2029—with many jobs driven overseas.

In my state of Pennsylvania, it was projected that over 94,000 jobs would have been lost in the manufacturing sector by 2030.

Yet, the Waxman-Markey draft is far more sweeping than Warner-Lieberman and thus economic consequences will be even worse.

The bill imposes a tax on every energy producer for their carbon emissions—this tax will most certainly be passed on to consumers.

President Obama acknowledged this in a meeting with the editorial board of the San Francisco Chronicle in January 2008. He said, "Under my plan of a cap and trade system electricity rates would necessarily skyrocket ... that will cost money. They will pass that money on to consumers ..."

In Pennsylvania, 56% of energy demand relies on coal. With the advent of a harsh energy tax that discriminates against coal-powered electric utilities, hard working families will have to devote a larger proportion of their income to increasing energy prices.

Every American realizes that we're in a time of economic trouble. So, we must ask the question, is it prudent to pass a cap and trade bill which will increase the cost of energy and conceivably cause 3.75 million in job losses?

Is it prudent to pass legislation that will make matters even worse by levying a new national energy tax that could cost families over $3,100 per year per family?

Mr. Chairman, we need to carefully consider the negative impact a cap and trade bill will have upon our economy. I do not believe it is in the best interest of American families to pass a bill that will make their way of life harder and more challenging by lost jobs and higher energy costs.

In addition, despite the harmful economic consequences, the bill is even short-sighted in what it considers alternative and renewable energy. Nuclear energy, a prime source of clean energy, is entirely excluded from this bill, as is waste-to-energy, which has been used successfully in my district for decades to produce energy from municipal solid waste.

Therefore, Mr. Chairman, I hope that these hearings will be substantive and clarify several aspects of the discussion draft that are puzzling at best and harmful to consumers at worst.

I look forward to hearing from our witnesses over the next three days.

I yield back.

Mr. MARKEY. I thank the gentleman.

The Chair recognizes the gentlelady from Wisconsin, Ms. Baldwin.

OPENING STATEMENT OF HON. TAMMY BALDWIN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WISCONSIN

Ms. BALDWIN. Thank you, Mr. Chairman. And thank you for all of your leadership in bringing us to this moment. We have an opportunity before us to address climate change in a real and meaningful way.

Our greenhouse gas emissions have put our global environment, social structure and security at risk, and if we fail to act boldly, comprehensively and decisively, the impact will reverberate during the later decades of this new century with the loss of human lives, declines in health, species extinction, destruction of ecosystem and increase of social conflict.

Among the challenges that we face is that we are asking current generations to conserve and live a lower carbon lifestyle in order to improve the lives and well-being of future generations, generations yet to come. I often remind folks, especially my colleagues, that the future doesn't have a voice or a lobbyist. Our great, great, great grandchildren don't have a voice or a lobbyist. The present has plenty of lobbyists. Those of us who are here on Earth today have a voice. We know that it is up to us. We know the science, we know the consequences of inaction and we must act on behalf of both those who are here today and those who will inherit this Earth in generations to come.

Now, if we are truly to be successful in our effort, it is necessary for our energy legislation to address climate change while spurring innovation, creating jobs and containing costs. The bill we have before us begins to set us down such a path. It is not perfect, but with four key components of this legislation—increases in renewable energy requirements, higher energy efficiency standards, a cap-and-trade program to address emissions and assistance incentives for transitioning to a low-carbon economy—our opportunities for success are achievable.

I cannot overstate, our Nation's security, our planet's sustainability and our children's future hang in the balance, and the world is watching our every step. They are looking to us, with the largest economy, most talented innovators and the richest resources, to bring leadership and commitment to Copenhagen and beyond. We absolutely cannot show up empty handed.

I look forward to hearing from the experts who will address us in the panels throughout this week and to working with my colleagues to ensure that we craft a bill that meets all of our diverse needs regionally, our challenges and our opportunities.

Like my colleague, Mr. Inslee, I also had the chance to tour cutting-edge businesses in Wisconsin over the spring recess, who are doing incredible innovative things with regard to energy efficiency and renewable electrical and liquid fuel production. I had a chance to go to Orion, who is manufacturing a solar light pipe technology that can eliminate factory floors electricity free. I visited Johnson Controls that is focusing on building efficiency and lithium ion batteries for plug-in hybrids and fully electric vehicles of the future.

I had a chance to visit We Energies and their carbon capture demonstration project and a chance to tour a wind farm in my State and to see a farm with a manure digester generating enough electricity for 600 homes in the area.

As I toured these innovative businesses throughout the State of Wisconsin, what I took from that is that we can do this. Folks are doing it right now. Many are already leading the way. The goals that we have to confront the challenge of climate change are within our reach, and we must lead at this moment.

Thank you, Mr. Chairman. I yield back my remaining time.

Mr. MARKEY. The gentlelady's time has expired.

The Chair recognizes the gentleman from Pennsylvania, Mr. Murphy.

OPENING STATEMENT OF HON. TIM MURPHY, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF PENNSYLVANIA

Mr. MURPHY OF PENNSYLVANIA. Thank you, Mr. Chairman. I remember as a young boy one day hearing my parents talk about this thing called Sputnik that was launched into space and they were worried, as were many Americans, that somehow the Russians were beating us at something that—what we thought was a backwards sort of country, the Soviet Union that really didn't have much science at all.

But it did spark an incredible change in America. In our schools, it emphasized science. And our universities, they really began to look more beyond just our streets and into our skies.

And then came this incredible challenge by the President of the United States that said, Within 10 years we will put a man on the moon safely and bring him home. And indeed we did that because over a 10-year time span, our Nation came together to meet the challenge of its generation to do that.

Well, now, we have a new challenge for our generation and that has to do with energy. Now, I am not a climatologist or a physicist, and I am not here to argue about any of the things that people do discuss with regard to climate change and its causes and what that might be. But I have a background in health, and I am concerned that where we should find common ground is that we do want a clean planet with clean air and clean water and clean soil. And we can get there if we pull together to do that; the question is how. And the question is, can we do this in a way that boosts our economy and not hurts it, that creates jobs in America and not sends them overseas and really and truly works in a way that American families find opportunity and not the loss of more jobs.

To that end I think we have three things we should do:

One, we need to explore. We need to find domestic energy sources and make sure we clean them up and not just continue business as usual. As it is, nothing should sicken us more than when we find that we are sending hundreds of billions of dollars overseas and, in essence, funding both sides in the war on terror when we see other countries use that money from oil to buy bombs or create them and use them against our soldiers, and to fund terrorism. That is unacceptable to all of us.

What we need to do is find ways of using our domestic resources, as abundant as they are, of coal, of natural gas, of oil, but clean it up so we are not polluting this planet and leaving it dirtier than when we came.

The second thing we have to do is conservation. Many of my colleagues and I have companies in our districts that are coming into their own now as they find many ways to conserve energy. We will recognize that homes and farms and factories and offices perhaps use only about 40 to 50 percent of the energy effectively, but they pay for 100 percent. And—it is unacceptable for our economy that we waste so much, and we have to work on ways of conserving that with every conceivable thing from manufacturing to transportation to education.

The third thing, however, we have to do is innovation. The Apollo Project of our generation is energy, and we need the idea, the science, the research and the funding to get there. We need to have a sense of awe, and wonder what we can do; and we need to be dealing with, Is this the truth? We cannot afford to have commercials sniping each other with people pretending there is no such thing as clean coal. I suppose the Wright brothers faced the same sort of challenge and other people said there is no such thing.

If there is any country in this world that can clean it up, we can do it. My friends, that is Nobel prize stuff to find someone who will find a lump of coal and find a way of getting all of the energy out of it, not 40 percent, and do it without pollution. We ought to be funding that.

We do so many other things with innovation, but where I must say I have agreement with many parts of this legislation before us, I hope the door is still open to do some other things that deal with innovation. I am deeply concerned that what this bill will do with cap and trade is not really stop pollution, because it merely sells pollution credits and does not reinvest in cleaning up our coal plants and, I believe, will actually send many, many jobs to China, to Brazil and to India.

We have to gather together and find ways that we can use our abundant resources in effective ways. We can do that. But it also means we have to put that money back into these things and not siphon it off and send it off to the Federal Government to use for other sources.

It is going to take a lot of work here; and I hope, as we proceed in this, we remember the awe and wonder in which we were—many of us were inspired back in the 1960s, and instead of sniping at each other with regard to political gain, we gather together. Because the end is something we have to agree on: energy independence and a clean planet, with a good future for our children and their children.

I yield back.

Mr. MARKEY. I thank the gentleman.

The Chair recognizes the gentleman from Arkansas, Mr. Ross.

OPENING STATEMENT OF HON. MIKE ROSS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARKANSAS

Mr. ROSS. Thank you, Mr. Chairman, for holding today's hearing.

Let me begin by stating that, like all of you, I am concerned about climate change, and I believe that we must develop a comprehensive plan to reduce greenhouse gas emissions and invest in alternative and renewable fuels like wind and solar, cellulosic ethanol, biodiesel, biofuels, as well as nuclear power and clean coal.

As the leader of the Free World, I also believe we must lead by example. However, we must embrace a commonsense approach to imposing regulations that will help to improve our environment while still maintaining jobs and strengthening our Nation's economy here at home in America.

In order to do this, we must ensure that we do not allow our laws to get ahead of our technology, but that when the appropriate technology becomes available, we demand that industry use it.

In addition, I think we must be very careful in enacting climate legislation to ensure that we do not enact a policy that will simply result in shipping our jobs and our carbon dioxide emissions overseas, which would do nothing for Planet Earth. I recognize that few things get done without U.S. leadership and action, but our action must include compelling other countries to join us. The reality is that between now and 2040, 97 percent of all new carbon emissions will not be produced in North America or Europe, but in places like China, India and the Middle East. We must do all we can to ensure that the rest of the world works with us towards a goal of improving our environment and reducing carbon dioxide emissions. We are not trying to fix a problem in the United States of America; we are trying to address a problem that affects the entire planet.

I believe that the draft we will be discussing this week is a significant step in the right direction. Or maybe a better word would be to say "correct" direction. For example, I was pleased to see that the draft addressed and embraces carbon capture and sequestration. In my own State of Arkansas, there are massive deposits of lignite coal, over 9 billion tons to be exact. However, there must be a serious investment in carbon capture and other new carbon technologies in order for lignite to realize its full potential.

The bottom line is that, you know, if you didn't like $4 gasoline last summer, you are really not going to like your electric bill sometime between now and 2030. We are going to have an electricity crisis sometime in this country, and I say we could do it all. We need to do more nuclear. We need to continue to find ways to clean coal up. We need to do all those things in the science lab today. We need to find ways to move them to the marketplace. A few of them, to me, sound a little goofy, but if we can make them work, we should embrace them. The sooner we can do that, the fewer dollars we will be sending overseas and the more of those dollars we can keep at home, make our energy here at home and put people back to work.

While I believe that the draft is a good first step, there are a number of concerns I have. I am deeply concerned that the more traditional renewable resources—wind, solar, geothermal—do not exist in places like Arkansas in sufficient amounts to satisfy a Federal renewable electricity mandate, especially an aggressive one. This draft needs to expand its definition to include biomass to a much larger degree than what it does today.

I represent a very rural and poor district. As a result, any increase in electric rates due to a renewable electricity standard will fall disproportionately on consumers in my district. And I want to ensure that this does not happen.

I hope to work with the chairman to ensure this legislation will not create a burden, much higher electricity bills for consumers and business, and to ensure that all of our available natural resources like biomass are included to the fullest extent possible in that definition.

I also believe that our Nation's farmers and agriculture community can play an important role in the fight against climate change by growing our fuels and restoring carbon in their fields. I am hopeful that we can work to make that possible in this legislation.

I also believe that we must ensure that energy-intensive industries like the refining industry are still able to supply our Nation as we transition to more renewable forms of energy. This U.S. Industry must remain viable, and I hope to work with the committee to ensure that.

Finally, I believe that the draft provides a strong framework to protect natural resources, but I want to ensure that there is significant funding to protect our Nation's wildlife and natural resources as well as the low-income consumers who could be disproportionately affected by this legislation.

With that, Mr. Chairman, I realize I am out of time, and I thank you for the opportunity.

Mr. MARKEY. I thank the gentleman very much.

The Chair recognizes the gentleman from Florida, Mr. Stearns.

OPENING STATEMENT OF HON. CLIFF STEARNS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF FLORIDA

Mr. STEARNS. Thank you, Mr. Chairman.

I think that what concerns us on this side, Mr. Chairman, is that this economy is obviously struggling in the worst economic crisis in over 70 years. The majority, I think, should move very carefully here and not hastily move the bill or craft an incomplete emissions mitigation plan that lacks any procedure for distributing the allocations in a very precise manner.

Since 1997, Europe has engaged in a similar-style cap-and-trade system that certainly should serve as an example of how such a hastily crafted system can be manipulated. Their cap-and-trade-system as been plagued with industry closures, price spikes and windfall profits. European governments and industries, in an attempt to head off a negative economic impact of cap and trade, freely handed out emission allowances that resulted in an emission permit market that constantly fluctuated. With the price of carbon up and down by an average of 17.5 percent per month, with daily price shifts as great as 70 percent, European companies have been left to simply guess at how much their environmental compliance costs might be every month. Meanwhile, European consumers have suffered as the rates for energy have increased, with homeowners in Germany paying 25 percent more for electricity now than they did before the implementation of the cap and trade.

The intellectual architects of this U.S. cap-and-trade plan acknowledge higher energy prices would result from an emission cap

here as well. In fact, they rely on it. This will force manufacturers and small businesses to absorb the cost of higher energy prices, which they will do by raising prices, cutting costs by laying off employees or, of course, being forced to close. This is what we don't want in this economic situation.

Now, the National Association of Manufacturers estimates that a cap-and-trade plan will cost up to 4 million jobs. The Heritage Foundation also estimates the loss of up to 5.5 million jobs. The Charles River Associates estimates job losses as high as 7 million. The consensus seems to be that a cap-and-trade plan will cost millions of U.S. jobs.

Besides instituting a bureaucratic cap-and-trade plan, the majority draft here also mandates that 25 percent of U.S. electricity generation come from a limited list of renewable sources by 2025. Because my State of Florida and the Southeast have limited availability of solar, land-filled gas and virtually no wind power, electric consumers in our region would be forced to pay through their electric bills for renewable energy credits, if available; or for alternative compliance payments essentially amounting to a tax on electricity used by businesses and other consumers. This will drive up energy costs and hurt economic growth with no guarantee that the money collected would actually be invested in generation and efficiency projects in their State.

If Congress were to enact a 25 percent renewable electricity standard, as proposed in this bill, it would cost my State over $10 billion between now and 2030.

Renewable energy programs should be based on consumer demand, regional differences and appropriate incentives, not on unrealistic Federal mandates that selectively penalize electricity consumers in certain regions of our country. Ultimately, it should be States, not the Federal Government, that should be responsible for the design and implementation of renewable energy directives affecting electricity consumers in their areas.

The fact remains that despite political favoritism and billions in subsidies, wind power still only accounts for 1 percent of U.S. net electricity generation, and solar power accounts for just 100th of 1 percent. Any meaningful effort to achieve long-term, sustainable reduction in global greenhouse gas emissions will depend on the development and deployment of new energy technologies, including advanced clean coal technologies and carbon capture and sequestration. The rapid development and demonstration and widespread deployment of such technologies are of paramount importance in any reasoned and effective effort to address climate change concerns.

The expansion of nuclear power production in the United States must also be part of this plan to address carbon dioxide reduction, yet nuclear power is only mentioned twice in the entire 648-page bill.

So, Mr. Chairman, I think this bill requires amendments, and I look forward to the markup. Thank you.

Mr. MARKEY. We thank the gentleman.

The Chair recognizes the gentleman from North Carolina, Mr. Butterfield.

OPENING STATEMENT OF HON. G.K. BUTTERFIELD, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NORTH CAROLINA

Mr. BUTTERFIELD. Thank you very much, Mr. Chairman, for convening this important hearing this week. I know that you told us at the beginning of the session this would be a long, robust debate; and I thank you very much for getting it started.

You know, I have been listening very carefully to my friends on the other side of the aisle this afternoon to see if there is any support for the notion that the science is unsettled in this area. I have not heard that today and that is very pleasing to hear that. The science is indeed clear, the planet is warming, sea level is rising, so I don't see how we can deny that human beings are indeed contributing to this warming. To continue to debate the science, if that is going to happen this week and next week, does a disservice to this enormous issue.

So we must lead the way on climate change. We simply cannot wait, and I thank you, Mr. Chairman, for at least getting it started. I know it would be nice to wait on developing countries; I have heard that argument made and that is not wise. We must lead the way. We cannot wait until the recession ends. I don't know when that is going to be, but we must begin this debate this week; and so I am ready to engage in this process.

But, Mr. Chairman, having said that, I have some deep and serious concern about some aspects of the bill, and I want to associate myself with some of the comments made by Bart Gordon earlier in this hearing this afternoon. I also want to thank Mike Ross from Arkansas for his comments, as well as those of Mr. Stearns, my friend from Florida.

The RES, the renewable electricity standards, I am very concerned about that mandate on some of our States, particularly my home State of North Carolina. We cannot achieve, Mr. Chairman, a 25 percent mandate by 2025. Not only is it impractical, it is impossible.

But there are ways that we can address my concerns and the concerns of others. We can reduce the RES mandate to 15 percent, for example, or some other number by the year 2025, or we can authorize a greater mix of renewable sources. We can certainly look at including nuclear power in the mix; I am not opposed to that. We can look at the possibility of maximizing the use of biomass; I am not opposed to that, as well.

Also, I would not rule out, Mr. Chairman, a conversation about allowing special consideration for those States in the condition of my State. There are several States in the Southeast who are similarly situated, and I think there could be some language put in the bill that would allow some special consideration.

Also, Mr. Chairman, I am particularly concerned that the economic impact will be devastating on low-income families in America. Low-income families simply cannot absorb the increase in consumer prices that are sure to come. We must make sure that we devise a way to offset the increased prices. We can do that. We can do it in a variety of ways that we should discuss and debate, and I have some proposals that will be offered at the appropriate time.

Finally, Mr. Chairman, I encourage us to move deliberately on this important legislation, and as Ms. Harman said earlier, to get it right. If we fail to get it right, the result will be very painful to many American families.

Thank you. I yield back.

Mr. MARKEY. The gentleman's time has expired.

The Chair recognizes the gentleman from Iowa, Mr. Braley.

The Chair recognizes the gentleman from Georgia, Mr. Barrow.

I am sorry. The gentleman from Iowa is here. I think we should stay in regular order. My apologies to the gentleman from Georgia. We will recognize the gentleman from Iowa for his opening statement.

OPENING STATEMENT OF HON. BRUCE L. BRALEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IOWA

Mr. BRALEY. Thank you, Mr. Chairman, for your extraordinary leadership on this important legislation. And I want to join Congresswoman Harman in welcoming all the young people that are here today because we are really here to talk about a blueprint for an energy revolution that is going to affect you the rest of your lives. And for somebody my age—I am not going to be around as long as you are to see the impact that this bill is going to have, not just on your lives, but on the future of this planet; and that is why the work we are doing here is so significant.

Mr. Chairman, I want to thank you for your efforts on the American Clean Energy and Security Act. We all know addressing climate change and energy independence are two of the greatest challenges facing this country. It has taken a lot of work and consensus to try to come up with language that balances the need of people with businesses, but this discussion draft is a great start, and I am pleased that you have brought so many people to the table from diverse industries and interest groups to put together this legislation.

This year I was proud to form the Populist Caucus, the only caucus in Congress devoted solely to addressing middle-class economic issues. I can take this bill back to caucus members and tell them there are provisions here that will help working class Americans.

I am extremely encouraged by several provisions included in this draft to appropriate green jobs, and I think that your presence here today confirms that. This bill should be seen as an opportunity to put in place a green industry in the United States and take advantage of a world-class education system to make sure we have adequately trained workers for careers in renewable energy, energy efficiency, climate change mitigation; and the grant program that is a part of this bill will be a good step toward accomplishing those goals.

Tomorrow, President Obama will be in Newton, Iowa, where I got my first drivers license at the age of 16, to discuss the importance of this legislation to economic revitalization. For over 100 years, Newton was the world headquarters of Maytag Corporation, a leader in home appliances, making washers and dryers. When Maytag shut down, the Newton facility, some of my high school classmates, lost their jobs. Now that facility is putting Iowans to work building wind turbine components to meet the growing demand for wind energy in Iowa, the United States and the world.

These are the kinds of job opportunities that make a renewable energy investment pay off for America. This is no silver bullet, but I am proud that Iowa is now second in the Nation in wind generation; an Iowa success story is further evidence that investment in renewable energy is working. Iowa is currently home to six wind manufacturing companies, representing thousands of green collar jobs and an investment of nearly a quarter of a billion dollars in our State's economy. Recently, Iowa surpassed California and now has the installed capacity over 2,700 megawatts this amount of wind generation will provide about 18 percent of Iowa's total electricity needs.

We can all benefit from investments in wind energy and other renewables through newly created jobs, cheaper energy, cleaner skies and a reduced dependence on foreign oil.

One of the things I would like to see as a part of this bill is an allowance allocation for renewable energy deployment. I have been working with many renewable energy groups to discuss a subsidy matrix that takes into account distributed generation versus centralized generation and matured technologies versus emerging technologies. I hope we will soon have some language that the committee can consider as a part of the base language, and I believe this type of approach will bring new technologies to the market faster and ensure that effective technologies have resources they need to expand.

I also think it would be helpful to have an expansion of the temporary program for the rapid deployment of renewable energy and electric transmission projects. The program modeled after the Department of Energy's loan guarantee program is designed to speed commercial adoption and use of advanced renewable energy technologies by providing low-interest, government-backed loans to companies investing in the implementation of technologies, including advanced biofuels technologies. The stimulus program expires on September 30, 2011.

I am also glad there is language in place that will help low- and middle-income Americans lower their energy costs, like money for weatherization of homes. And I am also hopeful there will be additional protections for working-class Americans as part of this legislation. I want to make sure that some kind of mechanism is in place to provide rebates to middle- and low-income Americans to help balance their energy costs. Including additional projects in LIHEAP money would also be welcomed.

I am glad there is a requirement to report and set forth a unified and comprehensive strategy to address the key legal and regulatory barriers for the commercial-scale deployment of carbon capture and sequestration. According to the legislation that we are considering, the EPA is to write regulations for certifying, maintaining and trading offsets. I am hopeful they would see the benefits that farmers can provide in reducing carbon emissions and include these things such as methane digesters and no-till farming.

The Energy Revolution has begun. We need your help to make it a reality. And I yield the balance of my time.

[The prepared statement of Mr. Braley follows:]

April 21, 2009

Congressman Bruce Braley Opening Statement

Hearing on "the *American Clean Energy and Security Act*"

Thank you Chairman Markey.

I commend you for your efforts on the *American Clean Energy and Security Act.* Addressing climate change and energy independence are two of the greatest challenges facing us. I know it's taken a lot of work and consensus to try to come up with language that balances the needs of people and businesses, but the discussion draft is a great start. I am pleased that you have brought so many people to the table from diverse industries and interest groups to put together this legislation.

This year I was proud to form the Populist Caucus, the only caucus in Congress devoted solely towards addressing middle class economic issues. I can take this bill back to caucus members and tell them that there are provisions in here that will help working class Americans.

I am encouraged by several provisions included within this draft to promote green jobs. This bill should be seen as an opportunity to put in place a green industry within the United States. We should take advantage of our world-class education system to make sure we have adequately trained workers for careers in renewable energy, energy efficiency, and climate change mitigation, and the grant program that is a part of this bill will be a good step towards accomplishing these goals.

Tomorrow, President Obama will be in Newton, Iowa—where I got my first driver's license when I was 16—to discuss the importance of this legislation to economic revitalization. For over 100 years, Newton was the world headquarters of Maytag Corporation, a world leader in home appliances like washers and dryers. When Maytag shut down its Newton facility, some of my high school classmates lost their jobs. Now that facility is putting Iowans to work building wind turbine components to meet the growing demands for wind energy in Iowa, the US, and the world.

There is no technology silver bullet, but I am proud that Iowa is now second in the nation in wind generation. Iowa's success story is further evidence that investment in renewable energy is working.

Iowa is home to six wind manufacturing companies representing thousands of green collar jobs and an investment of nearly a quarter of a billion dollars in our state. Iowa surpassed California and now has the installed capacity of over 2,700 MW. This amount of wind generation will provide about 18% of Iowa's total electricity needs.

We can all benefit from investments in wind energy and other renewables through newly created jobs and industries, cheaper energy, cleaner skies, and a reduced dependence on foreign oil.

One of the things I would like to see as a part of this bill is an allowance allocation for renewable energy deployment. I have been working with different renewable energy groups to discuss a subsidy matrix that takes into account distributed generation vs. centralized generation and mature technologies vs. emerging technologies. I hope that we'll soon have some language that the Committee will consider as part of the base language. I believe that this type of approach will bring new technologies to the market faster and ensure that effective technologies have the resources they need to expand.

I also think it would be helpful to have an expansion of the Temporary Program for the Rapid Deployment of Renewable Energy and Electric Transmission Projects. The program, modeled after the

Department of Energy's Loan Guarantee Program, is designed to speed commercial adoption and use of advanced renewable energy technologies by providing low interest, government-backed loans to companies investing in implementation of the technologies, including advanced biofuels technologies. The stimulus program expires on September 30, 2011.

I'm glad there's language in place that will help low- and middle-income Americans lower their energy costs like money for weatherization of houses. I'm also hopeful there will be additional protections for working-class Americans as a part of this legislation. I want to ensure that there is some kind of mechanism in place to provide rebates to low- and middle-income Americans to help balance their energy costs. Additional protections, such as Low Income Energy Assistance Program (LIHEAP) money, would also be welcomed.

It is also encouraging that energy-intensive, trade-exposed industries are given special consideration under this legislation. The last thing any of us want to happen is for energy-intensive industries to move oversees to avoid regulations implemented as a part of this bill. The provisions for these industries will provide better safeguards

for keeping manufacturing jobs in the United States and will ultimately result in lower carbon emissions, as opposed to these factories going to places where they receive little incentive to reduce their greenhouse gas emissions.

I'm also glad there is a requirement for a report to set forth a unified and comprehensive strategy to address the key legal and regulatory barriers for the commercial-scale deployment of carbon capture and sequestration. The reality is that we use a lot of coal that isn't easily replaceable, especially over the short-term, and carbon capture and sequestration needs to be looked at to see the potential for reducing the amount of carbon that goes into the air.

According to this legislation, the Environmental Protection Agency (EPA) is to write regulations for certifying, maintaining, and trading offsets. I hope they'll see the benefits that farmers can provide in reducing carbon emissions and include things such as methane digesters and no-till farming in this list.

The energy revolution has begun. We need your help to make it a reality.

Mr. MARKEY. We thank the gentleman. The Chair recognizes the gentlelady from Tennessee, Mrs. Blackburn.

OPENING STATEMENT OF HON. MARSHA BLACKBURN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE

Mrs. BLACKBURN. Thank you, Mr. Chairman.

Last week the EPA positioned itself to regulate carbon dioxide emissions under the Clean Air Act without congressional consent. We are then faced with a choice. We can acquiesce to bad regulation that will have certain and disastrous impacts on our economy, or we can legislate an even more harmful system. It is as though, when faced with a gun to our head, Congress is going to take it and shoot ourselves in the chest.

For the record, I would remind the committee of my bill, H.R. 391, which will prohibit the EPA from taking action under the Clean Air Act and allow Congress the time we need to craft intelligent legislation. My bill would also save farms who, under the EPA's proposed regulations, would face steep levies on livestock.

Laying aside my skepticism of the underlying science that led us to this bill, I would like to address some of my concerns on the legislation itself. There are at least two provisions that we know will be detrimental to the economy at a very bad time.

First are the renewable electricity standards imposed by the bill. Currently 3 percent of our electricity is generated by renewable energy. The chairman's bill calls for 25 percent by 2025 to meet these standards. Under current electricity usage levels it would require 20,000 megawatts of renewable energy to come on line each year until 2025. That is 20,000 megawatts a year.

I would remind my colleagues that only 10,000 megawatts' worth of renewable electricity came on line last year. The Energy Information Administration estimates that only 8,000 additional megawatts will come on line over the next 4 years, and that is in total. This makes the renewable energy requirements in this bill unrealistic, and that is under current usage rates.

This bill aims to increase electricity usage without accommodating the increased usage in the standard for renewable generation. They also happen to be exceedingly expensive. We are saddling our States and our energy consumers with unrealistic demands at prohibitively high prices.

Secondly, while there are large blanks in the chairman's bill when it comes to the mechanics of a cap-and-trade proposal, few in this room doubt that we are actually talking about a cap-and-tax system. Electricity rates are going to rise and Washington is going to pocket the profits.

I take no comfort from any assurance I hear from my colleagues across the aisle or down the street that energy consumers will be compensated in some way. We must be plain, and we must be honest when we discuss this system. It will pull thousands more out of the family budget each and every year. There is simply no way around it, and we are wrong to try and sugarcoat it.

Mr. Chairman, I wonder if the committee will give as yet unforeseen compounding effects of this bill due consideration. We know that the renewable energy standard will increase electricity costs;

there are ample case studies to prove it. We also know that the cap-and-trade system will drive up electricity costs. The President himself has told us the prices will—and I am quoting him—"necessarily skyrocket," for consumers. What we don't know, what we must know before this bill becomes law, is what the compounding effect of an expensive renewable energy standard and an expensive cap-and-trade system will be to the family budget. As my colleagues and I work on this legislation, that is what I am going to be paying the closest attention to.

Thank you, Mr. Chairman. I yield back.

[The prepared statement of Ms. Blackburn follows:]

Statement of Rep. Marsha Blackburn

April 21, 2009

Mr. Chairman, last week the EPA positioned itself to regulate carbon dioxide emissions under the Clean Air Act, with or without Congressional consent. We are then, faced with a choice, we can acquiesce to bad regulation that will have certain and disastrous impacts on our economy or we can legislate an even more harmful system. It is as though, when faced with a gun to our heads, Congress is opting to shoot ourselves in the chest."

"For the record, I would remind the Committee of my bill, H.R. 391, which would prohibit the EPA from taking action under the Clean Air Act and allow Congress the time we need to craft intelligent legislation. My bill would also save small farms, who under the EPA's proposed regulations would face steep levies on livestock."

"Laying aside my skepticism of the underlying science that led us to this bill, I would like to address some of my concerns over the legislation itself. There are at least two provisions that we know will be detrimental to the economy at the worst possible moment."

"First, are the renewable electricity standards imposed by this bill. Currently, 3% of our electricity is generated by renewable energy. The Chairman's bill calls for 25% by 2025. To meet that standard under current electricity usage levels would require 20,000 megawatts of renewable energy to come online each year until 2025."

"I would remind my colleagues that only 10,000 megawatts worth of renewable electricity came online last year. The Energy Information Administration estimates that only 8,000 additional megawatts will come online over the next four years."

"This makes the renewable energy requirements in this bill entirely unrealistic, and that is under current usage rates. This bill also aims to increase electricity usage without accommodating that increased usage in the standard for renewable generation. The proposed standards also happen to be exceedingly expensive. We are saddling our states and our energy consumers with unrealistic demands at prohibitively high prices."

"Secondly, while there are large holes in the Chairman's bill when it comes to the mechanics of a Cap and Trade proposal, few in this room doubt that we are actually talking about a Cap and Tax system. Electricity rates are going to rise and Washington is going to pocket the profits. I take no comfort from any assurance I hear from my colleagues across the aisle or down the street that energy consumers will be compensated in any way."

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"What we don't know- what we must know before this bill becomes law- is what the compounding effect of an expensive renewable energy standard and an expensive Cap and Trade system will be to the family budget."

"As my colleagues and I work on this bill, that is what I am going to be paying the most attention to."

Mr. MARKEY. We thank the gentlelady.

The Chair recognizes once again the gentleman from Georgia, Mr. Barrow.

Mr. BARROW. I thank the chairman. And I want to thank you for holding this marathon series of hearings this week.

Mr. Chairman, if I were to adopt the mood of my colleague, Brother Murphy over here, and go back to what I learned as a child, I would have to recall learning about the wonders, the miracle of the carbon cycle, the idea that what plants emit as poison to them is food to us, and what we emit as poison to us and is food to them just struck me as such a miracle of evolution. But I have to acknowledge that the Almighty had a carbon sequestration plan of his own in mind in order to be able to create the conditions in which this balance could exist, and we busted the Almighty's carbon sequestration plan all to hell with our own activities.

So climate change is real, our role in it is real, and I want to support the work of the committee in trying to do something about it. I have to say, though, this bill has potential for far-reaching impacts in our economy, both good and bad, and we are going to have to be very, very precise about how we craft the programs that are contained in this legislation.

There are big gaps that remain in the language. It seems that we have an awful lot of work yet to do.

I look forward to a productive week of hearings. And I look forward to working with my chairman and my colleagues to craft what I hope will be a reasonable bill.

With that, I yield the balance of my time.

Mr. MARKEY. We thank the gentleman.

The Chair recognizes the gentleman from Texas, Mr. Gonzalez.

OPENING STATEMENT OF HON. CHARLES A. GONZALEZ, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. GONZALEZ. Thank you very much, Mr. Chairman. And I will commend, of course, your fine work and that of the chairman of the full committee bringing us this far and this quickly. And we will be moving with great dispatch in the next couple of weeks.

I will make some very general statements first and then be specific as to one issue of great consequence, I think. First, I would hope that all of us will recognize the different challenges that face the different regions of this country. While we all must represent our distinct districts we need to understand that we are all not similarly situated. I do not have to live in Salt Lake City or Boston or Los Angeles to understand that their situation there may be different than those of the citizens in San Antonio, Texas.

I would like to be specific when it comes to automobiles. We have over 200 million vehicles in the United States, which are responsible for approximately 20 percent of greenhouse gas emissions. We will start with a system with greater efficiency of the internal combustion engines with emphasis on hybrid technology, with eventual conversion to battery-based powered vehicles. The question is, how long will this conversion take.

What we do know is that traditional transportation fuels will be required during this transition period. To determine the amounts needed during this transitional phase, we must establish first the

number of vehicles in use today using hydrocarbon-based fuels and the duration of their expected use, because we know just recently what we used to think in terms of what would be the replacement rate of vehicles in the United States has been reduced drastically.

And, secondly, the characteristics of replacement vehicles: Will it be hybrids and what type of hybrids, battery operated, hydrogen cell, alternative fuel powered and so on? And the technological feasibility of placing a sufficient and affordable number of these vehicles in the marketplace, I believe that the inevitable conclusion is that the United States will require an increase in the domestic production in refining capacity of traditional carbon-based fuels. This does not mean that we will abandon our clean air objectives, but rather adopt a transitional approach that allows us to achieve our goals in a realistic fashion. Should we ignore what will be required during this conversion period, we will find that we have created a situation that exposes us to greater dependence on foreign sources of transportation fuels with the attendant costs to our Nation's economy and security.

In closing, while a cost-benefit analysis will not be ignored, we need to understand that increased costs and the required change in consumption behavior by our citizens in this country will not represent insurmountable obstacles to the passage of a meaningful energy reform legislation.

Thank you very much. And I yield back, Mr. Chairman.

Mr. MARKEY. We thank the gentleman.

The Chair recognizes the gentleman from Louisiana, Mr. Melancon.

OPENING STATEMENT OF HON. CHARLIE MELANCON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF LOUISIANA

Mr. MELANCON. Thank you, Mr. Chairman. I am finally getting used to being the second Louisiana guy. I appreciate the opportunity to do an opening statement.

And thank you, Mr. Waxman, for your work on this legislation.

We are now considering the most important energy legislation of our generation. This bill and the final version of this bill will shape our environment, our energy consumption, our independence and our economy. These issues deserve thoughtful consideration and diligent debate.

Before we can discuss the specific provisions of this bill and their merit, we must acknowledge the science of climate. Some choose to debate whether the cause of climate change is man-made or a result of natural cycles.

To be frank, the cause does not matter. We have all seen the impact of change in climate on our land and our oceans. Droughts damage our crops, while rising water levels threaten to erode our shores. My home, Louisiana, has the tragic distinction of bearing witness to increased hurricane strength, a result of the warming of waters in the Gulf of Mexico.

Energy policy has been at the forefront of American politics for decades. The shortages of the 1970s, the manipulation in the 1990s and the technology shifts of today all reflect our Nation's dependence and growing demand for energy.

I believe that any responsible energy legislation should consider the broad spectrum of energy sources that are available today. Just as American innovation can create new sources of energy, it can take our existing resources and adapt them to a low-carbon environment.

America has been blessed with rich deposits of energy that have driven our economy for decades and through many wars. As we strive for energy independence, we should focus on reducing foreign imports first, allowing domestic production to continue and be the bridge our economy needs to flourish. Technologies may eventually exist that replace fossil fuels, but even under the most optimistic of projections, those technologies are decades away for large-scale commercial viability.

As this country makes the transition to renewable fuels and electricity generation, we must be open to all energy solutions. Climate change legislation offers the promise of millions of green jobs, but those jobs will not materialize overnight, and to avoid the loss of even more jobs, we must be deliberate and considerate in the policies we draft. American innovation has the capacity to make us world leaders in the export of new energy technologies, and those future firms and construction opportunities mean good, decent-paying jobs for Americans.

However, let us not forget the contribution existing companies have made to that same goal. The oil and gas service companies in my district have provided gainful employment to millions of men and women for generations. These are jobs that require skill and good work ethic, and they pay livable wages in return. The loss of those jobs would cripple the economy of Louisiana and many other blue collar and oil jobs in energy-producing States across the country.

I commend you, Chairman Markey, and Chairman Waxman, for your diligence on these issues. I would also like to express my appreciation for the dedication to regular order, allowing input from all the members of both full and subcommittee. The staff has also shown tremendous commitments to this legislation and have produced a solid working document, and I thank them also.

I look forward to working with this committee now and into the future on energy policy that will be good for this country.

I yield back the remainder of my time.

Mr. MARKEY. We thank the gentleman very much.

And we now turn and recognize the gentleman from Utah, Mr. Matheson.

OPENING STATEMENT OF HON. JIM MATHESON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH

Mr. MATHESON. Thank you, Mr. Chairman.

I have a number of concerns I want to raise. I think I participated in close to 2½ years of hearings on climate change before this subcommittee. We have a 648-page draft that we are looking at right now. This is a huge piece of legislation, this is an exceptionally complicated issue, and I am concerned of moving so quickly that when we go to markup next week, we may not get it right. And I just want to make sure that we are deliberate in how we go about this.

The draft has, as many members have pointed out, significant holes right now in terms of how we will address the issue of allowances. So I just want to express that concern.

Second, major or landmark legislation that has been passed through this Congress historically in terms of environmental issues has often had a bipartisan component. I believe good policy on this subject should be bipartisan. I implore all members on this committee, on both sides of the aisle, to step up to the plate on this issue. It is a serious issue and everybody ought to get engaged.

Third, the idea, if your goal is to reduce carbon emissions and you talk about cap and trade, one of the things that people like about cap and trade is, it provides a certainty about how the emissions will be reduced year to year and allows the marketplace to decide the most efficient way to go about doing that. But then we have other sections in this bill where Congress starts to dictate how we are going to reach these emission reductions.

Now, we ought to have a discussion in this committee about if and when that is appropriate. We have got a renewable electricity standard here. We have got renewable fuel standards. We have talked about an energy-efficient standard. Those are all good discussions to have. But in the context of the cap and trade where people want to let the marketplace decide how to achieve emission reductions, how far should Congress go in stovepiping down into specific issues, as well, and mandating what happens?

Next issue: I want to talk about targets that were established in this bill. It is my understanding that this draft uses the high end of the targets, the most aggressive end of the targets—the USCAP developed for its year-by-year targets for emissions.

When USCAP testified before this committee, I asked, how did they arrive at these targets, what was the justification, what was the economic modeling. I haven't gotten an answer on that. That is one of the most significant aspects of any climate change bill, and this committee needs to have a discussion about that; and I hope we do that in these legislative hearings, because we haven't done it yet.

Number five: I have expressed many times in hearings about this concern of what I call a potential regional income transfer. There are many ways that this can happen. It can happen through the way our allowance system is structured. It can happen through a renewable electricity standard. It can happen even—through perhaps even the efficiency standard. But there are a lot of ways that that could happen. And I think from a substantive and, quite frankly, a political standpoint, that is a really important issue for this committee to understand better than it has so far.

Allowances: It has been mentioned many times we have got to figure out what we are doing with that. It is silent right now. We don't even have a bill that says how it is going to be addressed, and yet we are looking to mark up next week.

RPS: Twenty-eight States in the district have an RPS already. I question whether there ought to be a Federal standard, and we shouldn't set up a policy to encourage the rest of the States to do this. If there is a standard, if the goal here is really to have lower carbon emissions, then should we care how we produce the electricity if the kilowatt hour doesn't produce carbon?

So why are we picking just one set of technologies? Shouldn't we include nuclear? Shouldn't we include zero-emission coal as the Utah voluntary RPS does right now?

Next issue: Energy efficiency. That is a good thing. And the energy efficiency resource standard which calls for 15 percent efficiency by 2020 and 10 percent for natural gas by 2020, that is a good thing to have; but I am concerned that we are piling on when we are already looking at the renewable electricity standard.

I also think that decoupling for electricity has to be on the table.

Next issue: Transmission. There is nothing real for transmission in this draft. People are talking about going to 25 percent renewable electricity generation in this country. If we don't deal with our transmission issue, you can't do it. So we have got to get serious about transmission.

Offsets: I am pleased with the Offsets Integrity Board provision, but I think we are being unfair to businesses by trying to discount offsets. If the offsets are real, then a turning of five offsets for full reduction credits doesn't make sense to me. This should be a one-to-one ratio and it should also include the western climate initiative offsets.

Next issue: International offsets. This should not link up with the CDM. Witnesses have testified before this committee that the international program has had major problems. Language should be tightened to preclude international offsets are not of equivalent quality to U.S. offsets.

Next issue: Fuels. This committee wasn't involved in writing the RFS that went through Congress. It wasn't run by this committee, and its feedstock mandates don't make any sense. Our corn ethanol policy is a failure, and we ought to address that issue as well.

Two more issues, Mr. Chairman; I will be real quick as my time is running out.

CAFE: I think we have to have some harmony between where Federal and State policy is on this. I am concerned about getting the checkerboard pattern of how this policy is set in this country.

Last issue: Where do revenues go? The President suggested revenues from auction of offsets should go to pay for the middle-class tax cuts. I think that is bad policy. I think that any revenues that come out of this policy need to be plowed back into the climate change set of issues; and this whole discussion about costs to rate payers, until you identify where the money goes from the auction of some allowances—and I am not for 100 percent auction, by the way—but until you figure out where those revenues go, any discussion about cost to consumers is a moot point because we are not talking about where the money is going to come from to help mitigate those cost components. So let us address that issue as well.

That was 14 quick issues, Mr. Chairman. Thank you for your patience and letting me go over time.

Mr. MARKEY. Let me thank the gentleman. You have crammed more into a 5-minute statement than—it was like Olympic-level issue identification.

The Chair recognizes the gentlelady from the Virgin Islands, Ms. Christensen.

OPENING STATEMENT OF HON. DONNA M. CHRISTENSEN, A REPRESENTATIVE IN CONGRESS FROM THE VIRGIN ISLANDS

Mrs. CHRISTENSEN. Thank you. And thank you, Chairmen Waxman and Markey, for your commitment and leadership on this important issue. It is an honor for me to be on this committee at such a historic time, because the work that we do in this committee in this Congress will determine the future of our country for generations.

I also want to take the opportunity to thank the President for his commitment to also reducing our dependence on foreign oil and ensuring a better quality of life for everyone in this country and, indeed, the world because, as we will discuss in one of the hearings, this effort to provide clean air, reduce the process of climate change and mitigate the impact of global warming has to be one of international collaboration.

We are on the cusp of creating a whole new green economy, a green revolution through increased adoption of renewable energy, a green revolution that is reminiscent of the Industrial Revolution of the 18th and 19th centuries. My colleagues and I on the Energy and Environmental Task Force of the Congressional Black Caucus have written to both of you, and I want to reiterate here, as move we forward, we ensure that the needs of minority and underserved communities, who are not a part and do not benefit in the Industrial, be fully included in this one.

As we support science-based legislation to reduce domestic greenhouse gas emissions to at least 80 percent below 1990 levels by 2050, we want to see included a serious attempt to address the education, training and employment of workers who live in innercity urban, rural and island communities. We want to see a career pipeline created for low- and middle-income communities that will not only lead to the much touted green jobs, but the entrepreneurial opportunities in distressed communities, and for educational opportunities at the vocational schools, community colleges, universities that serve rural communities, that serve our territories and racial and ethnic minorities.

We also look for an adequate transition for those who work in high-emitting industries to meaningful work in the emerging low-carbon economy.

As a representative of an island community and as a representative of the other territories of the United States, it is clear that despite our minimal contribution to greenhouse gas emissions, we stand to be severely impacted by global warming, and so reducing it is vital to our interests and survival. From the loss of coral reefs, to the rise of sea levels, to the spread of tropical diseases, my colleagues and I are requesting that the special needs of our offshore areas be looked at carefully as we prepare this landmark legislation.

The CBC task force has also asked that steps be taken to ensure that the cost of this new energy is not prohibitive but affordable to all. It is important to note that energy costs in the island territories that are part of the U.S. family are already among the highest in the Nation. At present, provisions that would address affordability are not yet completely written.

So I look forward to being involved in that process and to working with you, Chairman Waxman and Chairman Markey, and my other colleagues to examine and discuss the other issues, especially finalizing the details of cap and trade. I look forward to passing comprehensive energy legislation that creates a robust economy, that meets the energy needs of today and also the energy needs and environmental needs of people and our planet for generations to come.

And I thank you for the opportunity to make an opening statement.

Mr. MARKEY. We thank the gentlelady.

The Chair recognizes the gentlemen from Pennsylvania, Mr. Doyle.

OPENING STATEMENT OF HON. MICHAEL F. DOYLE, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF PENNSYLVANIA

Mr. DOYLE. Thank you, Mr. Chairman.

Mr. Chairman, I rise today with a lot of hope that these hearings will serve as a big first step towards eventually passing a comprehensive climate bill through our committee, so that it can continue on to the House and Senate floors and eventually make it to the President's desk for his signature. I applaud your decision to use regular order, and I hope that the members of this committee on both sides of the dais will use this opportunity to offer constructive ideas so that the eventual law is reflective of the combined efforts of the entire committee.

After all, climate change is not a problem that will affect only Democrats or Republicans. It will affect each and every one of us, as well as our children and our grandchildren.

As I have said in the past, the draft that you and Chairman Markey released on March 31st was a good starting point from which this committee can begin to craft our answer to the question of climate change. However, I would also like to say that this bill was just that, a starting point. As everyone in this room knows, many of the key questions that will define this bill's workability have yet to be answered, and I, for one, look forward to working with you, Mr. Chairman to fill in these blanks.

These are questions such as, where are credits allocated? What are the appropriate time frames and reduction goals? How will we minimize the cost imposed on our constituents? And how will we encourage and deploy next-generation clean energy technologies? These are not simple questions with simple answers. They are very complex and challenging issues, one that will require a careful look at to where we are today, where we want to be tomorrow and most importantly how are we going to get there.

As I have said many times, the threat of climate change is really a question of two things, technology and transition. What technologies can we bring about through innovation, research and deployment that will ensure that America has the energy it needs to power our country for generations in the future, while at the same time reducing and eliminating the carbon footprint resulting from the way we power ourselves today? What are the appropriate transition steps that need to be made not only to encourage these tech-

nological advances, but to ensure that we preserve current jobs while creating new green jobs? And what transition steps need to be taken to ensure we don't greatly increase our constituents' power bills?

This bill gives us a bit of a framework picture as to how we are going to answer those questions, but much work will need to be done to fill in these blanks if we are going to adequately address climate change.

Like most Democrats on this committee, I hope that we can all work together to answer these questions so that we can bring about a bill that we can all eventually support. Unlike some of my friends on the other side of the aisle, I have long ago taken the position that it isn't enough to just say "no"; we must be able to find a way for all of us to say "yes," and I am committed, as I have been all along, to working to help us get to that place.

I must admit I have a lot of concerns with the renewable electric standard as it is currently written. I think a better standard would be like the one we already passed through the House in the last Congress. That is a standard that is workable and one that will not penalize many of our constituents simply because of where they live.

Any new renewable standard must do more than this bill currently does to recognize that different regions have different resources available to them. And I look forward to discussions on this matter.

Furthermore, we need to do more to encourage CCS deployment. Without widespread deployment of this technology, all other reductions in this bill won't matter. This fact needs to be reflected more in the bill, and we need to ensure the framework and funding for these technologies is certain.

Similarly, the transmission piece of this bill is quite inadequate, in my opinion, and I would like to see more work done there also.

I would also like to see the provisions that Jay Inslee and I worked on regarding emissions and job leakage tightened.

These are a few examples of places where I think the bill needs some improvement. It is a good starting point, and I, for one, am ready to work with our chairman to refine and improve the starting text. I personally appreciate our chairman's efforts to this point, especially in areas such as including the Doyle-Inslee EMPLOY Act provisions, as well as the Boucher CCS bill.

It will be critical for us to concentrate on transitional and technological issues as we move forward with our attempt to fundamentally alter how we produce and use power in this country for the first time since the Industrial Revolution.

Mr. Chairman, I believe, if done right, this bill will serve as an engine to transform our economy to ensure that America is the world's leading manufacturer and exporter of clean fuel technologies. The jobs that can be created by this transformation are needed in every region of this country, and it is critical that Members from all regions of our country work together to create them.

I, for one, am ready to do my part; and with that, Mr. Chairman, I yield back the balance of my time.

Mr. MARKEY. We thank the gentleman.

The Chair recognizes the gentleman from Ohio, Mr. Space.

OPENING STATEMENT OF HON. ZACHARY T. SPACE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO

Mr. SPACE. I want to begin by thanking you, Chairman Markey, and also Chairman Waxman, for the initiative you have undertaken in approaching such a monumental and ambitious task.

Today, we have before us one of the most significant pieces of legislation that Congress will consider in our lifetime. As we proceed with our deliberations, we must be mindful that we are operating in the shadow of history and at a moment pivotal in the lives of this generation.

Without question, our Nation faces a significant challenge in addressing the issues of climate change and energy production. While current sources of energy, such as coal, are critical components of our Nation's economy, creating a new energy policy that encourages investment and expansion in new green jobs offers important opportunities that cannot be overlooked. It is incumbent upon us in this committee to seize upon those opportunities.

As the committee considers this critical legislation, I am mindful of the fact that I represent a district facing significant challenges of poverty. Even when times are good, the economy of Appalachian Ohio can claim unemployment rates approaching 10 percent and poverty rates exceeding 20 percent. Thus, as the committee proceeds, it is my intention to view this legislation through the lens not of any one group represented here in Washington, but through the perspective of the residents of Ohio's 18th Congressional District.

I believe this legislation offers significant opportunities for my district. The provisions of this bill pertaining to carbon capture and sequestration offer the promise of continued employment for the mine workers I represent as we strive to create a future for this critical domestic resource.

This bill also includes legislation I introduced, the Renew Through Green Jobs Act that authorizes grants for new green job training programs. These training programs are a critical link in the creation of a new green economy, and I thank the chairman for the inclusion of this provision.

Finally, this legislation also includes important investments in building efficiency that will provide badly needed stimulation to the insulation and glass industries. Many of these industries have faced layoffs and furloughs in the face of declining demand, and I am hopeful this legislation can provide new life to this sector.

However, this legislation is larger than these provisions and represents an effort to comprehensively overhaul how we produce and consume energy in this country. As such, we must move with caution to ensure the same people we are striving to protect are not harmed by this legislation. We must be cautious to ensure that this legislation means a brighter future for those we represent, not darker days to come.

I believe we have an opportunity in this legislation to create a stronger future for two critical industries in Ohio, coal and manufacturing. This legislation creates a pathway forward to real investments and technology, and I appreciate the time of the committee today and look forward to hearing more perspectives from the many witnesses over the coming days.

And I yield back my time.

Mr. MARKEY. We appreciate the gentleman's work.

And now we will, I think, complete—no. We have another member who is joining, and we will then recognize the gentleman from Vermont, Mr. Welch, for his opening statement.

OPENING STATEMENT OF HON. PETER WELCH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF VERMONT

Mr. WELCH. I thank you very much, Mr. Chairman. I thank you and Chairman Waxman for the ambitious work you have set before our committee.

I agree with much of what my colleagues have said. We now have a consensus that climate change is real, it is urgent, and we have to address it. And this bill is the first attempt of this Congress, really any Congress, to undertake a challenge that we too long ignored.

In the process of moving from a fossil fuel-based economy to one that is based on efficiency, alternative energy and getting the most out of the energy that we do use is going to be very daunting, and it will impose some dislocations. So the points that have been made by our colleagues on this committee about the regional interests and about the real-world impact of climate change legislation is something that has to be taken very seriously by all of us.

But the big question that will allow us to proceed forward is whether we have confidence that by undertaking the challenge that is ours to undertake—and that is to eliminate or dramatically reduce carbon greenhouse gas emissions by 2050; and this bill has as its goal an 80 percent reduction by 2050—the question is, do we have the confidence to undertake that challenge, knowing if we do it wisely, we do it energetically and we do it well, we can actually create jobs, create foreign independence and clean up the environment?

The Union of Concerned Scientists has just done a study that has found that if we, in fact, enact policies—and we have to do it the right way, from renewables to efficiency—our climate bill will bring the cost to consumers and businesses down.

In 2030, according to this study, the policies implemented under the blueprint would save business and consumers $465 billion while maintaining the same—the same—rate of economic growth. An average U.S. household, if we do it right, with enjoy net savings of $900 on their energy bills and that includes $580 on transportation costs and $320 on electricity, natural gas and heating oil. Business collectively would realize net energy bill savings of $130 billion by 2030.

And what we know is that if we are going to achieve this goal, we have to start with efficiency. It is the most cost effective at cost containment. And in fact, one of the byproducts of our fossil fuel-based approach to economy is this notion that we had an endless and cheap supply and it led to wasting energy that we should never waste. This legislation should focus on a number of things, but first and foremost, among them is efficiency. And I am delighted, Mr. Chairman, that you see fit to include in this title an energy efficiency legislation that I have sponsored and that we have used in the State of Vermont with real success. And that is

for building retrofits. In the carbon emissions that come out of our buildings, residential and commercial, it is about 50 percent of the greenhouse gases.

And if we give the tools to our businesses and our homeowners to save that energy through energy efficiency, we are going to create jobs and go a long way towards achieving our goals. Thank you very much, Mr. Chairman. I look forward to working with you and our colleagues on this committee to achieve our goal of an 80 percent reduction by 2050.

Mr. MARKEY. We thank the gentleman very much. And we recognize the gentlelady from California, Ms. Matsui.

OPENING STATEMENT OF HON. DORIS O. MATSUI, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Ms. MATSUI. Thank you very much, Mr. Chairman. I want to thank you for convening this week's hearing on the American Clean Energy and Security Act. I commend you and Chairman Waxman for both your leadership and your determination to advance this bill to where it is today. The legislation we are discussing will be an achievement for the American people. And it is an achievement for future generations of Americans. Because of this legislation our children and grandchildren will live in a country that is more sustainable, more economically viable and more efficient than the country we live in today. And for my hometown of Sacramento, the bill is more than an achievement, it is a necessity.

My district sits at the base of the Sierra Nevada Mountains and at the confluence of two great rivers, the American and the Sacramento. The threat of flooding in Sacramento is ever present and is made worse by a warming planet. California's Department of Water Resources projects that the Sierra Nevada snowpack will experience a 25 to 40 percent reduction by 2050. These are not empty numbers. They represent real impacts of climate change that translate into serious and unpredictable risk for my constituents. As California's climate warms more of the Sierra Nevada snowpack will contribute to peak storm runoff. High frequency flood events are projected to increase as a result. In a city like Sacramento we simply cannot afford to ignore the reality that global warming and flooding are interconnected. We have no choice but to adapt to these realities. My constituents realized this long ago.

As a result the majority of them have long supported taking action to cap the carbon emissions that are warming our planet. They recognize that taking bold action today means a more secure future for Sacramento tomorrow. I also recognize this truth which is why I support the American Clean Energy and Security Act so strongly. But fighting global warming is not just about preserving our current way of life, it is also about creating a cleaner stronger economy that will power the United States into the future. When I was home last week I saw numerous examples of how Sacramento is already generating new clean energy opportunities. I toured a renewable energy testing center that is about to open at the converted site of the former McClellan Air Force Base. This center is working to give small businesses the support they need to take clean energy companies to the commercial stage. I visited an innovative com-

pany called Synapsis that helps data centers improve their cooling capabilities.

Synapsis is working HID Laboratories which is developing energy efficient lighting technologies. Both companies revolutionize the way commercial businesses save money on energy efficiency strategies. I also saw UC Davis biogas energy project, an innovative way of converting organic waste into biogas fuels and other valuable products. This technology has so much potential that Campbell Soup is interested in using biogas digesters to fuel their plant in Sacramento. These businesses and technologies are not dreams in someone's mind, they are neither ideas nor concepts on a paper, instead they are the realities of the modern American economy. They are real businesses creating real jobs, real technologies, during a revolution in Sacramento's regional economy. With the help of the American Clean Energy and Security Act, every city and community in America can emulate the clean energy blueprint that Sacramento has pioneered. What is needed today are strategic investments in clean energy infrastructure that will help similar projects expand and prosper.

With the American Clean Energy and Security Act we are making these smart investments. We are giving entrepreneurs the tools they need to create clean energy jobs that demand American skills and that put our country in a strong position to compete internationally. These tools will continue to help the economy grow even as we reduce the carbon dioxide emissions that threaten our very way of life. In this way, clean energy will be the building block of a new era of American economic strength. With the American Clean Energy and Security Act, we will show the rest of the world that America is back and they are ready to lead again. I will look forward to remarks of the many and varied witnesses who will testify before us in the coming days in regard to this groundbreaking legislation. And with that I yield back the balance of my time.

Mr. MARKEY. I thank the gentlelady. And the Chair recognizes the gentleman from Indiana, Mr. Hill.

OPENING STATEMENT OF HON. BARON P. HILL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF INDIANA

Mr. HILL. Thank you, Mr. Chairman. Mr. Chairman, thank you for your work and leadership on this issue. It is not easy to tackle such a big problem, but this draft represents an important first step in the process. These hearings will be instructive for us as we hear an array of viewpoints. Addressing climate change is an issue of utmost urgency. Though we may differ on the details of how to tackle this problem, we agree on the broader picture. This draft represents an important first step but much more work remains. We must ensure that States like my own are not unfairly punished for using abundant resources that are legal and viable. I want to urge you, Mr. Chairman, to ensure each region of the country is treated appropriately and that the committee recognizes that certain areas will be affected more by this legislation than others.

I would also like to call to the committee's attention to municipal solid waste. I believe this is a proven technology that has been improved over the years and will be an important tool for us to solve climate change. In order to gain the full benefit from this tech-

nology, I believe that it should be classified as a renewable energy source. I also hope that we will work with our Republican colleagues to produce a bill that produces the desired environmental results, spurs investments in new technologies and creates the new jobs that we desperately need. I believe entrepreneurs can find the technology to solve this problem better than any politician can.

Clean coal technology, while helping us at home, has the potential to be an important export for years to come. I believe that farmers by growing our fuels and storing carbon in their fields are a valuable asset in reducing our greenhouse gas emissions. I believe that we don't need government micromanagement. Set smart pollution standards and show American business what needs to be done. They will figure out the fastest cheapest way to do it. I recognize that nothing important in the world gets solved without U.S. leadership and action. And the U.S. will lead. And that must include compelling China and other countries to do their part too.

For those who believe China should get a pass I say no chance. These investments will make our country's economy stronger and more secure. America has the opportunity to be a leader in these issues. And I look forward to working with Chairman Markey and Waxman to ensure that this bill puts us on the right path. And I yield back the balance of my time.

Mr. MARKEY. The gentleman's time is expired. The Chairman recognizes the gentleman from Maryland, Mr. Sarbanes.

OPENING STATEMENT OF HON. JOHN P. SARBANES, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MARYLAND

Mr. SARBANES. Thank you very much, Chairman Markey. Chairman Waxman, thank you for your tremendous leadership on this issue. When it comes to energy policy, this American Clean Energy and Security Act of 2009 is really turning the titanic around and setting targets that are going to help us get to a new place when it comes to energy independence, when it comes to clean jobs, when it comes to these exciting new technologies that we are going to see, and obviously with respect to progress on global warming. My view has always been that government's role is to take the framework that operates and every so often move it forward in a significant way.

And if we do that, what happens is the entrepreneurs of this country and ordinary citizens then come in and they take up the charge. For too long, that framework has been stuck when it comes to our energy policy and our environmental policy, and the pent up passion and creativity and ingenuity of the country has been held back. Now, what this proposal does is it opens the floodgates, I believe, to a whole new generation of ingenuity and creativity.

I come from Maryland. The Chesapeake Bay is a national treasure. And we consider ourselves stewards of the Chesapeake Bay. The other day I was at a high school in Anne Arundel County and I met with the environmental club there. And I know what is going to happen when we pass this bill. Led by the next generation, led by young people in this country who are going to take up this charge, we are going to go places we can't even conceive of right now. We think about how much we can dent our energy portfolio

with respect to wind power and solar power and other sources of clean energy and we estimate 5 percent, 10 percent, 15 percent. I will bet you that in 2 years or 3 years, once we let loose this ingenuity on clean technologies, we will be making even more progress with respect to that portfolio. That is what is about to happen.

And we have to seize this moment in time. And I thank you for your leadership, I thank Chairman Waxman for his leadership. And I look forward to the hearings that we are going to be holding. Thank you, and I yield back.

Mr. MARKEY. We thank the gentleman from Maryland very much. The Chair recognizes the gentlelady from Ohio, Ms. Sutton.

OPENING STATEMENT OF HON. BETTY SUTTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO

Ms. SUTTON. Thank you, Mr. Chairman. It was not long ago that gas was over $4 a gallon and people across this country struggled with those high energy costs. Energy and its related costs impact every segment of our lives. It impacts our economy, it impacts our manufacturers and our industries, it impacts jobs, and it impacts our national security, it impacts our health and clearly it impacts our environment. And that is why we are here today. It will be a challenge for our country to transform the way we operate and to transition to a green economy. But the cost of not addressing climate change far outweigh the challenges. We cannot afford to delay but we must be smart. Scientific evidence confirms that unrestrained growth in greenhouse gas emissions poses a danger to public health and the environment. The American Clean Energy and Security Act boldly seeks to address the global warming crisis, and I would like to commend Chairman Waxman and Chairman Markey on the enormous task of drafting this landmark legislation. We most bolster our national security by mapping out a more energy dependent future for our country. Today the United States imports nearly 60 percent of the oil that we consume. By expanding our energy supply we can reduce our dependence on foreign oil and increase our energy security.

And most importantly we can bolster our economy by creating hundreds of thousands of new green jobs. With the economic recession Americans are hurting, and the resolve of the middle class is being tested. The economic downturn has taken a toll on U.S. manufacturing, including the steel plants in my congressional district.

Ohio's unemployment rate hit 9.7 percent in March and continues to be higher than the national rate. We can turn our country around and at the same time bring America to a cleaner safer more productive future. With the American Recovery and Reinvestment Act we made a down payment investing billions of dollars to spread the development of clean renewable energy production and transmission. Just last night, I spoke at an Avon Lake city council meeting to explore the potential forming a community-based wind energy co-op in Lorain County, Ohio. It is encouraging to see people working toward solutions that will create jobs, help local economies and improve our environment. And we must do all we can to continue to encourage this type of creative thinking and innovation to develop energy from renewable sources.

I support a national renewable energy standard that shifts towards wind solar biomass and other forms of energy to meet our electricity needs. Investments in alternative sources of energy, clean technology and energy efficiency will create new industries and jobs, revitalize American manufacturing, jump start economic growth and revive the middle class. And as we move forward in our efforts to retool our economy and our workforce it is important that there are safeguards in place for worker transition and assistance. We cannot leave our workers and communities behind. We cannot leave a section of our Nation in the wake. We have an opportunity but we also have a responsibility. We must also remember that greenhouse gas emissions and climate change are global problems. The atmosphere recognizes no borders. For industries like steel, some emissions are an unavoidable part of the manufacturing process.

Currently neither science nor technology exists to mitigate them. And many in the country make their living as steel workers. Yet while the U.S. steel industry has become 33 percent more energy efficient since 1990, the Chinese steel industry emits as much carbon as the rest of the global steel industry combined. The production of a ton of steel in China generates anywhere between 2 and 4 times the carbon emissions of a ton of steel produced in the United States. Any increased cost imposed by climate change laws must not put domestic industries at a severe competitive disadvantage to industries that are not subject to similar environmental rules.

If we allow that to happen, it will work against the very goals of environmental integrity that we seek to achieve. And as we put our Nation on a new course in energy policy, as I said, we must ensure that no region and no state is left behind. Throughout my district, long established companies want to be a part of the solution and are transitioning to green technologies. Companies that have produced brakes for helicopters are now producing brakes for wind turbines. Companies that have manufactured bearings for the auto industry are now finding another market with renewable energy system. And there are several companies that are trying to start up during some of the most difficult economic times our country has ever seen. These companies are developing advanced waste heat recovery systems, biowaste electricity generation systems and algae-based biofuels. Recently, President Obama announced that the General Services Administration will accelerate its purchase of 17,600 new fuel efficient vehicles produced by American auto companies. The President's announcement about modernizing the fleet of a government is welcome news, and I share his commitment to shoring up jobs for American auto workers while improving our environment.

That is why I introduced the Consumer Assistance to Recycle and Save Act of 2009. The CARS Act will help consumers stimulate our economy, improve our environment, reduce our dependence on foreign oil and help our domestic auto and related industries. The President's announcement demonstrates that finding ways to achieve these multiple goals can be done. My colleagues, Representative Steve Israel and Jay Inslee have introduced similar legislation. I look forward to continue a collaboration with them to

enact a green vehicle purchase incentive program that will meet these multiple goals. And I look forward to working with Chairman Waxman and Markey and my colleagues to implement a balanced and effective measure to reduce greenhouse gas emissions and address global climate change.

Mr. MARKEY. I thank the gentlelady very much, and we look forward to working with her. And with the completion of your testimony, your opening statement, all time for opening statements from the members has now been completed. Tomorrow morning at 9:30 at that witness table we will have the Secretary of Energy Steven Chu, the Administrator of the Environmental Protection Agency, Lisa Jackson and the Secretary of Transportation, Ray LaHood. 9:30 tomorrow morning we begin to write history in the United States. With that, this hearing is adjourned.

[Whereupon, at 5:25 p.m., the committee was adjourned.]

[Material submitted for inclusion in the record follows:]

THE AMERICAN CLEAN ENERGY SECURITY ACT OF 2009—DAY 2

WEDNESDAY, APRIL 22, 2009

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The committee met, pursuant to call, at 9:40 a.m., in Room 2123 of the Rayburn House Office Building, Hon. Henry A. Waxman (chairman) presiding.

Present: Representatives Waxman, Dingell, Markey, Rush, Eshoo, Stupak, Green, DeGette, Capps, Doyle, Harman, Gonzalez, Inslee, Ross, Matheson, Melacon, Barrow, Matsui, Christensen, Castor, Sarbanes, Murphy of Connecticut, Space, McNerney, Sutton, Braley, Welch, Barton, Hall, Upton, Stearns, Whitfield, Shimkus, Blunt, Radanovich, Pitts, Bono Mack, Walden, Terry, Rogers, Myrick, Sullivan, Murphy of Pennsylvania, Burgess, Blackburn, Scalise, and Gingrey.

Staff present: Phil Barnett, Staff Director; Kristin Amerling, Chief Counsel; Karen Lightfoot, Communications Director, Senior Policy Advisor; Bruce Wolpe, Senior Advisor; Earley Green, Chief Clerk; Greg Dotson, Chief Counsel, Energy and Environment; Alexandra Teitz, Senior Counsel, Energy and Environment; Michal Goo, Counsel; Alex Barron, Professional Staff Member; Melissa Bez, Professional Staff Member; Ben Hengst, EPA Detailee; Jen Berenholz, Deputy Clerk; Caren Auchman, Communications Associate; Matt Weiner, Special Assistant; Mitchell Smiley, Special Assistant, Matt Eisenberg, Staff Assistant; Peter Spencer, Minority Professional Staff; William Corty, Minority Professional Staff; and Garrett Golding, Minority Legislative Analyst.

OPENING STATEMENT OF HON. HENRY A. WAXMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. WAXMAN. The committee will please come to order. This week we begin our consideration of comprehensive energy legislation, the American Clean Energy and Security Act of 2009. Since the beginning of last Congress, this committee has been working hard on energy legislation. We held 41 days of hearings since January. We received testimony from 61 witnesses. This week alone, we will hear from 67 more witnesses. And I want to thank all the members of the committee on both sides of the aisle for their intensive involvement on energy reform. You have made a major commitment of your time, your staff's time, and this is crucially impor-

tant to our success. I also want to warn the members that as hard as we have been working, the pace is going to accelerate over the next 4 weeks. There are many issues that we need to discuss and resolve between now and Memorial Day. We will be working hard because the goals are so important. The energy legislation we are considering will create millions of jobs, revive our economy and secure our energy independence. It will also protect our environment.

In February, President Obama spoke to Congress and the nation about the need for comprehensive energy reform. He called on Congress to pass legislation that would transform our economy, protect our security, and preserve our planet. Our job on this committee is to meet those goals. We are fortunate today to have 3 cabinet level officials testifying to our committee for the first time, Energy Secretary Steven Chu, EPA Administrator Lisa Jackson, and Transportation Secretary Ray LaHood. They will explain the President's objectives and how we can ensure our legislation meets them.

As Chairman Markey and I worked on the draft legislation our blue print was a plan proposed by the U.S. Climate Action Partnership, a coalition of industry CEOs and environmental organizations. We will hear today from 6 leaders of U.S. CAP, DuPont, ConocoPhillips, Duke Energy, Alcoa, NRG, and the Natural Resources Defense Counsel. They will tell us how well we did translating their blue print into legislative language. I want to thank them and all our witnesses for their participation in this hearing. Some have said that true energy reform will undermine our economy. They argue that there is a fundamental conflict between economic growth and clean energy. This is a false choice.

Our economic future and clean energy are inextricably intertwined. The economy that will grow the fastest in this century will be the one that makes the greatest investments in new energy technologies. Nearly 40 years ago this committee passed the original Clean Air Act. Since then, we have reduced dangerous air pollutants by 60 percent or more. During the same period, our population has grown by 50 percent, and our economy by over 200 percent. Twenty years ago under the leadership of John Dingell this committee passed the 1990 amendments to the Clean Air Act. Opponents of the legislation said that stopping acid rain would bankrupt the utility industry. In fact, we cut emissions in half at a fraction of the cost the naysayers predicted.

We have a similar opportunity and responsibility this year. The legislation we will be considering today has 4 titles. The clean energy title will spur investment in the technologies of the future, clean renewable energy, electric utilities, electric vehicles, and the smart grid. The energy efficiency title will reduce our dependence on foreign oil and save consumers billions of dollars by making our homes, our appliances, and our transportation system more energy efficient. The global warming title will create a market-based system for reducing carbon emissions to safe levels, and the final title will provide our industries, our workers and American families with the support they need during the transition to a clean energy economy.

It is no longer a question whether we will act to reduce CO_2 emissions. The endangerment finding released by EPA last week

answers that issue. The real question is whether we will do so in a way that strengthens our economy, creates new jobs, and ends our dangerous dependence on foreign oil. These are achievable goals but to reach them Congress needs to act, and we on this committee need to lead the way. We can succeed, but we will need to work together to forge consensus and a workable solution. And I look forward to working with all the members of the committee as we embark on this process. I want to recognize Mr. Barton now for opening comments he wishes to make.

OPENING STATEMENT OF HON. JOE BARTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. BARTON. Thank you, Mr. Chairman. I want to welcome our distinguished panel of Administration officials, especially Mr. LaHood, a former colleague. Of course, Dr. Chu, who I had some dealings with in the laboratories, and the Honorable Ms. Jackson, we appreciate you being here. I think it is interesting, Mr. Chairman, that we are trying to go ahead and move a bill that will reduce CO_2 emissions in the United States to below 83 percent of their base line of 2005. If you want an idea of what that is like in terms of carbon foot print, you might try living in Nigeria today because that is the emission level that they have right now. If you have a time machine, you might dial your time machine to 1875, and feel what it is like to live in America back in 1875 with a carbon foot print of approximately 2½ tons per person.

I don't think most of the today citizenry in the United States would enjoy that type of a lifestyle too much. I also think that it is interesting that a lot of people seem very determined to raise energy prices in this country. Our current President, President Obama, has said during the campaign that capping carbon and trading emissions would make electricity bills necessarily skyrocket, and that is his quote, necessarily skyrocket. The people that global warming is religion believe that carbon dioxide, CO_2, which is naturally occurring in nature, is the devil's brew and they apparently think that we can only achieve salvation by putting our faith in the United States Federal Government. Our government will offer indulgences in the form of emission permits and we all atone for our past sins and our economy's past sins by paying through the nose with these expensive new energy carbon taxes.

It is no secret that I am a skeptic. I don't believe that mankind is the primary cause of climate change. I do accept that CO_2 levels are rising. I think it is a debatable proposition, whether that is a good thing or a bad thing, but in any event to put some sort of blind faith in a cap and trade system that hasn't worked anywhere in the world in terms of CO_2, won't work here in the United States, and if we take it to the level that the draft bill that Mr. Waxman and Mr. Markey have put out. It will de-industrialize the United States of America in the next 40 years. I am not going to be a part of that. I am just not going to do it. The dark side of economic opportunity will always be that somebody thinks they can benefit from it, and I believe that that is one reason so many U.S. companies, some of which are going to be before us later this afternoon, support the cap and trade because they think they can benefit economically, either having allowances to sell or by trading in the al-

lowance market. And I understand the need to make a dollar, but I think it is a terrible thing if we are going to set up a system where the only people that benefit are the people that are in the trading system and the people that get these free allowances because of what they have done in the past.

Now I understand that your draft is silent on that. My understanding is that you and Mr. Markey have decided at least so far to not have free allowances. You are going to have an auction system. I hope you stick with that. I was here in the Clean Air Act amendments when we did SO_2 back in the early 1990s and I remember the fights we had on base line, and I remember the fights we had on allowances for particular plants and things like that. That will be a picnic compared to what we will have if we go down where we start trying to—we, not me, but you and Mr. Markey start trying to buy votes by giving allowances to this group or that group or whatever. I think it is interesting that we don't have a score from CBO because you have not put anything out that CBO can score so apparently if and when we go to markup, we are going to have this miracle draft that comes forward in terms of a manager's amendment, and lo and behold there will be something to score, but CBO won't have time to score it.

If it is anything close to what we had last year in the Senate with the Warner-Lieberman bill, it is going to be very, very expensive. If it close to what the Obama Administration put in their budget, according to the CBO director it is probably going to be score in the neighborhood of $2 trillion negatively over an 8-year period. That is a pretty expensive package, Mr. Chairman. If you look at where our economy is today, what the unemployment rate is today, where the stock market is today, I don't think that is a cost that we can bear. As long as we are talking about cost, let us talk about just the straight increases in energy costs. Every estimate that I have seen, Mr. Chairman, says that energy costs are going to go up across the board. The electricity cost could go up somewhere between 44 to 125 percent, gasoline costs could go up. You name the cost. It is going to go up.

How does that affect the unemployment rate? Michigan right now has an unemployment rate of 12 percent. Indiana has an unemployment rate of 10 percent. Ohio is at 9.7. California and Georgia are at 9.2 percent. Even my great State of Texas where the economy is relatively better off has got an employment rate over 6 percent. I mean if energy prices go up lots and lots of Americans are going to lose their jobs and then that in turn is going to cause even more deficit spending on behalf of the federal government. How is that costed into this draft? However, you cost it, it is going to be a negative cost. I could go on and on, Mr. Chairman, but I have already gone over almost 2 minutes, and I appreciate your indulgence. Put me down as undecided on your bill and I look forward to hearing from our panel, and then trying to work with you and Mr. Markey and members of the committee to do something that is positive.

Mr. WAXMAN. Thank you, Mr. Barton. I now want to recognize the chairman of the Energy Subcommittee, Mr. Markey.

OPENING STATEMENT OF HON. EDWARD J. MARKEY, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF MASSACHUSETTS

Mr. MARKEY. Thank you, Mr. Chairman, very much. First, I want to thank Secretary LaHood, Secretary Chu, and Administrator Jackson for being with us here today. The presence of this all star lineup is a testament to the priority that the Obama Administration places on developing sound energy legislation and fighting global warming. Today, Earth Day, 2009, we begin the process of writing history as we work to pass new energy legislation that will revitalize our economy, enhance our energy security, create millions of new jobs, and end the global warming crisis. We arrive at this crucial moment with much at stake and not a moment to spare.

Winston Churchill once said courage is what it takes to stand up and speak. Courage is also what it takes to sit down and listen. In the days ahead, we will need to have both the courage to speak out and the courage to sit down and listen. If we do that, we can pass legislation that will create millions of new jobs and reduce our dependence on foreign oil all in a way that meets our environmental and economic needs. We have reached a crossroads where inaction is simply not an option. Our economy cannot continue to depend heavily on foreign oil. Our energy system cannot continue to be highly inefficient.

We cannot continue energy policies that look to last century's energy sources while other nations race ahead to take the lead in developing and marketing clean energy technologies and green jobs. Germany's second largest export after cars is wind turbines. China is becoming the leader in renewable energy. Japan and Korea are leap frogging America in advanced vehicle technology. Nor can we pretend that business as usual has shielded us from harmful, negative changes in our economy or from increases in energy prices. It has not. Attempts to seek refuge in the status quo have left us further behind in the ongoing global economic and energy race.

Those who predict our bill will result in soaring energy costs fall into a long line of doomsayers who have eventually been proven wrong. Environmental statutes have saved lives and smart energy policies have saved money, and done so at a fraction of the high cost projected by industry. Nor will global warming or oil-driven foreign regimes wait for us to act. Just last Friday, Administrator Jackson issued her proposed endangerment finding stating that climate change is an enormous problem and "the greenhouse gases that are responsible for it endanger public health and welfare." Among the impacts that flow from global warming are increased drought, more frequent and intense heat waves and wildfires and harm to water resources, agriculture, wildlife, and ecosystems.

And EPA also emphasized that global warming will have disproportionate impacts on the very poor, the very young, the elderly, those already in poor health, and those living alone are dependent on few resources. Left unabated, global warming and our dependence on oil will jeopardize America's national security and increase our economic risk. Whether it is in the hundreds of billions we send every year to unfriendly regimes or the hundreds of millions glob-

ally who could be without drinking water from increased drought, we cannot wish away these problems.

Chairman Waxman and I have developed our discussion draft with all of these factors in mind. In the discussion draft and going forward, Chairman Waxman and I will strive to get reductions in global warming pollution that meets science-based targets by using cost saving, energy efficiency, and clean energy solutions. We will continue to develop strategies to help keep costs low from the use of offsets, to banking and borrowing, and through the use of a strategic reserve of allowances that can limit any costs that are higher than expected. We will continue to fund clean energy solutions that will allow new American companies to prosper creating clean energy jobs that can't be shipped overseas, and we will continue to provide opportunities and incentives for energy efficiency to save families money.

We will continue to ensure that we assist and benefit consumers, especially low income consumers. We will ensure that our most internationally competitive industries are not left exposed to foreign inaction, and we will hold ourselves to high standards and we will hold the international community to high standards. Nor are we finished improving this legislation. As we proceed through these hearings, we will hear dozens of other witnesses, some with positive comments and some with suggestions for improvements. We welcome these comments, and we look forward to working with all the members of this committee to develop legislation that will create a new clean energy economy free of the threat of dangerous global warming and free of our dependence on foreign energy sources. Thank you, Mr. Chairman.

Mr. WAXMAN. Thank you, Mr. Markey. Now I wish to recognize for an opening statement the ranking member of the energy subcommittee, Mr. Upton.

OPENING STATEMENT OF HON. FRED UPTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. UPTON. Thank you, Mr. Chairman, and before I begin my opening statement, I would like to submit a number of articles for the record. First of all, from last week's Washington Post, India Rejects Calls for Emission Cuts. With regards to the President's push to combat climate change, Indian officials said it was unlikely to prompt them to agree to binding emission cuts. From the New York Times, Thirsty for Energy in India's Boon Town and Beyond, I quote, "Almost half of India's population has no access to the electricity grid. About 700 million Indians rely on animal waste and firewood as fuel for cooking." From the Saginaw News, Terrible Time for Higher Bills, "As a result of the recent green mandates sticking people with an average of $125 utility bill increase seems kind of cruel in a state that is suffering 12½ percent unemployment." From the Detroit News, Cap and Trade Plan will Hit the Heartland, with a quote, "Cap and trade system is a giant economic dagger aimed at the nation's heartland, particularly Michigan."

From the Hill, Not All Senators Warming to Obama Cap and Trade. Sherrod Brown, former member of this committee, Obama's plan would lead to an increased energy cost and would drive Amer-

ican firms abroad. From the Wall Street Journal, Who Pays for Cap and Trade, with a quote, "An economy wide tax under the cover of saving the environment is the best political money maker since the income tax." And from the U.S. News and World Report, The Next Bernie Madoff, Emissions Cap and Trade Aids the Corrupt, Hurts the Little Guy, and on and on.

I would like in advance to thank the 60 some witnesses who will be testifying before our committee this week, and due to the limited time, I would like to submit the following 4 questions to each of our witnesses and would ask them to address these during their opening remarks. Number 1, will the legislation increase energy costs? If so, is there anything in the underlying bill that prevents these costs from being passed on to consumers? 2, since the legislation applies only to the U.S. but not other nations like China, India, and Mexico, is there a chance it will result in American jobs being shipped overseas, and how many jobs will be lost? 3, what is the cumulative cost per household of this legislation, and, 4, absent other nations adopting the same reduction policy, how much will the legislation actually reduce global temperatures, if at all?

I do believe that we need to reduce emissions, but we must do it in a common sense way that takes into account the economic and global realities of the issue. This week it was reported in the New York Times that China discovered 180 miles of the Great Wall that they didn't know existed. How on earth are they going to be able to monitor and reduce their greenhouse gas emissions, and I wonder how many coal-fired plants that they might have discovered in the last couple of years as they were analyzing this new 180 miles. We are not engaged in a guessing game. We have the luxury of examining empirical evidence of past forays into different policies. All one has to do is to examine the results of the EU's cap and tax scheme. It was a failure.

CO_2 emissions in the U.S. fell by 1.8 percent in 2006 compared to a .3 percent increase in emissions in the EU according to the EIA. Both economies grew at a near identical pace in 2006 of about 3 percent. Cap and tax, cap and trade, will essentially kick working families when they are down. And we thought the American public was angry at $4.25 gas prices last summer. Just wait till they get their hands on their utility bills under a cap and tax. In 2008, approximately 21 percent of all utility accounts were overdue with folks carrying past due balances on average of $160 in electric bills and $360 for natural gas. And in Michigan the account debt totaled $367 million with 1 out of 3 behind on their bills in some of our areas.

Times are tough, yet this proposal puts a bulls eye on the back of working families who are struggling to feed their families and to keep the lights on. In fact, in Michigan it came out just yesterday that we have lost 150,000 jobs in 4 months, and it is expected that according to the University of Michigan we are going to lose 239,000 jobs in 2009. We are one of the hardest hit in this weak economy, and we would be disproportionately impacted with this legislation. NAM did a detailed analysis of the impact on Michigan, and, quite simply, jobs are going to be lost, electric prices are going to go up, and household incomes will be decimated and any growth will absolutely disappear.

Let us put the scale of emissions reductions called for into perspective. Current proposals would mean that the U.S. cannot emit more in the year 2050 than we emitted in 1910. That is a pretty daunting task considering that in 1910 the U.S. had only 92 million people compared to about 420 million expected in 2050. And to reach the lofty goal of 80 percent reductions emissions from the entire transportation sector would have to drop to 0. Emissions from all electricity generation would have to drop to 0, and then we would need to reduce everything else by 50 percent. Climate change is a serious problem that necessitates serious solutions, but how can we address such a critical issue without nuclear even being addressed in this measure even though nuclear power accounts for 70 percent of our nation's emission free electricity.

We are in desperate need of a reality check. Without international participation jobs and emissions will simply shift overseas to countries that require few, if any, environmental protections harming the global environment as well as the U.S. economy. If our objective is to send manufacturing jobs overseas, destroy the Midwest, mortgage our future, and hand the keys over to our super power status, then I would say job well done. This bill does it. The stakes are high, the planet is warming, and this is no time to throw in the towel all in the name of cap and tax. So I guess, Mr. Chairman, you can put my name as undecided with Mr. Barton. I yield back.

Mr. WAXMAN. Thank you very much, Mr. Upton. We are pleased to welcome 3 representatives from the Obama Administration, Secretary LaHood, Secretary Chu, and Administrator Jackson. Your prepared statements will be in the record in full, and we would like to recognize each of you to make an opening statement. And we will have a clock that will indicate 5 minutes. When you see the red light on, we would like you to recognize your time is up and to summarize so we will have plenty of time for questions and answers by members of the committee. Administrator Jackson, we would like to start with you.

STATEMENTS OF LISA JACKSON, ADMINISTRATOR, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY; STEVEN CHU, SECRETARY, UNITED STATES DEPARTMENT OF ENERGY; AND RAY LaHOOD, SECRETARY, UNITED STATES DEPARTMENT OF TRANSPORTATION

STATEMENT OF LISA JACKSON

Ms. JACKSON. Thank you. Thank you, Chairman Waxman. Chairman Waxman, Chairman Emeritus Dingell, Ranking Minority Member Barton, Congressman Markey, Congressman Upton, and members of the committee, thank you for inviting me to testify about the draft American Clean Energy and Security Act, and happy Earth Day to each and every one of you. Let me begin by commending this committee for embarking on the serious, difficult, and essential work of crafting comprehensive, detailed energy legislation and moving it through an open and careful process in which representatives hold hearings, make amendments, and cast votes.

When President Obama was inaugurated 92 days ago, the United States found itself in the worst economic crisis since the Great De-

pression. So the President worked with Congress to pass the American Recovery and Reinvestment Act. That law is now creating good jobs for Americans. Thanks to the Act, EPA is putting Americans to work, overhauling clean water systems, restoring and redeveloping polluted properties, installing clean air equipment on diesel engines, and cleaning up leaking underground fuel tanks. The American Recovery and Reinvestment Act also injected an essential shot of adrenalin into the American energy sector. That immediate relief is essential to economic recovery. But President Obama has also leveled with the American people. Lasting economic recovery will come only when the federal government looks beyond the quick fix and invests in building the advanced energy industries that will help restore America's economic health over the long term.

So President Obama has called on Congress to pass forward-looking energy legislation. That legislation should create here in America millions of the clean energy jobs that cannot be shipped overseas. It should catapult American innovators past the foreign competitors who, due to aggressive investments by their governments, now enjoy a head start in the advanced energy technologies that represent the new Internet revolution, the new biotech wave. The legislation should reduce our dependence on oil and strengthen America's energy security. And it should start in a real and tangible way to tackle greenhouse gas pollution, which threatens to leave to our children and grandchildren a diminished, less prosperous, less secure world.

Three weeks ago, Chairman Waxman and Markey released draft legislation that strives to accomplish the goals I just listed. The American Clean Energy and Security Act would introduce a clean energy requirement for American electric utilities and new energy efficiency programs for American buildings. Those initiatives aim to create good American jobs that cannot be shipped overseas. The legislation would launch programs to promote electric vehicles and deploy technologies for capturing, pipelining, and geologically storing carbon dioxide produced at coal-fueled power plants. Those incentives aim to help American companies make up for lost time in the advanced energy industries that will be to the 2010 what Internet software was to the 1990s.

The legislation would institute new low-carbon requirements for vehicles and fuels, as well as programs to reduce vehicles miles traveled. Those proposals aim to increase America's energy security and cut back on the hundreds of billions of dollars that America throws away every year on oil. And the legislation would put in place a declining cap on greenhouse gas pollution. That market-based system aims to protect our children and grandchildren from severe environmental and economic harm and from great threats to our national security while further invigorating advanced American energy industries.

The American Clean Energy and Security Act draws on the thoughtful legislation that Chairman Emeritus Dingell and Congressman Boucher drafted last October, and it tracks many of the recommendations put forward by the U.S. Climate Action Partnership, a coalition that includes American manufacturers, such as Alcoa, John Deere, Caterpillar, Dow, Ford, General Motors, and General Electric. Now the no, we can't crowd will spin out dooms-

day scenarios about runaway costs. I do not claim that we can get something for nothing, but EPA's preliminary economic modeling indicates that the investments Americans would make to implement the cap and trade program in the American Clean Energy and Security Act would be very modest compared to the benefits that science and plain common sense tell us a comprehensive energy and climate policy will deliver.

I ask the members of this committee to recall the Acid Rain Trading Program, drafted by this committee as amendments to the Clean Air Act, and signed by a Republican president in 1990. Beltway corporate lobbyists insisted that the law would cause, and I quote, "death for businesses across the country." But as the members of this committee who worked hard on that legislation know well, it ended up delivering annual health and welfare benefits of over $120 billion at an annual cost of only $3 billion. Our economy grew and acid rain was cut by more than 50 percent. The Clean Air Act amendments dealt with controversial issues, not just acid rain, but smog, hazardous air pollutants, and the threats to the ozone layer, but once Chairman Dingell and Chairman Waxman joined forces with other members of this committee to find consensus the committee reported the amendments favorably to the full House by a vote of 42–1. I believe this committee can make history again this year, and the draft American Clean Energy and Security Act is a great start. It reflects the President's priorities of reducing our dependence on oil creating millions of new jobs by leveraging America's tremendous capacity for innovation and significantly reducing greenhouse gas pollution.

This Administration wants to see this effort move forward, and I pledge to work with this committee over the weeks ahead to help you find consensus. Thank you. I look forward to answering the members' questions.

[The prepared statement of Ms. Jackson follows:]

Statement of Lisa P. Jackson
Administrator, U.S. Environmental Protection Agency
Hearing on American Clean Energy and Security Act of 2009
Committee on Energy and Commerce
U.S. House of Representatives
April 22, 2009

Chairman Waxman, Chairman-Emeritus Dingell, Ranking Minority Member Barton, and members of the Committee, thank you for inviting me to testify about the draft American Clean Energy and Security Act. Let me begin by commending this Committee for embarking on the serious, difficult, and essential work of crafting comprehensive, detailed energy legislation and moving it through an open, careful process in which representatives hold hearings, make amendments, and cast votes. EPA is grateful for your work.

When President Obama was inaugurated ninety-two days ago, the United States found itself in the worst economic crisis since the Great Depression. So the President worked with Congress to craft the American Recovery and Reinvestment Act, which he signed into law sixty-four days ago. That law is now creating good jobs for Americans. Thanks to the Act, EPA is putting Americans to work overhauling clean-water systems, restoring and redeveloping polluted properties, installing clean-air equipment on diesel engines, and cleaning up leaking underground fuel tanks.

The American Recovery and Reinvestment Act also injected an essential shot of adrenaline into the American clean energy sector. Economic recovery would not have been possible without that immediate relief. But President Obama has leveled with the American people: Lasting economic recovery will come only when the federal government looks beyond the quick fix and invests in building the advanced energy industries that will help restore America's economic health over the long term.

So President Obama has called on Congress to pass forward-looking energy legislation.

That legislation should create, here in America, millions of the clean-energy jobs that cannot be shipped overseas. It should catapult American innovators past the foreign competitors who, due to aggressive investments by their governments, now enjoy a head start in the advanced energy technologies that represent the new Internet revolution, the new biotech wave. It should reduce our dependence on oil and strengthen America's energy security. And it should start, in a real and tangible way, to tackle greenhouse-gas pollution, which threatens to leave to our children and grandchildren a diminished, less prosperous, less secure world.

Twenty-two days ago, Chairmen Waxman and Markey released draft legislation that strives to accomplish those goals.

The American Clean Energy and Security Act would introduce a clean energy requirement for American electric utilities and new energy efficiency programs for American buildings. Those initiatives aim to create good American jobs that cannot be shipped overseas.

The legislation would launch programs to promote electric vehicles and deploy technologies for capturing, pipelining, and geologically storing carbon dioxide produced at coal-fueled power plants. Those incentives aim to help American companies make up for lost time in the advanced energy industries that will be to the 2010s what Internet software was to the 1990s.

The legislation would institute new low-carbon requirements for vehicles and fuels, and programs to help reduce vehicle-miles traveled with increased transportation options and help for communities that want to plan for sustainable growth. Those proposals aim to reduce America's dependence on oil and cut back on the hundreds of billions of dollars that Americans send overseas every year.

And the legislation would put in place a declining cap on greenhouse-gas pollution. That market-based system aims to protect our children and grandchildren from severe environmental and economic harm, and great threats to national-security while further invigorating advanced, American energy industries.

The American Clean Energy and Security Act draws on the thoughtful legislation that Chairman-Emeritus Dingell and Congressman Boucher drafted last October and is a serious effort at constructing comprehensive energy and climate legislation. We look forward to working with Congress as this bill moves forward to ensure that it meets the President's objectives in the areas of an efficient and comprehensive approach that creates jobs, leverages our tremendous capacity for innovation, reduces our dependence on oil, and prevents the worst consequences of climate change.

I would like to note that the Waxman-Markey discussion draft tracks many of the recommendations put forward by the U.S. Climate Action Partnership, a coalition that includes American manufacturers such as Alcoa, John Deere, Caterpillar, Dow, Ford, General Motors, and General Electric. Those employers of American workers recognize, as they declare at the outset of their *Blueprint for Legislative Action*, that:

> "The United States faces an urgent need to transform our nation's economy, make the country more energy secure, and take meaningful action to slow, stop, and reverse [greenhouse-gas] emissions to address climate change."

I believe that the leadership of this Committee is stepping up to provide the kind of "new vision and policy direction" that those companies talk about.

Now, the "no, we can't" crowd will spin out doomsday scenarios about runaway costs. But EPA's available economic modeling indicates that the investment Americans would make to implement the cap-and-trade program of the American Clean Energy and Security Act would be modest compared to the benefits that science and plain common sense tell us a comprehensive energy and climate policy will deliver.

I ask the members of this Committee to recall the Acid Rain Trading Program, drafted by this Committee and signed by a Republican President in 1990. Beltway corporate lobbyists insisted that the law would cause "death for businesses across the country." But as the members of this Committee who worked hard on that legislation know well, it ended up delivering annual health and welfare benefits estimated to be over 120 billion dollars at an annual cost of only 3 billion dollars. Our economy grew by 64 percent even as the program cut acid rain pollution by more than 50 percent. And past auto-emissions standards sparked key technological innovations that made cars more appealing to consumers here and abroad.

Achieving energy independence and reducing carbon emissions are not easy challenges. But this Committee has dealt with difficult challenges before. When Chairman Dingell and Chairman Waxman joined together with other Members of the Committee to pass the 1990 Clean Air Act Amendments, they were reported out of this Committee by a 42-to-1 vote. That bill dealt with controversial issues – not just acid rain, but also smog, hazardous air pollutants, and the threat to the ozone layer. But you found consensus, and your legislation has ended up cutting pollution at a fraction of the cost that was predicted at the time.

There may be more than one dissenting vote this time, but that does not mean that the Committee's history cannot be repeated this year. We want to work with you in finding consensus in the coming weeks, so that we can reduce our dependence on oil, create millions of new jobs in innovative energy technologies, and significantly reduce greenhouse-gas emissions.

Thank you. I look forward to the answering the members' questions.

Mr. WAXMAN. Thank you very much, Administrator Jackson. Secretary Chu, we would like to hear from you.

STATEMENT OF STEVEN CHU

Mr. CHU. Chairman Waxman and Markey, Chairman Emeritus Dingell, Ranking Members Barton and Upton, and members of the committee, thank you for the opportunity to appear before you today to discuss the American Clean Energy and Security Act. For decades our energy strategy has been little or no strategy at all. For our transportation needs, we have become increasingly addicted to oil at escalating costs to our economy, our environment, our security. For our electricity needs, we burn immense amounts of coal, which is cheap and abundant, but a major contributor to global warming. We will continue to use coal as a fuel, but we must learn to do it in a cleaner way. On this Earth Day, we must state in no uncertain terms we have a responsibility to our children and their children to curb the carbon emissions from fossil fuels that have begun to change our climate.

President Obama recognizes that the energy challenge is a defining challenge of our time, and he is committed to a comprehensive energy plan that creates jobs, reduces our greenhouse gas emissions, and reduces our dependence on oil. The Energy Independence and Security Act and the American Recovery and Reinvestment Act have made a down payment on clean energy future. I am pleased to report that the Department of Energy is getting the Recovery Act money into your local communities as quickly as possible, while maintaining the highest standards of transparency and accountability. We are already putting Americans to work making homes and buildings more efficient, which will grow our economy and cut energy bills for families. The Recovery Act also provides financing options that could double the production of renewable energy and expands investments in the development of break-through energy technologies.

But we need to do more. We need not only to jump start our economy today but to lay the foundation for America's long-term prosperity. In the years ahead, the work will turn increasingly to unconventional sources of petroleum, which could lead to higher prices for consumers. With these rising energy costs and the mounting challenges of our climate, the development of clean, renewable sources of energy will be the growth industry of the 21st century. The key question is who will lead the world in making energy efficient vehicles when turbines, solar panels, and other products and technologies that will power tomorrow's economy? There are 2 dangers, either of which could dramatically weaken America's future. The first is that the world will fail to take action on climate change in time to prevent its worst potential effects. The second is that the United States will fail to seize the opportunity to lead and new clean energy jobs will be created overseas rather than in America.

We can neither let our planet get too hot or let our economy grow too cold. We must get off the sidelines of the clean energy race and play to win. To that end, we in the Administration appreciate Congress' effort in developing the American Clean Energy and Security Act. While we are still reviewing the details, it is clear that Chair-

man Waxman's legislation would advance the President's goals of launching a new sector of clean energy jobs, making our economy more competitive and weaning the nation from its dependence on oil. The President looks forward to working with members of Congress in both chambers to pass a bill that would transition the nation to a clean energy economy.

The Administration believes that a gradual marked-based cap on carbon pollution would also be a significant step for restoring America's leadership in the deployment of clean energy technology. Building on the success of the bipartisan Acid Rain Program created in 1990 Clean Air Act, this approach will set clear long-term emission goals that empower the private sector to find the most innovative ways to reduce carbon pollution. The Administration also believes a renewable electricity standard could help create a stable investment environment for America's innovators to do what they do best, create new jobs and entire new industries. We also believe it is important to foster continued development of critical technologies to give the American people advanced clean vehicles, to capture and store carbon to limit emissions and sustain our environment, to accelerate energy efficiency improvements, and to develop a smart grid to improve the efficiency, reliability, and security of our electricity transmission system. I applaud Chairman Waxman and Markey for bringing this bill forward.

Now is the time to take comprehensive and sustained action to meet our nation's energy challenge. With the leadership of the President, the actions of this Congress, and the support and participation of the American people, I am confident we will succeed. Thank you, and I will be glad to answer your questions.

[The prepared statement of Mr. Chu follows:]

Statement of

Steven Chu
Secretary of Energy

Before the
Committee on Energy and Commerce
United States House of Representatives
Washington, D.C.

April 22, 2009

Chairmen Waxman and Markey, Chairman-Emeritus Dingell, Ranking Members Barton and Upton, and Members of the Committee, thank you for the opportunity to appear before you today to discuss the American Clean Energy and Security Act of 2009.

For decades, our energy strategy has been to have little or no strategy at all. For our transportation needs, we have become increasingly addicted to oil at escalating costs to our economy, our environment, and our security.

For our electricity needs, we burn immense amounts of coal, which is cheap and abundant but a major contributor to global warming. We will continue to use coal as a fuel, but we must learn to do so in a cleaner way. On this Earth Day, we must state in no uncertain terms that we have a responsibility to our children and their children to curb the carbon emissions from fossil fuels that have begun to change our climate.

President Obama recognizes that the energy challenge is a defining challenge of our time, and he is committed to a comprehensive energy plan that creates jobs, reduces our greenhouse gas emissions, and reduces our dependence on oil.

The Energy Independence and Security Act and the American Recovery and Reinvestment Act made a down payment on that clean energy future. I'm pleased to report that the Department of Energy is getting the Recovery Act money into your local communities as quickly as possible, while maintaining the highest standards of transparency and accountability. We are already putting Americans to work making homes and buildings more efficient, which will grow our economy and cut energy bills for families. The Recovery Act also provides financing options that could double the production of renewable energy, and it expands investments in the development of breakthrough energy technologies.

But we need to do much more. We need not only to jumpstart our economy today but to lay the foundation for America's long-term prosperity.

In the years ahead, the world will turn increasingly to unconventional sources of petroleum, which could lead to higher prices for consumers. With these rising energy costs and mounting changes to our climate, the development of clean, renewable sources of energy will be the growth industry of the 21st century. The key question is – who will lead the world in making

the fuel-efficient vehicles, wind turbines, solar panels, and other products and technologies that will power tomorrow's economy?

There are two dangers, either one of which could dramatically weaken America's future. The first is that the world will fail to take action on climate change in time to prevent its worst potential effects. The second is that the United States will fail to seize this opportunity to lead, and the new clean energy jobs will be created overseas rather than in America. We can neither let our planet get too hot nor let our economy grow cold. We must get off the sidelines of the clean energy race and play to win.

To that end, we in the Administration appreciate Congress' efforts in developing the American Clean Energy and Security Act. While we are still reviewing the details, it is clear that Chairman Waxman's legislation would advance the President's goals of launching a new sector of clean energy jobs, making our economy more competitive, and weaning the nation from its dependence on oil. The President looks forward to working with members of Congress in both chambers to pass a bill that would transition the nation to a clean energy economy.

The Administration believes a gradual, market-based cap on carbon pollution would be a significant step for restoring American leadership in deployment of clean energy technology. Building on the success of the bipartisan Acid Rain Program created by the 1990 Clean Air Act, this approach will set clear long-term emissions goals that empower the private sector to find the most innovative ways to reduce carbon pollution.

The Administration also believes a Renewable Electricity Standard could help create a stable investment environment for America's innovators to do what they do best: create new jobs and entire new industries.

We also believe it is important to foster continued development of critical technologies to give the American people advanced clean vehicles; to capture and store carbon to limit emissions and sustain our environment; to accelerate energy efficiency improvements; and to develop a "smart grid" to improve the efficiency, reliability, and security of our electric transmission system. I applaud Chairmen Waxman and Markey for bringing this bill forward.

Now is the time to take comprehensive and sustained action to meet our nation's energy challenge. And with the leadership of the President, the actions of this Congress, and the support and participation of the American people, I am confident that we will succeed.

Thank you. I would be glad to answer your questions at this time.

Mr. WAXMAN. Thank you very much, Secretary Chu. Secretary LaHood.

STATEMENT OF RAY LaHOOD

Mr. LAHOOD. Mr. Chairman, Mr. Markey, Mr. Dingell, and Mr. Barton, and friends all, thank you for inviting me to discuss the Department of Transportation's commitment to promote a cleaner, greener America through effective and innovative transportation policy. I appreciate the opportunity to discuss the important environment and energy policies laid out in the American Clean Energy and Security Act. I commend the committee for drafting this important legislation. Since today is Earth Day, this is an excellent time to hold a serious national conversation on the most effective ways to improve energy efficiency, reduce greenhouse gas emissions, and mitigate the impact of climate change.

As you know, one of the highest priorities of President Obama's Administration is to develop a comprehensive energy plan that will not only achieve these goals but also create millions of good paying, clean energy jobs and help our communities become more livable in the process. There is no question that the United States must be the leader in the global effort to address climate change, cut pollution, and find more sustainable ways to keep our society mobile. The President has already taken concrete steps in this direction. The Administration has proposed new fuel efficiency standards for cars and light trucks that would significantly reduce emissions and save millions of gallons of fuel beginning in model year 2011. And we are coordinating with the Environmental Protection Agency and the Department of Energy on new fuel economy standards to take us through 2016. Our department is also using new statutory authority to explore new fuel economy standards for medium and heavy duty trucks. Additionally, the department continues to invest in buses running alternative fuels thereby reducing emissions and improving air quality in cities and towns across America. Our commitment has helped to quadruple the number of clean fuel bus fleets across and around the nation since 1998.

Through the Recovery Act, we are making hundred million dollar grants in grant funds available to help the transit industry to improve fuel efficiency and reduce emissions for bus, rail cars and other transit equipment. On the climate change front over the last several years we have invested in research and technology efforts that will help us to transition away from fossil fuels, improve vehicle efficiency, and optimize our transportation network to reduce congestion and idling while contributing to higher emission levels. Across the department, we are committed to programs and policies that address our environmental concerns. The FAA, for instance, is working with the private sector on sustainable alternative fuel for aircraft. The Maritime Administration exploring new technologies in cooperation with EPA and industries to reduce emissions from marine diesel engines.

Looking ahead, the Department of Transportation stands ready to meet the President's ambitious goals for making transportation an integral part of our approach to addressing environmental challenges. In the coming months, we will work with stakeholder groups around the country to determine how best to invest $8 bil-

lion in new funding for high speed passenger rail service that will ultimately improve mobility and reduce congestion, and we will work closely with Congress to develop a new service transportation bill that focuses on reducing greenhouse gas emissions by investing in green transportation choices such as bike paths, pedestrian walkways, and building more affordable housing near transit.

In closing, the Department of Transportation will continue to be your full partner as we move forward with new legislation to help America address its formidable energy challenges. I look forward to working with you, Mr. Chairman, and the entire committee.

[The prepared statement of Mr. LaHood follows:]

STATEMENT OF
THE HONORABLE RAY LAHOOD
SECRETARY OF TRANSPORTATION
BEFORE THE
COMMITTEE ON ENERGY AND COMMERCE
U.S. HOUSE OF REPRESENTATIVES
HEARING ON AMERICAN CLEAN ENERGY AND SECURITY ACT OF 2009

APRIL 22, 2009

Chairman Waxman, Ranking Minority Member Barton, and Members of the Committee, thank you for holding this hearing, on this important day for reflection on the environment, Earth Day, to discuss the draft American Clean Energy and Security Act. I commend you for the hard work you did to craft this bill and for your efforts to engage in a serious national conversation on the most effective ways to grow a clean energy economy, promote energy efficiency, reduce greenhouse gas emissions, mitigate the environmental and societal impacts of climate change, and adapt to climate change.

The Obama Administration, including the Department of Transportation (DOT), considers a comprehensive energy plan that will generate millions of clean energy jobs, reduce our reliance on oil, reduce pollution, create more livable communities, and attack climate change, a major priority. Aggressive action to reduce the impacts of climate change is needed, and the U.S. must be a leader in the global effort to reduce greenhouse gas emissions.

The President has already announced a series of aggressive actions to lower greenhouse gas emissions. These actions include improving the fuel efficiency of automobiles, intensifying U.S. actions on energy efficiency and renewable energy through the American Reinvestment and Recovery Act, and asking Congress to pass comprehensive legislation to make clean energy the profitable kind of energy through a gradual, market-based cap on carbon pollution. These ambitious and far-reaching actions, combined with others outlined in the President's Energy and Environment Agenda, demonstrate a commitment from the White House to lead efforts confronting climate change.

The Department of Transportation has been and will continue to be a full partner in all of these efforts, as well as legislative efforts. This is essential because transportation sources are a significant contributor of greenhouse gas emissions in the U.S. and must be part of the solution. I look forward to working with you as we develop policies to address the transportation system in this climate change bill to assure that it is fully integrated with the federal transportation programs and works in concert with the other statutory duties that DOT has been given by Congress.

The President, like Congress, recognizes the vital role that DOT plays in improving energy efficiency and combating climate change and has challenged us to:

- make a major investment in building new high speed rail lines.

- transform the way transportation serves the American people by creating more choices and encouraging less carbon-intensive transportation.
- provide states and local governments with the resources they need to coordinate transportation planning with economic development decisions; and
- ensure that additional federal transportation dollars generate affordable transportation options for persons in the highest-need communities.

My department is working aggressively to implement these forward-thinking policies and other measures that will reduce emissions of greenhouse gases and improve the lives of Americans. I want to take a few minutes to describe some of our efforts.

DOT recently issued new fuel economy standards for passenger cars and light trucks for model year 2011 and is coordinating with the Environmental Protection Agency and the Department of Energy to develop standards for 2012-2016. These standards will save billions of gallons of fuel and encourage the auto industry to use more fuel-efficient technologies that will ultimately save American consumers money.

DOT also is implementing new statutory authority to look at options for issuing fuel economy standards for medium and heavy duty trucks.

The reauthorization of DOT's surface transportation programs, which will expire at the end of Fiscal Year 2009, will provide additional opportunities for considering ways to improve our energy and environmental policies. An important element of the reauthorization should focus on livable communities. This means fostering pedestrian and bike-friendly communities, providing more transportation choices, and offering better access to jobs and housing. Transit-oriented, mixed-use development also has the potential to contribute significantly to the revitalization of downtown districts and offer an alternative to urban and suburban sprawl and automobile-focused commuting.

In addition, DOT has been studying both mitigation and adaptation of climate change over the last ten years. We have long recognized the importance of transitioning away from fossil fuels, improving vehicle technologies, and optimizing the transportation network to reduce fuel-wasting activities like idling in traffic.

Furthermore, as the stewards of investments possibly at risk from the impacts of climate change, we want to equip decision makers with the data and tools they need to ensure that our transportation infrastructure and systems can sustain sea level rise, changing weather patterns, and other potential long-term consequences of climate change. For instance, the Department has already issued a study alerting State and local officials in the Gulf Coast to potential changes in climate that could disrupt transportation services. The report stressed the need to take climate change impacts into account as transportation plans are developed and investment decisions are made. Subsequent phases of the study are intended to focus on risks and adaptation strategies for transportation decision makers in the Gulf Coast region and nationwide.

Additionally, DOT funds the development of alternative fuel technologies and deployment of alternative fuel buses, including hydrogen fuel cell buses, diesel-electric hybrid buses, and supports alternative fuels infrastructure investment for transit systems across the United States. The implementation of developing bus rapid transit technologies holds real potential for reduced greenhouse gas emissions.

The Department also has focused on efficiency beyond highways and transit. In aviation, we have begun to modernize the U.S. air traffic system, called the Next Generation Air Transportation System or NextGen, and have put energy and environmental concerns at the heart of the effort. NextGen will result in the more efficient movement of planes in the air and on the ground. We are in the process of setting up a research consortium this year focused on accelerating the maturation of lower energy, emissions, and noise technologies for aircraft and engines and advancing cleaner alternative fuels. We also continue to implement the NextGen program, which will result in the more efficient movement of planes in the air and on the ground, the use of less fuel and the reduction of emissions. FAA has partnered with manufacturers, airlines, and airports in the Commercial Aviation Alternative Fuel Initiative to significantly progress toward sustainable alterative fuels.

We have conducted an Aviation Climate Change Research Initiative to better understand the impacts of high altitude emission impacts. Additionally, in recognition of the global nature of aviation business, we are expanding international engagement on reducing aviation emissions by working with the International Civil Aviation Organization (ICAO), in coordination with the State Department and the Environmental Protection Agency, to influence how the international aviation community addresses this critical issue. Finally, through the innovative Voluntary Airport Low Emission (VALE) program created by Congress, the FAA funds low-emission airport technology, ranging from alternative fuel vehicles and aircraft ground support equipment to various infrastructure improvements like gate electrification to reduce aircraft emissions at the gate.

Likewise, the Maritime Administration is focused on the potential of new technologies to reduce the harmful emissions from marine diesel engines through cooperative efforts with the Environmental Protection Agency and the maritime industry on alternative fuels and reduced ship stack emissions.

All of these efforts reinforce DOT's commitment to tackling the climate change challenge, achieving America's energy security, and improving the lives of Americans.

Again, I commend you for all of the valuable work you have done in drafting the American Clean Energy and Security Act. The draft bill identifies concrete ideas for discussion and is an important step in solving the challenges we face in freeing ourselves from our dependence on fossil fuels and charting a new course on energy in this country. I also thank you for allowing me, on behalf of DOT, to join in the discussion.

Mr. WAXMAN. Thank you very much, Secretary LaHood. We will now recognize members for questions, 5-minute rounds, and I will start off. The 3 of you gave us testimony on behalf of the Administration, and I thank you for your presentations. Our nation is facing some very difficult energy challenges and we have ignored them for too long. We are overly dependent on foreign sources of oil. Our economy is in a recession. We are no longer leading in the development of clean energy technology and we are polluting our environment. President Obama is trying to confront these problems. He has said we need a comprehensive energy policy that creates new clean energy jobs, promotes energy independence, and tackles a tremendous threat of global warming.

Chairman Markey and I tried to draft a discussion, a proposal that addresses these 3 issues. And what I want to ask you is whether you think our draft accomplishes the President's goals. Let me begin by asking about jobs and our economy. Americans are hurting, and this is the first question on most of our minds. Administrator Jackson, do you believe the bill would create jobs here in the U.S. and stimulate economic growth?

Ms. JACKSON. I do indeed, Mr. Chairman. I believe this is a jobs bill, and it is a jobs bill that focuses our country's attention on the growth industry of the future, which is the clean energy industry. There are opportunities here for us to create literally millions of jobs in the green energy.

Mr. WAXMAN. Secretary Chu, do you agree, would this bill put us on the path to a clean energy economy?

Mr. CHU. I absolutely agree with that. I think as you yourself noted the world has rapidly changed its attitude towards carbon emissions and it is continuing to do so. So in a future world, it is very clear that we will be living in a carbon constrained world so the action will be how do you transition to a sustainable energy future. The United States must position itself in a way so that we can lead this transition, that we take advantage of the full intellectual opportunities and vigor of this country to develop those technologies that will add to our economic prosperity.

Mr. WAXMAN. And, Secretary LaHood, what do you think about creation of jobs and helping our economy with the Obama proposal?

Mr. LAHOOD. Well, Mr. Chairman, I think that nothing has taken as much time for this Administration than trying to get the economy going. This is the number 1 priority for this Administration, and I know it is for Congress also, and I know that is why Congress passed the Economic Recovery Act, which many of us in this Administration are implementing to try and get our fellow Americans back to work, and we are certainly doing that at the department. I believe that the work that you all are doing, the bill that you have laid out will go a long way to creating jobs, and particularly I want to note green jobs.

And in the area that we work at the Department of Transportation, we believe there will be a number of green job opportunities created around the country as a result of the approach that is being taken by your legislation and this is the reason that we are here today.

Mr. WAXMAN. Let me ask you this though. The other objective, one of the other objectives, is to reduce our dependence on foreign

oil. Americans are tired of sending billions and billions of dollars overseas for oil in many countries to countries with hostile governments. Do you believe this bill would reduce our dependence on foreign oil?

Mr. LAHOOD. Absolutely. I think it sets the bar very high and obviously one of the concerns that all of us in public policy positions have faced is the ire of the public when a barrel of oil goes up and gasoline goes up, and people are not able to use their automobiles. And I think this approach will help. The approach that you are taking in your legislation will relieve our dependence on foreign oil by creating other opportunities for people, certainly in the area of transportation.

Mr. WAXMAN. Thank you very much. I assume, Secretary Chu and Administrator Jackson, you agree this will reduce our dependence on foreign oil as well?

Mr. CHU. Yes, I do.

Mr. WAXMAN. The third goal of this discussion draft is to effectively address the danger of global warming. We want to craft legislation based on science, and that means a bill that makes the global warming pollution reductions scientists tell us are necessary to avoid catastrophic climate change. Secretary Chu, does this bill represent an effective response to the threat of global warming? Does it take the necessary steps at home to ensure that American can restore global leadership on this issue?

Mr. CHU. It does.

Mr. WAXMAN. And do the other two of you agree with that position? Administrator Jackson?

Ms. JACKSON. Yes, I certainly do, Mr. Chairman. This bill includes strong targets, and it moves us to addressing global warming pollution by establishment of a cap and trade program which I think many businesses agree is the way to harness private investment and capital into on our side in reducing pollution and creating the green energy economy.

Mr. WAXMAN. Thank you very much. My time has expired. Do you want to add anything, Secretary LaHood?

Mr. LAHOOD. I agree.

Mr. WAXMAN. OK. Good. Mr. Barton.

Mr. BARTON. Thank you, Mr. Chairman. Before I begin my questions, I want to commend you and Mr. Markey on one thing that I didn't in my opening statement. We have had intense debates about the number of Republican witnesses versus Democrat witnesses at these hearings. In this case, I want to commend you on your Administration panel. You went out of your way to make sure we had a Republican witness and we didn't even have to ask. I should have commended you for that, so we appreciate you doing that.

Mr. WAXMAN. You can commend the American people for that.

Mr. BARTON. Very good. Thank you. And the President for appointing him. Administrator Jackson, your agency yesterday came up with an economic impact analysis of the pending draft. How were you able to do that since the most important economic component of the draft has no allocation cost scheme in it?

Ms. JACKSON. At the request of the drafters, we did indeed release economic modeling and in order to do it, we had to make as-

sumptions about how allowance revenue would be distributed. At the request of the drafters those assumptions were put into the modeling.

Mr. BARTON. I haven't seen the analysis, but are those economic assumptions and allowances cost, are those public?

Ms. JACKSON. Yes, they are, and the modeling is public.

Mr. BARTON. They are public. Thank you. Your agency also recently came up with a finding that CO_2 is hazardous to health and therefore should be regulated under the Clean Air Act. Just what is the health hazard since CO_2 itself is not a pollutant?

Ms. JACKSON. Well, the proposed finding would classify CO_2 as a criteria pollutant, and the health impact associated with CO_2, especially for the very young and for the elderly, are exacerbation of other impacts from pollution. CO_2 acts to make impacts from pollution worse because the CO_2 and the warming that it causes the climate change is actually——

Mr. BARTON. Inhaling CO_2, being exposed to CO_2, in and of itself is not a health hazard?

Ms. JACKSON. Well, right. Well, CO_2 in the absence of oxygen——

Mr. BARTON. You are creating CO_2 as you talk to me.

Ms. JACKSON. I think I understand your question, sir, which is if you inhale only CO_2 certainly that would make you sick. You wouldn't live without oxygen. But the CO_2 and the endangerment finding is based on scientific analysis of CO_2 and 5 other greenhouse gases and their impact on the welfare of our country and then human health because of——

Mr. BARTON. Do we have examples in your finding of CO_2 pollution causing death or large illnesses? We know SO_2 and we know mercury and we know lead. We know the criteria pollutants. Even ozone causes asthma or can exacerbate asthma. We don't have that with CO_2.

Ms. JACKSON. The finding, the proposal answers the question put to us by the law and by the Supreme Court, which is do these greenhouse gases as a class endanger public health and welfare, and the finding is based on an analysis of what the greenhouse gases do first to our environment and our planet and what that means for human health.

Mr. BARTON. I thank you for those answers. Mr. LaHood or Secretary LaHood, former Chairman Dingell in his opening statement yesterday talked about the need for specific funding for the automotive industry and some assistance in terms of meeting their admission requirements under legislation that was passed last year. Have you looked at former Chairman Dingell's comments, and, if so, do you support some of the things that he said yesterday?

Mr. LAHOOD. I am sorry, I have not seen his testimony. I will be happy to look at it, but I haven't seen it.

Mr. BARTON. He was specifically saying that there should be a specific funding source in this bill to help the automotive industry meet the requirements in terms of their emission improvements that they have to meet, and he also said that for retooling issues and things that there should be additional funding so you might just——

Mr. LAHOOD. You mean the bill that is under consideration here by the committee?

Mr. BARTON. Yes. If I understood him correctly, that is what——

Mr. LAHOOD. Well, to be honest with you, Mr. Barton, I haven't thought about this, but I would say this. I don't know of another Administration or another Congress that has done more for the American automobile manufacturer than the Obama Administration and this Congress in the Economic Stimulus Bill and also last year in what Congress did in terms of the money available to the American automobile manufacturers. This Administration is committed——

Mr. BARTON. You don't have to convince me, Mr. Secretary. I am one of the Republicans who voted for the auto package so you don't have to preach——

Mr. LAHOOD. No, if you are asking me if we are committed to helping the American automobile manufacturer, the answer is, yes, we have, and I believe the President will——

Mr. BARTON. I am specifically asking just to take a look at what Mr. Dingell said.

Mr. LAHOOD. I didn't see his testimony, but I will be happy to look at it.

Mr. BARTON. Dr. Chu, I don't want to leave you out. You are our scientist. I have one simple question for you in the last 6 seconds. How did all the oil and gas get to Alaska and under the Arctic Ocean?

Mr. CHU. This is a complicated story but oil and gas is a result of hundreds of millions of years of geology, and in that time also the plates have moved around, and so it is the combination of where the sources of the oil and gas——

Mr. BARTON. But I mean isn't it obvious that at one time it was a lot warmer in Alaska and on the North Pole. There wasn't a big pipeline that we created in Texas and shipped it up there and then put it underground so we can now pump it out and ship it back.

Mr. CHU. There are continental plates that have been drifting around throughout the geological ages.

Mr. BARTON. That just drifted up there?

Mr. CHU. That is certainly what happened, and so it is a result of things like that.

Mr. WAXMAN. The gentleman's time has expired. Mr. Markey.

Mr. MARKEY. Thank you, Mr. Chairman, very much. Secretary Chu, I know you spent a lot of time thinking about new energy technologies. Are you concerned that we could lose our leadership in new energy technologies to other countries?

Mr. CHU. I am very concerned of that. It actually tears my heart out to see what has happened. If you consider what happened photovoltaics were invented by Bell Labs in the 1930s. We are not a leading manufacturer of photovoltaics. Wind turbines, which were first deployed in the United States in the first energy crisis in the mid-1970s, that had gone overseas to Denmark—to Germany. Nuclear reactors which we pioneered. Now Westinghouse, there is a major shareholder in Westinghouse that is now owned by a company in Japan. I am very concerned. Major power electronics of the world has drifted overseas. It is in Europe and it is in Asia. And so I see step by step us losing the technology lead. We need to bring those high technology jobs back, manufacturing jobs, back to the United States.

Mr. MARKEY. Thank you, Mr. Secretary. During the presidential campaign now President Obama pledged that the United States could actually deploy 25 percent of our electricity from renewable resources by the year 2025, which would be a revolution in the way in which we generate electricity in our country. Do you agree with that assessment that we can reach that goal by the year 2025, Mr. Secretary?

Mr. CHU. Yes, I do. I think when the American public and especially the science and technology part of the United States gets going it can really move, and so although it might seem like an ambitious goal, I think with the proper incentives we can get there.

Mr. MARKEY. Could I ask you, Secretary LaHood, what role do you think that new advanced automotive technologies can play in revitalizing the American economy?

Mr. LAHOOD. Well, we know from visiting with the automobile manufacturers that the kind of technology that they are developing in terms of hybrids, in terms of battery powered automobiles, and then the standard that we have asked them to meet in terms of CAFE standards are going to allow the American people to have many, many choices in the future for opportunities to have automobiles that will emit far less CO_2, and certainly the case is true with hybrids and the further development of that. There are a couple of American automobile manufacturers that are developing an all battery automobile, and obviously that is going to go a long way to enhance our opportunities.

Mr. MARKEY. Are you an optimist, Mr. Secretary, that if we continue to invest in these new technologies as an American strategy that we can meet this goal?

Mr. LAHOOD. I think the American automobile manufacturers have gotten the message. They need to get where the American people are, and the American people are ready to drive automobiles that get good gas mileage in the instance of those that use gasoline, but if development of hybrids and battery powered automobiles come on to the opportunities for people and are allowed to be developed, I think the American people are ready for that.

Mr. MARKEY. Thank you. Mr. Secretary. Administrator Jackson, you have had a chance to look at the Waxman-Markey draft. Could you tell us in your opinion how that legislation could help to reduce our use of oil, our dependence upon imported oil in the United States?

Ms. JACKSON. Well, the bill as you drafted it is comprehensive in that it has several opportunities for advancing renewable energy, energy efficiency. We just heard about the opportunity to put forward electric cars, a low carbon fuel standard, and all of those things along with especially the energy efficiency, which is such low-hanging fruit right now for our country, and which could start tomorrow in reducing our dependence, and then the longer term options as we move towards a lower carbon future through a cap and trade program, all of those are drivers that will push us towards using foreign oil right now as it makes us vulnerable.

Mr. MARKEY. We produce 8 million barrels of oil a day in the United States. We import 13 million barrels of oil a day. That is our weakness. We thank each of you for your leadership in helping us to address that question. Thank you, Mr. Chairman.

Mr. WAXMAN. Thank you, Mr. Markey. Mr. Upton.

Mr. UPTON. Thank you, Mr. Chairman. I would first like to ask Secretary Chu, Secretary Chu, the loan guarantees for nuclear are certainly, as many of us know, an essential part for building new projects such as new nuclear reactors. We know that you have proposed a revision to the DOE loan guarantee program, but as I understand it, OMB is not satisfied and has rejected the proposed change. In spite of that, can you comment on what we need to improve the program? I don't know, is that a final resolution?

Mr. CHU. No. I believe that nuclear power has to be part of the energy mix in this century. I stated that many times. I continue to state that.

Mr. UPTON. That would be my follow-up question, but go ahead.

Mr. CHU. And so we are certainly moving as aggressively as we possibly can. We are going to work out the differences with OMB to try to get those initial loan guarantees going. We are also using our budget of 2008–2009 and going to 2010, we are helping the getting the NRC licenses, particularly the AP–1000, so its generic design can be licensed. That is being done with the aid of the Department of Energy. We fully intend to use the resources of the Department of Energy to further develop nuclear technology. This is one of the areas of technology that the United States should recapture leadership in.

Mr. UPTON. During your confirmation, I was heartened when you said nuclear is going to be part of our energy future. It has to be, and yet you had a statement a couple weeks later as it related to Yucca Mountain, as you know, there is no nuclear title as part of this bill, and I just want to know as you indicate now that nuclear needs to be part of the equation. Would the Administration support a nuclear title to this bill knowing that there is no greenhouse gas emissions, and what are we going to do about Yucca? And, lastly, would you support reversing President Carter decision on recycling, something that our subcommittee actually visited last year as we saw the French begin to—or they have done it for now a number of decades, recycle the nuclear waste. It is my understanding that both Japan and the British are doing it as well. What are your comments in that regard?

Mr. CHU. What we are planning to do is to appoint a panel to step back and take a fresh new look at how we are going to—a comprehensive plan of how we are going to deal with the nuclear waste. A lot has happened since the beginning of Yucca Mountain some 25, 30 years ago, and so without prejudging what these blue ribbon panels are going to find, I think it is an opportunity to actually develop a much more comprehensive forward looking plan. The fact that we are doing this, I see, in no way conflicts with my vision of trying to move the nuclear industry forward to restart the American nuclear industry. We can and will develop a comprehensive nuclear waste plant.

Now with regard to the recycling issue, I think it has become increasingly apparent even to France and Japan that the current recycling technology used today, which isolates plutonium, has proliferation issues, serious proliferation issues. So what I intend to do is to start a vigorous research and development program to look for ways to close the fuel cycle, to actually recycle, but in a way that

is proliferation resistant, so I think it is premature to start today because we simply don't have those processes today but in the long term I think that is the goal.

Mr. UPTON. Well, as we begin to embark on this legislation would the Administration support that a nuclear title that there is no greenhouse—a nuclear title to this bill which it does not currently have now to encourage the development and forward movement of additional new reactors?

Mr. CHU. I think the Administration has supported this. We are trying to, as I said, restart the American nuclear industry again. It should be——

Mr. UPTON. So it ought to be yes.

Mr. CHU. Yes. The answer is yes.

Mr. UPTON. We look forward to working with you. OK, good. Administrator Jackson, last year, I believe it was last year, in testimony before our committee, your predecessors indicated that the Lieberman-Warner bill, had it passed the Senate, would really not changed the—as long as other countries were not participating, India and China, the largest emitters, they didn't participate, that the global temperature would change by a miniscule amount of less than 1 degree. Do you concur with that same thought now what we have a change in the Administration?

Ms. JACKSON. I certainly concur with the concept, which is that global warming——

Mr. UPTON. It doesn't happen without India and China?

Ms. JACKSON. The international leadership, international action is needed to solve the entirety of the problem, yes.

Mr. WAXMAN. The gentleman's time has expired. The chair wishes to recognize the Chairman Emeritus of this committee, Mr. Dingell, under whose leadership as chairman, we passed the last revisions to the Clean Air Act with a vote of 42–1. I am hopeful we can get to 42–1 or that kind of a margin this time around but I have my suspicions given some of the opening statements that we may not be able to succeed as you had in the last go round on the most important environmental legislation that we had passed. Mr. Dingell is recognized for 5 minutes.

Mr. DINGELL. Mr. Chairman, thank you for your courtesy. Thank you for those kind comments. I intend to try to work with you to see to it we get a good bill out of here. And I want to commend you for the legislation that you have brought forward. Welcome to our panel, and particularly our old friend, Ray LaHood. Welcome back, Ray.

Mr. LAHOOD. Thank you.

Mr. DINGELL. These questions for Secretary Chu. How many applications for the Section 136 advanced technology vehicles manufacturing incentive programs has the department received?

Mr. CHU. Actually the exact number I can't really say.

Mr. DINGELL. Would you submit that for the record, please?

Mr. CHU. Yes.

Mr. DINGELL. The current authorization for Section 136 is 25 million. What is the total amount that has been requested?

Mr. CHU. Well in excess of that amount.

Mr. DINGELL. Would you give us the exact figure? And, Mr. Chairman, I ask unanimous consent that I be permitted to write

a letter to the departments asking to expand upon the questions that I am making now and that both that letter and the response be included in the record of the committee.

Mr. WAXMAN. Without objection, that will be the order.

Mr. DINGELL. Mr. Secretary, this goes to both you and my old friend, Secretary LaHood. This country has had a wonderful experience. The new Chevy Volt was driven out of the factory on electric power, and that wonderful vehicle was driven out on batteries that were made in Korea. Now we have had a policy in this country that has gone into effect and gone in and out like Murphy's glass eye. Each new administration comes in with a new package to stimulate new technology in the auto industry. And so we have a constant replacement of these programs and they never work because they never get a chance to. What do you think we ought to do in this legislation to see to it that we finally get Chevy Volts driving out of the factory on American made batteries and to stimulate the technology of the American industry so that it will in fact produce cars of the kind that we want them to produce and to do so in competition, not just with foreign manufacturers but with foreign governments which are subsidizing their manufacture?

Mr. LAHOOD. Mr. Chairman, I wanted to express my thanks for the warm welcome that you have given me here today and to say to you that——

Mr. DINGELL. You will get a warmer welcome if you give me an answer.

Mr. LAHOOD. I am going to let—Secretary Chu knows a lot more about this, but I want to say this. I do believe that there are some technology and research going on with respect to batteries that can be used by the American automobile manufacturers.

Mr. DINGELL. Very little support from our federal government, very little.

Mr. LAHOOD. I suspect given your interest in this there may be a little bit more from Congress in the future.

Mr. DINGELL. And I want to get something like that in this legislation. I need your guidance and that of Secretary Chu to define what that will be.

Mr. LAHOOD. You will have our guidance.

Mr. DINGELL. All right. I will submit a letter on this but I want you alerted to the fact something has got to be done on this. Now to Administrator Jackson. EPA is moving forward with an endangerment finding for greenhouse gases. When the Congress wrote the Clean Air Act, which our chairman so kindly referred to, our assessment at that time was that CO_2 was not a pollutant. In any event, you are now in this wonderful situation where you are going to have to regulate under the Clean Air Act unless this committee does something. Our chairman very happily has recognized this need and in his bill and Mr. Markey's bill there is a provision which will get us down to the point where the federal government is going to regulate those under the new legislation. I commend them for that. But just how many regulations and regulators will there be if we regulate under the Clean Air Act? My off the cuff figuring tells me it would be something on the order of 106. Am I incorrect in that judgment?

Ms. JACKSON. I don't know how you came up with the number of 106 there but——

Mr. DINGELL. Would you give us an answer on that particular point, please?

Ms. JACKSON. Is the question whether there would be regulation under the Clean Air Act if this——

Mr. DINGELL. Well, you are going to have to regulate everything in sight for CO_2 production and I am asking you how many or I am asking you to deny that we would have the situation where we would have as many as 106 regulations, perhaps more, on CO_2 emissions because you would have to do it under the state implementation plans. You would have to do it under all kinds of other regulatory powers and the states and the federal government, and you would have, as I have defined it, a glorious mess. Do you deny that we would have a glorious mess if you had to do it under existing law?

Mr. WAXMAN. The gentleman's time has expired but we would like to have you answer the question.

Ms. JACKSON. Thank you.

Mr. DINGELL. I look forward to your answers, gentlemen and lady.

Ms. JACKSON. Thank you. First, let me state that I believe new legislation is the best way as the President has said, and I certainly agree, to address the problem of global warming and greenhouse gas emissions in our country. I believe that the endangerment finding, the proposal that is out, certainly addresses that which the Supreme Court compels us to do, which is to speak as the Clean Air Act says EPA must now as to whether greenhouse gases endanger public health and welfare, and that draft is out for comment. It certainly means that it is the first step in a potential regulation of greenhouse gases via the Clean Air Act.

And if your point, sir, is that it is more efficient to do it via a bill, via new legislation like this discussion draft envisions, then I couldn't agree more.

Mr. WAXMAN. Secretary Chu, do you want to add something to that?

Mr. LAHOOD. Yes. To answer Chairman Emeritus Dingell's question, the American Recovery Act is investing $2 billion in advanced manufacturing. Also, we are investing a significant amount of money in R&D to develop next generation of advanced batteries.

Mr. WAXMAN. Thank you. Mr. Stearns.

Mr. STEARNS. The first question I have is this is directed at the Secretary of Energy. During your confirmation hearing, you testified that DOE has a legal obligation to safely dispose of nuclear waste. You said I am supportive of the fact that the nuclear industry is and should have to be part of our energy mix in this century. Doesn't it concern you then that nuclear energy does not even seem to be a part of this bill, and I think this is a follow-up to Mr. Upton's question.

Mr. CHU. Well, not specifically a part of this bill. If you look at the sum package of all the bills like the America Recovery Act, nuclear energy is supported in those other bills.

Mr. STEARNS. But don't you think there should be a separate title in this bill for nuclear energy, just yes or no?

Mr. CHU. Pardon? What was the question?

Mr. STEARNS. Do you think there should be a separate title in this bill for nuclear energy, just yes or no?

Mr. CHU. We are looking forward to working with the committee on——

Mr. STEARNS. Just yes or no. Do you think it should be? Can I have your yes or no answer?

Mr. CHU. A separate title on nuclear energy?

Mr. STEARNS. Yes. Yes or no.

Mr. CHU. I think nuclear energy can be mentioned in this bill but again it is working with this committee and the Administration in developing that.

Mr. STEARNS. Is that a no then, you don't think nuclear energy——

Mr. CHU. No, that was we will look forward to working with the committee and making sure that nuclear energy is part of our energy mix.

Mr. STEARNS. Last September you made the statement that somehow we have to figure out how to boost the price of gasoline to the levels in Europe, which at the time exceeded $8 a gallon. As Secretary of Energy will you speak for or against any measures that would raise the price of gasoline?

Mr. CHU. As Secretary of Energy, I think especially now in today's economic climate it would be completely unwise to want to increase the price of gasoline and so we are looking forward to reducing the price of transportation in the American family, and this is done by encouraging fuel efficient cars. This is done by developing alternative forms of fuel like biofuels that can lead to a separate source, an independent source, of transportation fuel.

Mr. STEARNS. But you can't honestly believe that you want the American people to pay for gasoline at the prices, the level in Europe?

Mr. CHU. No, we don't.

Mr. STEARNS. But your statement somehow we have to figure out how to boost the price of gasoline to the levels in Europe, doesn't that sound a little bit silly in retrospect for you to say that?

Mr. CHU. Yes.

Mr. STEARNS. OK. You have also stated that the American electricity prices are anonymously low and that coal is our worst nightmare largely due to its contribution to global warming. As Secretary of Energy, will you support coal-fired electric generation in order to provide affordable electricity for the American people?

Mr. CHU. I believe the full statement when I made that statement is that coal as it is used today in China and India especially where there is no trapping of sulfur dioxide, nitrogen oxide, mercury particular matter, and no capture of carbon dioxide, and when China was building coal plants, close to one a week, without the sequestering of any of these pollutants, is a nightmare. So I think going forward, I have also said that the world is not going to turn its back on coal, and the United States again should take a leadership position, as we have done in scrubbing the sulfur dioxide, the nitrogen oxide, the lead particular matter, and working toward——

Mr. STEARNS. Does that mean you would support more coal burning operations generation?

Mr. CHU. I certainly will be looking forward to supporting coal burning operations as we work towards clean coal, absolutely.

Mr. STEARNS. Because President Obama in the campaign indicated if we can go to the moon, we certainly can burn coal cleanly, and he sort of indicated that he would support coal operation if the coal was burned cleanly. The EPA analysis contains a rather aggressive assumption about carbon capture and sequestration technology coming to market. Does the Department of Energy have any analysis that shows that CCS being available by let us say 2015?

Mr. CHU. Well, if you look at where we are today in terms of the capture technology and sequestration technology, we are beginning—not only the United States, but Europe and Asia are beginning to look aggressively at piloting and bringing to commercial scale these projects. So it takes several years to build them. It takes several more years to have the lessons learned so that power companies can invest with confidence that this is not only technically feasible but it is economically feasible. And so at a minimum, I see 6, 8 years, for example, as a time when very serious deployment begins, but we are working as fast as we can to begin the testing both at pilot scale and at commercial scale.

Mr. WAXMAN. The gentleman's time has expired. Mr. Rush.

Mr. RUSH. Thank you, Mr. Chairman, for this hearing, and I certainly want to add my kudos and commendations to my friend from Illinois, Secretary LaHood. It is good to see you again, Mr. Secretary, and welcome to all of our witnesses today. Mr. Chairman, I just want to make sure that the record is real clear here that it is my contention and others contention that this bill is silent on nuclear simply because of the fact that nuclear energy doesn't generate any carbon emissions so the bill is silent on this, and I think that the future of the nuclear energy field is going to be quite good and quite positive and the nuclear energy field is subject under this bill. I want you to know that my state has enormous investments in nuclear facilities and we look forward to this bill and to the new era because we look forward to being able to generate jobs and additional revenues from nuclear energy.

So, Mr. Chairman, the comments of those on the other side kind of remind me of the phrase this dog just don't hunt no more because they are operating under kinds of premises here. So for the record, I want to clear that up. I do have a number of questions, and I am going to try to ask each and every one of you, if you will, to try to take a shot at these questions. I am going to ask them all together, if I might, because if time permits I got another area of questioning that I would like to engage on. Currently, the phrase green jobs and green job training and certification means different things for different jurisdictions, and each state or locality may define training and certification differently. In your opinion, should the federal government set standards for training and certification and should that be done through legislative language or through the EPA's administration of the program?

The next question, how do we ensure that local communities with large percentages of population without college or advanced degrees be recruited and trained in green job technologies in order to be a part of the job creation and economic boom that this new energy sector is create? And, lastly, how do we ensure that minority

and women-owned businesses are able to gain equal access to federal funding in order to take advantage of the entrepreneurship and innovative business opportunities that this new energy section will enable? Should the rules of the road be written through legislative action or through the administration and implementation within the agencies how do we track this funding and ensure that the people we are trying to reach are indeed recipients of this fund? Each one of you can take a crack at it.

Mr. LAHOOD. Mr. Chairman, let me just see if I can answer the question on green jobs because an economic recovery plan the Department of Labor is receiving a lot of money to really implement the kind of opportunities for training for green jobs and if Secretary Solis were here, she could really get into depth on this, but at our cabinet meeting that we had just this week with the President, she talked about the opportunities that are going to be created through her department with the money that comes from the Economic Recovery Plan for training for people in the whole area of green jobs.

Mr. CHU. Let me also add that Secretary Solis and I had visited a community college recently where this community college was providing the proper training for these new green jobs. I think you raise a very important part. There are certainly many examples across the country where proper training programs have been developed. Right now because of the urgency of what we are trying to do in terms of getting the economic recovery money out there and in practice, we first want to just make sure that best practices are shared in states.

Mr. RUSH. Administrator Jackson, would you speak specifically to the issue of certification and training?

Ms. JACKSON. Certainly, Mr. Rush. Let me first say that environmental justice in the future is going to also mean that this green economy is green for all as others have said to coin a phrase as others have coined. So I think that what you are asking is whether or not there needs to be assurances that all are actually able and ready to partake as we create and embark on putting America right in the bulls eye of the green energy economy, and certainly it should be. Again, I would defer to my colleague, Secretary Solis, as to how to do that. I am an environmental specialist myself.

Mr. WAXMAN. Thank you very much. The gentleman's time has expired. We would like to at this time recognize Mr. Whitfield.

Mr. WHITFIELD. Mr. Chairman, thank you very much, and I certainly want to thank the witnesses for being here today, and it is great to have Secretary LaHood here with us who many of us had an opportunity to be in Congress with in 1994. But I think it is imperative that as we discuss this issue of energy policy that we not go into this with rose-colored glasses, and that we just get it all out on the table and then the Congress will make its decision and the American people will be very much aware of the pluses and the minuses about all of this. Now the economists a couple weeks ago or last week had an article entitled Saving the Planet and Creating Jobs May Be Incompatible, and in that article they specifically referred to President Obama when he was in Europe. He gave a speech, and he said think of what is happening in countries like Spain where they are making real investments in renewable en-

ergy. They are surging ahead of us poised to take the lead in these new industries.

This isn't because they are smarter than us or work harder than us but because they are making investments with government funds in renewable energy, and these investments are paying off with good high wage jobs. And then we hear a lot about green jobs and we want green jobs. We need green jobs, particularly at this time in our nation's history with our economic problems. And we have heard a lot of models being used about the jobs that are going to be created, and we hear models used about how cap and trade and renewable can improve the health care of the American people and can reduce dramatic weather changes and so forth.

And we know that with all models there are all sorts of problems with models depending on the information that is going in. But I wanted to ask you all, you, Mr. Chu, particularly, and Ms. Jackson if you had read Gabriel Alvarez's study. He is at King Juan Carlos University in Madrid. And he used empirical data based on the government subsidizing renewable energy in Spain, and he came up with the conclusion exactly how much every job cost, and I know that President Obama in this renewable energy package is using Spain as one of the models. But for every job created in the renewable energy sector, so-called green job, they lost 2.2 jobs. And this is a 50-page empirical study that he conducted. And have either one of you seen his study?

Ms. JACKSON. No, sir, I am not familiar with the study.

Mr. WHITFIELD. Were you aware of the study? Had you even heard about in?

Ms. JACKSON. Generally, I know that there are many studies out. That particular study, I have not reviewed.

Mr. WHITFIELD. Well, you have heard time and time again that people are concerned about loss of jobs. I mean the issue on cap and trade, of course, is that, yes, China, they are not using scrubbers. They are not using carbon capture and sequestration. They are bringing on one new coal power plant every 2 weeks. How do we deal with that, Mr. Secretary, if we unilaterally move to take steps and China and India and other countries are not, how do we deal with that?

Mr. CHU. Well, this is an issue where I believe the United States should take a leadership role. The President has emphatically stated that, and I actually believe that other developing countries like China, Mexico has already stated that they want as a goal to reduce their carbon even though they are a developing country that they would like to reduce their carbon emission by 50 percent by 2050, and I think if China—if the United States does take the lead China will follow.

Mr. WHITFIELD. Well, I hope that as you work with the committee that you all will keep these jobs as a priority because if we are losing 2.2 jobs in existing industries as they did in Spain and they only picked up one job in green, the economy, then that is a losing proposition. And I would also just point out a study that Johns Hopkins did, for example, that said if you replace three-fourths, for example, of U.S. coal based energy with higher priced energy because we are doing to increase the price of energy with cap and trade and other things it would lead to 150,000 premature

deaths annually in the U.S. alone. Now that was a study at Johns Hopkins. Have you all seen that study because we hear a lot of benefits, you know, from moving in the direction we are moving but this shows the negative aspect of it. Have you seen that study?

Ms. JACKSON. No, Mr. Whitfield, but I would be happy to review it.

Mr. WHITFIELD. OK. Well, my time is expired. Thank you.

Mr. WAXMAN. The gentleman's time has expired. The chair would request of the gentleman that he submit that study because I think the committee would like to look at it carefully. Ms. DeGette.

Ms. DEGETTE. Thank you, Mr. Chairman. I would like to follow up, first of all, on some questions that were being asked that Mr. Rush was asking about the effect of this legislation on low income individuals. And I am wondering, Administrator Jackson, if you could tell us in EPA's analysis how the discussion draft might affect the economy and individual households, in particular low income households.

Ms. JACKSON. Certainly. The overall message from EPA's modeling, and again it was based on assumptions from the drafters that I can discuss in a second was that the impact is quite modest on the economy in general and that the impact on the average household annualized over a year, an annualized impact for a year is around $98 to $140.

Ms. DEGETTE. And why is that? Why is that impact relatively modest because to many outside observers they think that this is going to present a huge cost burden to American families.

Ms. JACKSON. Well, one of the opportunities and one of the things that I know this committee has before it to discuss is what happens with the money generated from the allowances, The value in the cap and trade system is in this currency called allowances. And one of the assumptions we made in the modeling was that about 40 percent of that money would go back to the American people to households in the form of rebates.

Ms. DEGETTE. So even though the discussion draft is silent as to where the allowances would go if the committee made the determination to put at least 40 percent back to American families then that would help reduce the impact on individual households, correct?

Ms. JACKSON. Certainly that is the driver.

Ms. DEGETTE. Another question that I have, and this is really for Secretary Chu but also either of the other witnesses could answer. I am wondering what your thoughts are about how realistic the discussion draft's reduction targets are both near term and long term.

Mr. CHU. I think they are aggressive but I think we can meet them. If you look back in history of how we have actually met certain things, the Clean Air Act, clean water, how we dealt with the ozone layer, invariably what happens especially that aggressive but obtainable target of 2050 that you reduce carbon by 83 percent, I think it is science and technology that is going to lead the way to give us those solutions. In the near term, efficiency will give us most of the gains immediately and it will also save us money.

Ms. DEGETTE. Let me ask you this question. Much has been made by some of my colleagues on the other side of the aisle of the

fact that India and China in particular but also other developing countries don't seem to have much of a interest in controlling global climate change right now. Is that a reason for us to not move ahead with our aggressive goals in the U.S., Mr. Secretary?

Mr. CHU. The view of China has changed dramatically in the last several years. I had the opportunity about a year and a half ago to speak with Premier Wen Jiabao for about an hour on this issue. They are taking it very seriously because they see the impacts of climate change in their own country, and so they are very——

Ms. DEGETTE. Well, let me stop you. What about India?

Mr. CHU. India is less far along in this realization.

Ms. DEGETTE. So to answer my question then in particular with India but to a lesser degree with China and maybe other developing countries, is there lack of prioritization of this issue reason for us not to move forward?

Mr. CHU. No. We have to move forward. Right now the United States and China represent 50 percent of the carbon emissions of the world, and as we go forward we have to take those leadership positions.

Ms. DEGETTE. Now if, say, we don't get China participating fully although we hope we will, if we don't get India and the other developing countries participating, what is that going to do towards the bill's reduction targets. In other words, are the draft legislation's targets tied to reductions in these third world countries or can we maintain some reductions in and of ourselves?

Mr. CHU. No. I think what the bill is saying is that we will go forward and we will start to reduce, aggressively start to reduce the carbon emissions in the United States. But in a cap and trade scheme, it also provides for offsets. Some of those offsets, much of those offsets, will be in the United States to the parts of our country, but some of that could also be used to help bring in developing countries.

Ms. DEGETTE. Thank you. Thank you, Mr. Chairman.

Mr. WAXMAN. Thank you, Ms. DeGette. Representative Bono Mack.

Ms. BONO MACK. Thank you, Mr. Chairman. And I thank our distinguished panel of experts for their time today, and I just want to start by saying my congressional district is probably one of the most beautiful congressional districts with all due respect to all of my colleagues, and I am extremely proud of the work we have done on renewables. We have invested, we believe, if you start at one end of my congressional district you will see windmills that we are very famous for. You can go to the other end and see a lot of geothermal capacity and certainly a lot of hope in between for solar projects. But, conversely, my congressional district is also one of the top 5 hardest hit in the housing crisis. So this legislation is keenly important to me and to my district. As a Californian, I believe in innovation and I believe there is a lot in this bill that can go a long way towards energy independence. I believe there is a lot in this bill that will promote the technologies that we all believe in.

But again I have very, very big concerns about the cost and what this will do to my constituents. California's rates are on average about 65 percent higher than the rest of the nation for electricity,

and this truly can be a matter of life and death for my constituents. In the summertime we see the deaths occur for people who are afraid to turn on their air conditioning. Years past, we saw a flawed deregulation bill in California that created vast, unattended consequences where we saw rolling blackouts, and we saw what flawed policy, whether it be out of Sacramento or Washington eventually, can do to harm people.

So my concerns in this bill I believe has been well known and my colleague, Mr. Upton, has asked each of you answer the questions in writing about what will this do for the cost of energy on our consumers, and I look forward to seeing those answers from all of the panelists. I would like to know from Administrator Jackson the EU, California's AB–32, the Western Climate Initiative, and Northeast RGGI system all handle transportation fields outside of the cap and trade program and in the case of California in particular works with fuels through a low carbon fuel standard. We have portions of both approaches in this draft legislation. Is it your opinion that putting fuels under the cap and trade is the right approach or can we separate fuels out with a low carbon standard?

Ms. JACKSON. My opinion is that it is extraordinarily important that we deal with transportation fuels and that we do it in a way where we see meaningful reductions in the carbon foot print of those fuels like a renewable fuel standard, like the low carbon fuel standard which are in this bill. I do believe that there are alternate approaches, and I think the committee will have the opportunity to discuss that and find the most effective way of dealing with it. And I think anything EPA can do to assist you in those discussions we are happy to.

Ms. BONO MACK. Well, you can start by answering a question, should it or should it not be under an economy wide cap and trade system?

Ms. JACKSON. Well, I think that it can be addressed either way and I don't think there is a right or a wrong. I think that it should be evaluated and discussed in terms of what gets the best result.

Ms. BONO MACK. Secretary LaHood, I am a firm believer that the new clean diesel needs to be a little bit more thoroughly discussed in Washington that there is great promise in clean diesel but I might be entirely misguided. I would love to know your thoughts on clean diesel, and if there is a role whether it be under low carbon fuel standard or just increased CAFE where clean diesel might fit in.

Mr. LAHOOD. First of all, I will agree with you that you have one of the most beautiful districts in the country, and some of the most beautiful golf courses too, by the way. But I am not prepared to talk about the diesel standard. I don't know whether Secretary Chu or Administrator Jackson can do that but I would be happy to get back to you after I look into it. That is not something that I have expertise in. I don't know if either one of these two folks want to say something about it not.

Mr. CHU. Yes. I think the Department of Energy is certainly funding programs that develop clean diesels. As you know, there has been a change in the technology in diesels and moderate size diesel engines can now satisfy the very stringent California EPA rules on particular matter on NO_X that we didn't think was pos-

sible 5 or 10 years ago. I should also say that I am very proud of the fact that the Department of Energy funded a program that works with Sandia Labs with Cummings that makes large diesel engines to actually use high performance computing to design a cleaner diesel and it actually reduced the design time by 15 percent. The engine was designed in software and built and said it satisfies our design goal and they went into production. So clean diesel is something that we will be investing in.

Mr. WAXMAN. The gentlelady's time has expired.

Ms. BONO MACK. Thank you.

Mr. WAXMAN. Representative Green.

Mr. GREEN. Thank you, Mr. Chairman. Like our colleagues, I would like to welcome our new secretaries, and particularly our former colleague, Ray LaHood. Ms. Jackson, the EPA produced a preliminary analysis of the economic impact of the discussion draft that was publicized yesterday and the analysis did not measure the overlapping impacts of a carbon cap, the renewable electricity standard, the efficiency standards, the new plant regulations, and low carbon gasoline program. From what I understand, it was a preliminary draft and when can we expect the analysis measure that includes all parts of the bill taken together?

Ms. JACKSON. Well, I think that we will be happy to provide additional modeling analysis once the bill is ready, once you have an actual bill. It was a discussion draft. It was incomplete. EPA was asked by the drafters to model a narrow portion of it, and as I mentioned we had to make quite a few assumptions to do that, but EPA stands ready to provide additional modeling analysis at the request of the committee.

Mr. GREEN. I appreciate it. In fact, since we are going to mark up in our subcommittee next week, I don't know if we can get those specifics to you because some of those decisions are being made now but I appreciate the update on the analysis. The discussion draft both regulates refining through a carbon cap and imposes a new gasoline standards for carbon essentially regulating these fuels twice. Last year, when the Senate considered a climate bill their estimates of gasoline price increases as high as 129 percent, and of course last year's price of gasoline was $4 so 129 percent was very substantial compared to what gasoline may be today.

My question for both EPA and DOE, would EPA and DOE perform an analysis of the case prices and supply that considers the impact of the implementation of the second stage of the renewable fuels program, the new low carbon program, and the carbon cap before we mark up the legislation. Is that possible that would look at both of those, the new low carbon program and the carbon cap before we get to a markup on the legislation?

Ms. JACKSON. Are you asking about the low carbon program in this bill, sir?

Mr. GREEN. In this bill, the low carbon program in this bill, along with the other requirements that we are going to have on refining capacity and ultimately the price of fuel. Does EPA and DOE have the capability to do that?

Ms. JACKSON. I know that EPA's capabilities are focused around the impact of the cap and trade on emissions and then allowance

prices, but I am certainly happy to work with the Department of Energy to make sure we get you whatever we can.

Mr. GREEN. Secretary Chu, is that possible?

Mr. CHU. Pardon? Is what possible?

Mr. GREEN. Since we had some estimates in the Senate last year on the climate change bill as high as 129 percent gasoline cost increases, does DOE perform an analysis of the gasoline price and supply that considers the impact of the implementation of the second stage renewable fuels program, the new low carbon program, and the carbon cap before we have an opportunity to mark up the legislation?

Mr. CHU. Yes. We will get the EIA and we will get you that information.

Mr. GREEN. Thank you. I guess this one is for Dr. Chu, Secretary Chu. In testimony you talk about the Administration believes the renewable electricity standard could help create a stable investment environment for America's innovators to do what they do best, create new jobs and entire industries. And I know coming from the State of Texas, we don't have a percentage. I know the bill calls for 25 percent renewable electricity standard. The House in 2007 passed a 15 percent renewable electricity standard that included electricity efficiencies. Why is the difference to have a national standard as compared to what a lot of states are doing? Some particularly in the south have hard kilowatt hours that they say this is what we are going to use from renewable electricity. And Texas is a good example because of growth in wind power. But why do we need a national standard to allow the states who are already doing it?

Mr. CHU. Well, surprisingly when I—or maybe not surprisingly, but when I meet with industry representatives many of the industries' representatives who are in these renewable energies want a national standard. It creates a uniform basis with that plus trading and the option for states to do this will create a market so that people who want to develop these new industries and further advance and deploy them will say that we have a market that we can make these hundreds of millions of dollars in investment across the country.

Mr. GREEN. My colleague, Congresswoman DeGette, from Colorado pointed out some of the concerns I think some of us may have about international agreements because I represent an area that is refining capacity and the refining that we do in Houston, Texas could easily be transferred to China or India or Libya or Saudi Arabia who would love to enhance their product. Instead of being crude oil suppliers, they would love to be refined product suppliers. Our concern is that the United States needs to be a leader, but we also need to recognize that some of the requirements we do similar to what our trade legislation has in the past that even if a country has very strong environmental laws they are typically not enforced.

Don't you think particularly dealing with climate change and carbon because if a ton of carbon goes up in Houston, Texas and a ton of carbon goes up in China, it is basically the same on the worldwide impact unlike some of our other pollutants. Do you feel like this legislation, at least the draft that we have now, is strong enough in dealing with not only the United States leading but also

bringing the developing world along in trying to make sure that we don't have that dislocation of some of our basic industries?

Mr. WAXMAN. The gentleman's time has expired, but we would like to ask the witnesses to answer.

Mr. CHU. Very briefly, I think this is the reason why this bill is advocating cap and trade, the cap and trade allowances begin in developing countries. I think the Administration wants to work very much with this committee on deciding how to dispose of the allocations. We already talked about the sensitivity, the most vulnerable parts of our society, and also there is a sensitivity with regard to the heavily energy intensive industries, so this is something the Administration will work with the committee in dealing with these issues.

Mr. WAXMAN. Thank you, Mr. Green. Mr. Walden.

Mr. WALDEN. Thank you very much, Mr. Chairman. And I want to thank our panelists for being here today. The first question I have given the complexity of this legislation, I just want to make sure each of you has actually read the draft bill in its entirety. Can you give me a yes or no, have you read it in its entirety?

Mr. LAHOOD. I haven't had time to read all 600 pages.

Mr. WALDEN. 648, but that is——

Mr. LAHOOD. I have not had time to read all 648 pages.

Mr. CHU. Neither have I.

Mr. WALDEN. Ms. Jackson.

Ms. JACKSON. Nor have I. My staff have certainly read through it.

Mr. WALDEN. OK. Well, then I want to draw your attention to a couple of issues. First of all, I come from a district that is very rural, 70,000 square miles, home to 11 national forests where we have all kinds of catastrophic fires and enormous overgrowth of wood fiber. Is there a scientific reason, Dr. Chu, for excluding woody biomass off federal land under the definition on page 8 of biomass, and why would the Administration support that exclusion?

Mr. CHU. Well, the Administration will be working with the draft of this bill.

Mr. WALDEN. Do you support this draft? Do you support the definition of biomass as found on page 8?

Mr. CHU. I would certainly look forward to working with you in terms of looking at how biomass is defined.

Mr. WALDEN. OK. Well, biomass is defined right now on page 8 as you couldn't take any of this off federal land. Federal land is completely excluded. I would love to know the scientific reason for doing that. Second, there are all these other definitions that private timber growers in my part of the world tell me would basically make it impossible for them to participate in woody biomass development. Whether that is a chip plant, whether that is a pellet plant, whether that is—all this stuff is being invested in right now. Our department of environmental quality in Oregon says basically there is virtually no emissions from heating sources that come that are heated with the wood pellets. This is a disc. They want to make these in my district using woody biomass off private and federal ground, put it in a mix with coal burning power plant reduce carbon emissions and improve efficiencies, and yet under this legisla-

tion you couldn't do that. It wouldn't count. Let me move on to hydro. Is hydro renewable or not?

Mr. CHU. Hydro power is renewable.

Mr. WALDEN. Can you give me the scientific reason for why hydro power prior to 2001 is not renewable in this legislation?

Mr. CHU. I think whether it is included in this legislation or not just like the definition of biomass is not a scientific question.

Mr. WALDEN. OK. I agree. So there is no scientific reason. It is a political reason.

Mr. CHU. I think the issue here with hydro power one wants to encourage new forms of renewable——

Mr. WALDEN. OK. Let me go to that. Page 11, new forms. It says the hydroelectric project installed on the dam is operated so that the water surface elevation at any given location and time that would have occurred in the absence of the hydroelectric project is maintained subject to license, et cetera, et cetera. Now my understanding, we have a lot of wind energy in my district. All this energy is with the hydro system being able to store water when the wind is blowing and be able to balance out the load. This is Bonneville Power. Apologies to my colleagues here. This is wind energy 1,000 megawatts that dropped to 0. This is the hydro system. Now is there any way that new hydro could be used to balance out wind energy if the pool level cannot be modified?

Mr. CHU. Actually, I think that the—especially in Oregon and with Bonneville Power Administration, this is something I heartily not only support but am encouraging them to look at pump storage as a method of storing wind energy.

Mr. WALDEN. Right. And I don't have any problem with that. I think it is great but you are going to store that behind some dam, right?

Mr. CHU. That is correct.

Mr. WALDEN. You are going to affect the level somewhere, aren't you, if you have hydro, if you had a hydro facility? Could we meet this definition that says at no time and in no location behind a facility that the water level could change because you added hydro? How would you read that?

Mr. CHU. Well, I must confess I am not familiar with this particular part of the——

Mr. WALDEN. Page 11. And with all due respect, I am going to move on because I only have 40 seconds. Back to Ms. Jackson. In your EPA evaluation of the cost of this legislation, you only included, if I heard you correctly, the cap and trade provisions, correct, in your analysis?

Ms. JACKSON. Correct. EPA was asked to model the impact of the cap and trade.

Mr. WALDEN. OK. So in your model since I have not had a chance to read through it, what percentage do you allocate to auction, what percent were allocated credits, and what cost per ton of carbon did you factor in your model?

Ms. JACKSON. The allowance price that came out of EPA's analysis in 2012 is $12 to $15 a ton, $17 to $22 a ton in 2020. And I forgot the other part of your question.

Mr. WALDEN. Percent of auction and percent of allocation.

Ms. JACKSON. The model did not, I believe, I can double check this for you, but I don't believe that question needed to be answered in order for the modeling to occur. I will double check.

Mr. WALDEN. Because that hasn't been answered in the draft text either.

Mr. WAXMAN. The gentleman's time has expired.

Mr. WALDEN. Thank you, Mr. Chairman. I thank the witnesses.

Mr. WAXMAN. Ms. Capps.

Ms. CAPPS. Thank you, Mr. Chairman. I want to just take a second to continue for my friend, Mr. Walden, from Oregon. I grew up in the shadows of Grand Coulee Dam and we do have a lot of hydro energy in this country, and I know this discussion is what we should be doing this as a draft bill. My thought would be that if we counted everything we already have it would less incentivize us to go forward, and this legislation, I would hope, from my reading of it is something that we want to push us forward, and then at some point we will have a debate about what counts from what we already have just for starters.

As the 39th Earth Day was celebrated on Sunday in my district, there was a lot of enthusiasm and anticipation that this year could mark a big turning point, that we are finally addressing in a very significant way some longstanding energy issues and the challenge now of global warming. A question quickly for each of the 3 of you. Secretary Chu, one of the important features of the discussion draft is that it is a very comprehensive approach to our energy problems and one title devoted to clean energy, deployment which will help us win the race against China and other countries to establish leadership in clean energy technology. Title 2 on energy efficiency, a huge title also, and Title 3 that sets up a system to reduce global warming pollution and hold energy companies accountable. And, finally, a title seeking to protect consumers as well as our industries as we transition to this new energy policy huge shift in the 21st century.

A lot of people have been arguing that this is taking on so very much, that this comprehensive approach is way too much, that we should parse these out. Can you give us a brief but compelling reason why it is important to address these in a comprehensive way?

Mr. CHU. I think it is because again going back to what the President has said. We have been doing this piecemeal for decades, and, quite frankly, because there are going to be trade offs here, there, and everywhere, so I commend this committee and the chairman on actually moving forward with a comprehensive bill. This is what the country needs.

Ms. CAPPS. Thank you very much. Administrator Jackson, the recent endangerment finding is showing that greenhouse gases indeed do threaten the public's health and welfare. And, you know, despite our very best efforts in this bill and other legislation as well, the climate is changing, has caused effects and will despite these efforts continue to do so, and that is why—I am a public health nurse by background, and I am committed along with you and others to ensuring that this legislation helps the American public and also helps developing countries adapt to the public health impact of climate change. I actually have some legislation to introduce separately on this topic. What are some significant

and targeted investments such as monitoring, planning, education, and so forth that would ensure that we promote and protect public health in a changing climate?

Ms. JACKSON. Well, one of the easiest investments that can be made is communities or governments investing in heating centers or places that protect people from extremes of climate. If we are looking at warming in areas, we have seen the impact, literally deaths, that happen in heat waves, and one of the ways that can easily be addressed is by making climate centers or comfort centers. You see that especially in urban areas. And on top of that, I think you mentioned education. First, public health professionals are on the front line of this so I thank you for your work, and educating people about how to deal with changes in the climate and how to, if they have health effects that are going to be exacerbated by that how to be aware and alert, not unlike we do with ozone alert days making them understand what is coming so that they take care of themselves is probably one of the first ways to keep you from having to take care of them first.

Ms. CAPPS. Thank you. Thank you so much, and there is more to come, I know. But, finally, Secretary LaHood, our former colleague, the average person in the United States now spends about 20 percent of their income per month on transportation largely on maintaining and driving personal vehicles. What are some specific ways this legislation will help invest in people's ability to take more affordable low carbon and transportation opportunities?

Mr. LAHOOD. We think that there are opportunities to develop a concept called livable communities where you provide opportunities for people to get out of their automobiles, they want to walk to work, ride their bike to work, take a light rail to work, take a bus to work, and the model for this really is Portland, Oregon. They have done a marvelous job in really creating an opportunity for people to get out of their car and have opportunities. And we are working with the Secretary of HUD in developing a program that I hope can be included in the authorization bill of transportation and also a program under HUD to really move forward with livable communities and create some models around the country and some pilots around the country to form different alternatives to people just using their automobiles.

Obviously, the announcement the President made on high speed rail, the work we are doing with transit districts under the Economic Stimulus Bill for more buses, cleaner buses, and the opportunities for light rail, we think this is our opportunity in transportation and HUD to work with this committee to create opportunities for people to use alternatives other than automobiles.

Ms. CAPPS. Thank you very much.

Mr. WAXMAN. Thank you, Ms. Capps. Your time has expired. Mr. Terry.

Mr. TERRY. Thank you, Mr. Chairman. Mr. LaHood, my first question is for you, and this is a parochial question more than anything that has to do with cap and trade. But in the stimulus bill to our metropolitan area transit company buses, all we get is buses. We don't get rail in our area. We are only a metropolitan area of 700,000 so we don't qualify. Our bus company is trading out their older diesel for just a newer brand diesel, not a cleaner energy, not

natural gas. Is that the intention of the stimulus dollars is just to let them trade out different one piece of diesel equipment for another piece of diesel bus?

Mr. LAHOOD. The transit portion of the Economic Recovery Plan is our ability to work with transit districts around the country that want to buy new vehicles, build facilities whether they be bus facilities or bus shelters or facilities where——

Mr. TERRY. So the energy efficiency aspect isn't a criteria?

Mr. LAHOOD. I visited a bus company in St. Cloud, Minnesota, and the orders for these buses are way, way up. If they are building——

Mr. TERRY. But I just want to know if energy efficiency or clean energy is part of the criteria. I thought this was a softball question. I didn't know it was difficult.

Mr. LAHOOD. Our people in the Federal Transit Administration are encouraging transit districts to buy fuel efficient buses for their transit districts.

Mr. TERRY. OK. I appreciate that. Dr. Chu, real quick, this isn't even a question, just my rhetoric, but you said in your opening statement that you know coal is going to continue to be an energy source but we hear statements about cap and trade being used as a tool to force out coal as a fuel and even President Obama said when he was campaigning that under my plan of cap and trade system the electricity rates would necessarily skyrocket so if somebody wants to build a coal plant they can. It is just that it will bankrupt them because they are going to be charged a huge sum for all of the greenhouse gas that is being emitted. So you can see when the President makes statements like that that there is some cynicism when we hear about, well, coal is still going to be a fuel.

Now, Administrator Jackson, does setting the rate at $11 or $12 per ton of CO_2 meet the Administration's goal of bankrupting coal fired plants? Does that meet their goal?

Ms. JACKSON. The Administration has no goal that is nefarious for coal. The President is on TV in ads. I see him talking about clean coal and how clean coal is crucial not only for the environment but to create jobs and make coal which is right now 50 percent——

Mr. TERRY. I am going to interrupt because I only have a minute, 45. Methane is a greenhouse gas that is in here, and it is reported that methane is going to be calculated at a time of 25 times the potency of CO_2. Can you point me to a scientific study that says methane is 25 times more potent than CO_2 as a greenhouse gas?

Ms. JACKSON. I would be happy to give you scientific backup for that statement.

Mr. TERRY. I would appreciate that. Last, in regard to methane, what industry do we have in the United States that has to worry about methane emissions?

Ms. JACKSON. Well, methane is natural gas, CH4, so the natural gas industry obviously if any leaks in many states addressing leakage from natural gas pipelines is one vey quick and important way. The other are landfills, landfills gases in our country. As food waste decays, as organic waste decays it makes methane. And previously that has been vented——

Mr. TERRY. What is the largest emitter of methane gas in the United States?

Ms. JACKSON. It may well be livestock.

Mr. TERRY. Welcome to Nebraska, the cattle state. OK. Is it then the EPA's plan to start regulating the methane from cattle emissions?

Ms. JACKSON. EPA has no plans to regulate cattle emissions.

Mr. TERRY. But there is nothing in this bill that exempts cattle?

Ms. JACKSON. This bill takes regulation of greenhouse gases for sources into this bill away from the Clean Air Act, and it is the Clean Air Act threat where people have spun these ridiculous notions of EPA taxing cows or regulating——

Mr. TERRY. Well, that has been stated by publicly elected officials from Congress so it is not spun stories. But the point is about if nothing is in this bill that exempts the cattle industry, won't cattle have to be regulated?

Ms. JACKSON. I do believe there is an exemption but I will check on that. Obviously, this discussion draft it meant to make sure those interests are protected.

Mr. WAXMAN. Just on that point for the gentleman's information only very large sources are covered by this and there is a specific exemption for what would be considered cattle. We now go to Ms. Harman.

Ms. HARMAN. Thank you, Mr. Chairman. I recall in the last century when Ray LaHood and I had offices next to each other in the back of the back of the Cannon Office Building. Mine at least was contiguous space. His was divided by some kind of a construction barrier. My guess is that his digs have improved. I would like to welcome this panel and say how impressed I am by your credentials and experience on this issue. You can play a big role in guiding us, helping us, and helping the Administration to fashion the right legislation, the right comprehensive legislation on climate change. I want to hold up my regular prop which is the U.S. CAP blue print for legislative action. U.S. CAP is testifying in the next panel, but I want to say how impressed I am that a diverse group of industry and environmental representatives has developed a consensus on basic principles, and then how impressed I am that this committee has used this as the basis for the bill.

I just want to ask you briefly to comment on whether you agree that U.S. CAP has played an important role here and whether you agree that these consensus principles which are not partisan are a very useful starting point. Let us start with Ray LaHood.

Mr. LAHOOD. I am going to defer to these other two folks but I know from discussing this with staff that they have played a very valuable role.

Ms. HARMAN. Thank you. Dr. Chu.

Mr. CHU. My understanding is that document says—I haven't read it in detail, but my understanding is that document says that 14 to 20 percent reduction in carbon emission by 2020 is economically possible to the United States, so that statement alone coming from industry is a very powerful statement.

Ms. HARMAN. Secretary Jackson.

Ms. JACKSON. I certainly agree with my colleagues.

Ms. HARMAN. Thank you. Now, Dr. Chu, welcome to a fellow Californian. Your experience in California is very valuable to those of us from California, but I think also to this effort since California, as everyone here knows, has been the leading state in terms of strict environmental regulation. There was a New Yorker article in December entitled Note to Detroit, Consider the Refrigerator. And this is a story by you, little profile, little picture of you here, and the experience of California which set out to regulate the efficiency of refrigerators. Of course, the industry objected but then, guess what, engineers rather than lobbyists figured out whether compliance was possible and now lo and behold the size of the average American refrigerator has increased by more than 10 percent while the price in inflation adjusted dollars has been cut in half.

Meanwhile, energy use has dropped by two-thirds. I tell this story, Dr. Chu, because you had a role in this. You talked about it. In this bill in the efficiency sections we have some new bipartisan standards on regulating the efficiency of outdoor lighting, and we also have a cash for clunkers provision which would encourage folks to trade in old clunker refrigerators and appliances, trade them in, get ride of them, not plug them in in the basement, in exchange for efficient appliances. And I just welcome your thoughts and thoughts by anyone else on the panel about these provisions and the experience that California has had regulating the efficiency of appliances.

Mr. CHU. Well, the refrigerator story is one of several stories but in fact the efficiency has gone up so that the present day refrigerators are using one-quarter of the energy they used in 1975. In fact, it was the anticipation of regulations, the regulations didn't start for several years, but as soon as the manufacturers realized that they couldn't go to either party that both parties in California strongly supported these regulations the efficiency immediately started improving. The reason the price went down inflation adjusted by a factor of 2 was because the better insulation and the smaller compressor of the refrigerator led to a reduction in the price.

Now I cannot emphasize how important this was. If you look at the energy saved today, we have roughly 150 million refrigerators, the energy we are saving today relative to the 1974 standards are actually more energy saved than all of the wind and solar energy we are now producing in the United States, just refrigerators alone. And so we can do similar dramatic improvements in building efficiencies, transportation. Building efficiencies can be even a bigger success story than refrigerators.

Ms. HARMAN. Any other comments?

Mr. CHU. Well, I can go on and on.

Ms. HARMAN. No. I was asking the others, Secretary Jackson.

Ms. JACKSON. Well, he is certainly the expert, but I think that story is repeated over and over again that often times the movement toward regulation and the call for national standards unlocks innovation. I am an engineer, you know unlocks engineers to move to where the market is going to be and unlocks the private sector investment to do it. We have seen it with cars. We have seen it with the phase out of gases that affect the ozone layer. Every time

we have a challenge once we make up our mind we are going to do it innovation kicks in and makes it a lot cheaper and quicker.

Ms. HARMAN. Thank you so much. My time has expired. I just add that we are now seeing it with indoor lighting which this committee regulated a couple years ago and California is moving on to clunker television sets. Thank you, Mr. Chairman.

Mr. WAXMAN. Thank you, Ms. Harman. Mr. Rogers.

Mr. ROGERS. Thank you, Mr. Chairman. You know, one of the things Ms. Harman and I are working together on an incentive program to get us there, and when you look at the places where we provided incentives the market kicks in faster, cheaper, better. And I get a little worried that this is a huge government mandated program that is very complicated. Who is involved in the trading? Who actually determines at the end of the day what the value of CO_2 or methane is? How do you quantify it? So a lot of the jobs we are talking about are going to be folks who aren't really producing anything but they are going to be living on the backs of those who are producing something because the government mandated a system that really hasn't been flushed out all that well.

And I would hope that we would stop and pause for a minute and try to find ways to incentivize people. I had a bill in 2006, an energy star system for servers, computer servers, because the largest growing energy use in the United States at that time were server parts. And lo and behold built on an incentive system, it has radically changed the way—now they advertise on those servers which are the most efficient servers, and it changed the way. If you talk to the people in the industry, they say it absolutely changed the way we buy, produce, sell servers. Fantastic. We didn't mandate anything. And it concerns me for a couple of reasons.

And I wanted to talk to the Secretary for a minute. I come from Michigan. Nobody is hurt more in this economy than we are, and to say that this Administration has done more for the car companies than anyone else is a bit shocking to us who live there. And I will give a couple examples. They went in and the guy who cut the work force from General Motors in half got concessions from the union, produced the Car of the Year last year, the CTS Cadillac, oh, by the way, produced the Car of the Year, the Malibu, both of which are built in my district, by the way, this year. The government came in and said you got to go, you are fired, oh, and take the board with you and you have 30 days for a viability plan. That is pretty hard to recover from when you are going through all of those tough times.

And, oh, by the way, they have more cars that get over 30 miles to the gallon than any other car company period in the world. The government didn't do that. They did that. The Chevy Volt, which Mr. Dingell so aptly talked about will revolutionize the way we think about commuting and how we power our cars. It is the first time it is an electric driven engine that is charged by gasoline versus the other way around, which really radically departs even from hybrid technology, very exciting. Billions and billions of dollars of research, decades, they were ahead of the curve. And what do we do? We come to this committee and kick them around. They finally the attention of the American people. Really?

In 2007 they mandated $80 billion in cost on these car companies. Gasoline went to $4.50 and they are struggling to make it and we are losing jobs as fast as we can count them. So be careful when you tell us that. The proposal for cap and tax will raise the energy rates for producing everything in the United States of America. Secretary Chu, you mentioned that, gee, if we raise the rates of gasoline it is going to hurt average Americans. Absolutely right. If we dramatically raise the rates of electricity, we will not be competitive when it comes to building anything in the United States. It is an attack on the middle class.

It is an absolute slap in the face to everybody that got up and built good cars or they built houses or they got in their car and drove somewhere to build something of use in the United States. And guess what India said this week? They are not going to play along. Go ahead, United States, make yourself uncompetitive because we have got lots of mouths to feed and we would love to be the new center of the middle class in the next several hundred years. I am just shocked that you would say that about a company who has done so much to survive and will lead the way in 2011 when that Chevy Volt rolls off the line. Also, in the new proposal there is an inventory tax increase. And if you produce anything in a just in time manufacturing system, you are going to be hurt by this inventory tax increase so manufacturers are going to take it on both ends of this.

That is very frustrating to those of us who represent lots of people who believe that the middle class is important. I had questions but the fact that you stand before us and tell us that you have done more for the automobile companies than any other administration, as you can tell put a burr under my saddle. We certainly don't think so, and we would hope that you would look at every job lost. You talk about green jobs created. You forgot to tell us how many manufacturing jobs go overseas, and we know there is a bunch of them. So, Mr. Chairman, I would argue we better go slow and we better worry about the middle class in this country that is quickly evaporating because of all of the weight and burden we are putting on their ability to produce anything in the United States.

Mr. MARKEY [presiding]. The gentleman's time has expired but, Secretary LaHood, if you would like to make a comment, we would allow you to do so. Thank you. The chair recognizes the gentleman from Washington State, Mr. Inslee.

Mr. INSLEE. Thank you. I am from Washington. I just want to tell you I got some constituents who are so happy you 3 are here today. They have been waiting for you to get to Washington, D.C. The obvious one is Dennis Hayes, one of the two co-founders of Earth Day, but the non-obvious ones are the people at the Sapphire Energy Company, which are developing algae based biofuels which have 0 net CO_2 emissions, the people at Infinia in Washington that have developed a sterling engine based solar power system, the people at AltaRock in North Seattle which are developing one of the world's leading engineer geothermal systems, the people at McKinstry that is the world leading energy efficiency contractor really probably in the world, the Better Place people that are developing an electrical infrastructure for electric cars, the Ramgen company in Bellevue Washington, which has developed a way to se-

quester CO_2 so we maybe can use coal cleanly and create hundreds of jobs in this country. These people are thrilled that you are here to promote these job creation exercises.

Now we have heard on many occasions people have said that President Obama said that this was going to be bad for the economy some time. I have heard him say repeatedly that in fact this bill is going to grow jobs and ultimately be good for the economy. I think this bill has been quite well balanced because it speaks to multiple technologies and multiple ways to create jobs. It hasn't just picked favorites. Is that a fair assessment of this? I will just ask Dr. Chu that.

Mr. CHU. Yes, it is a fair assessment. I would also want to emphasize that it is looking towards the future. To use a sports analogy, when Wayne Gretzky was asked how come he was such a mortal hockey player he said because I skated to where the puck will be, and I think this bill actually brings that—it positions America to go to the future and for the jobs of the future.

Mr. INSLEE. I want to ask you about the low carbon fuel standard. I think an important portion of this bill that will promote the development of low carbon emitting fuels. We have tried to address this so that it is consistent with the other parts of the bill or other regulatory systems. For instance, it does not kick in effectively until the renewable fuel standard essentially expires so we have tried to tailor it in a careful fashion. It also really drives on the European experience that a cap and trade bill while very important is not the only game in town, and I think their experience is you have to take multiple approaches to this big challenge, not just a cap and trade system. I just wonder if you have any comments, either Dr. Chu or Secretary Jackson, in that regard.

Ms. JACKSON. I absolutely agree that the design of the discussion draft is such that it phases the low carbon fuel standard in after the renewable fuel standards that are authorized also by a law of Congress are done. And I could not agree more that experience has shown that a cap and trade program while an extremely powerful tool to harness the kind of private capital that you just referenced in your opening remarks and certainly that is the key. The key is to make those who are investing in green energy future able to do it in a way that they know with certainty that this country is turning its gaze towards that. It makes the private sector full partners in the game, and I think it is part of why U.S. CAP—it is not just the big companies of U.S. CAP who have done extraordinary thinking on this in partnership with NGOs, but also the smaller folks.

Mr. INSLEE. Thank you. I will take that as an answer. I do want to ask one more question. The longer I look at this, it becomes apparent that our ability to really maximize these clean resources of solar and wind and hydrokinetic and the like depends on the development of a grid system fit for this century which we do not have today. I think one of the great quotes I have heard is that the bad news is that Thomas Edison would recognize our grid system. This is not really a salutary remark. One of the things I hope we can work on in the development of this bill is a way to increase the ability to cite increased transmission systems so that we can access the solar in the southwest and the wind in the Midwest and the off shore wind and the hydrokinetic to move it where we need it,

but we have some proposals to try to have back stop authority for the federal government to assist the siting of transmission in the event that we can't do it through sort of the typical channels. Would you encourage us in that regard? Any comments you have, I would appreciate it. Dr. Chu, perhaps you want to——

Mr. CHU. I would encourage you to try to develop this. I think you are quite right. As we go forward and develop renewable energy that we have to concurrently develop a new transmission system that can handle that. The fact that wind and solar are variable means that you have to have a much more robust system that is able to port energy very rapidly from different parts of the country, so increased siting authority is one element. It can't be the only element because after all just with increased siting authority alone, I think there has to be other elements that would help encourage the states and local areas to allow that, but is a very important part of our way into the future.

Mr. INSLEE. We hope you will continue to encourage us all. Thanks very much.

Mr. WAXMAN. Thank you, Mr. Inslee. Ms. Blackburn.

Ms. BLACKBURN. Thank you, Mr. Chairman. Thank you all for your patience this morning. Ms. Jackson, I wanted to talk with you a little bit about your pronouncement of regulating CO_2 under the Clean Air Act and that you could do that or the agency could do that with or without Congress and our consent, and I would like to know what your time table is. How do you see the agency moving forward on that regulation?

Ms. JACKSON. I would certainly like to just clarify that. It is not with or without Congress' consent. It is actually the Clean Air Act, the law passed by Congress and signed by the President, that compels us to and the Supreme Court's interpretation of the Clean Air Act that compelled EPA to make a finding, and it is a proposed finding. As far as time table, that time table starts with the proposal and a 60-day public comment. If it is finalized, and presuming it is finalized regulatory action would proceed after that. The history of the Clean Air Act, which is a good guide, is that proposed regulations under that Act take months to propose and, you know, after that the process——

Ms. BLACKBURN. OK. Let me ask you this then. With whatever emission standard that you use in that as you go through that period, will sectors of the economy such as Mr. Terry was talking about farming, and we all have great concerns about farming. Right now, building construction, we have tremendous concerns about that. Are they going to be forced to meet that standard? What do you see coming out at us through that?

Ms. JACKSON. If there is regulation under the Clean Air Act in the future, if that happens, EPA would move as it does on other regulations to look at the largest sources first, and in our economy the largest sources of greenhouse gases are mobile sources, automobiles, and trucks, and then the large stationary sources, especially the power generation sector, so I think we could expect that if there were regulations that would be where EPA's first regulatory actions would be. And, again, I don't believe we would ever get to the small sources. I think those discussions are really being

made to scare people with a very unlikely future instead of focusing on the big issue which is cars and power generation.

Ms. BLACKBURN. So you see it affecting cars. Would you apply that also to this bill in addition to your actions under the Clean Air or your proposed actions under the Clean Air Act, would you look at the bill and say the same thing that you would focus more on the large items such as transportation rather than farming and home construction?

Ms. JACKSON. As the drafter pointed out, as the Chairman pointed out, actually the bill says that regulations would be for those large sources over——

Ms. BLACKBURN. OK. Let me come to Mr. LaHood then. And, Mr. Secretary, I would just like to ask you when you look at the low carbon fuel standard in the bill. What do you see that doing to prices at the pump if the focus is going to be on the large sectors like transportation fuels? What do you see that doing to the price at the pump?

Mr. LAHOOD. Well, I wouldn't have any idea. I don't know if Dr. Chu would or not. I simply don't know the answer to that.

Ms. BLACKBURN. OK. Dr. Chu, any comment?

Mr. CHU. It will increase the price at the pump but the other issue is that also in this bill what we are focusing on is trying to hold transportation costs the same and so this is also we are encouraging higher mileage vehicles, things of that nature. And depending on how this committee working with the Administration works the allocations the impact on the American people for the total cost of living we hope to be as moderate as possible.

Ms. BLACKBURN. So, in other words, you all see this as increasing the cost to the American consumer, the price at the pump and the price of electric power generation?

Mr. CHU. We see this as shifting costs so that what happens as we return the allocations back to the American public and to the energy sectors that would be most adversely affected that the overall cost of living, if you will, which is the essential thing, plus the fact that we are aggressively moving towards higher efficiency, higher efficiency cars, higher efficiency homes that those costs actually could be held constant.

Ms. BLACKBURN. OK. Mr. Chu, let me ask you this about the renewable energy, the 20,000 megawatts of renewable energy that would need to come on line every year in order to meet the 2025 deadline at the 25 percent renewable energy standard. Do you think that that is a realistic goal?

Mr. CHU. Yes, it is.

Ms. BLACKBURN. And then how did you come to that conclusion?

Mr. CHU. Well, actually in the following way. I actually asked the EIA for an analysis several weeks ago, and that we did is we took a base line of where we saw the base line going. Then we added to it the stimulus, the Economic Recover Act, which actually accelerates the deployment of renewable energy. Also, in the provision of the bill there are small power producers, for example, a university that has a cogent plant in a small town, you take those off. You don't want this university to have a renewable portfolio. You take that off the mix from the 25 percent. It decreases the target by about 3 percent. Depending on whether efficiency is going to be

worked into this bill to take another 5 percent off, you are now talking about a difference of doing nothing and the 25 percent target as something on the scale of 5 or 6 percent additional beyond what the country—what the EIA projects the country is doing, so it is actually quite a reasonable bill in my opinion.

Mr. WAXMAN. The gentlelady's time has expired. Mr. Matheson.

Mr. MATHESON. Thank you, Mr. Chairman. I welcome the panel here. And, Secretary Chu, maybe following up on the discussion with Mr. Inslee, I know when I had a chance to see you a few weeks ago, we had a brief discussion about the electric transmission issue about the need for finding ways to encourage greater investment and greater beefing up of that infrastructure. You had mentioned you had been having discussions, I think, with EIA and others about this. This draft probably needs to be beefed up on its transmission section. Do you have thoughts about how we should be looking at that issue and things we should incorporate in this draft bill in terms of encouraging investment in our transmission grid?

Mr. CHU. Well, I am looking forward to actually working with the committee on this. Let me also say that not only the Department of Energy but Department of Interior, Agriculture, CEQ, have been meeting regularly. We have now regularly scheduled meetings in trying to formulate what we should be doing in terms of transmission and distribution. And so it is very much on our mind because as I said before this is a very necessary part of moving the country forward. We have somewhat old-fashioned energy and distribution system. It is divided into vertically organized utility companies, RTOs, ISOs, and in the past what happened is that these various sectors look out and they try to make the best judgments they can within their realm of responsibility.

And what that has led to is we don't have something that serves the nation in the best possible way, that we have incredible renewable energy resources, but they are distributed geographically across the country so I think anything that can help the siting, anything that can help get the states and the local communities to say, yes, this is a necessary part of the development of the United States would be very appreciative.

Mr. MATHESON. I think there is broad consensus that we need to look at transmission policy in this Congress, and I am pleased to hear you are meeting with these other agencies. I think any input that you could offer us for legislative action to help move that forward, I think would be appreciate by all of us. The next question I want to ask you, Secretary Chu, if I could, one of the struggles, I think, that I am having right now with putting this whole bill together is that we have had hearings on specific issues for 2½ years, and now we are trying to look how it all looks as one package. And the concept of cap and trade is that there is going to be a market base set of incentives to meet the cap, and that is the driver to let the market place figure out the most efficient ways to go about doing this.

And yet there are a number of other sections of the bill where Congress goes in and specifically says, OK, on this technology we want to encourage it in this way and for that technology, that issue, we want to encourage it that way. And it is hard to find the

right mix for how much Congress should get into those individuals or not. For example, carbon capture and sequestration, I think it is appropriate that we got to encourage that with the carbon capture sequestration of this bill. Have you thought about the context of this bill where we have a renewable portfolio standard, we have the energy efficiency standard, we have a lot of different components of the bill that are trying to achieve lower carbon emissions, but it is under this broad category of cap and trade.

And should we—do you have concern about is Congress overly prescribing what we should do as opposed to the cap and trade mechanism that allows the market place to make those decisions?

Mr. CHU. I think I will agree with you. Overall the cap and trade allows—it actually incentivizes the United States industry to look for lower carbon solutions. However, it is not going to start until 2012. It is going to have to ramp up. We need to give industry and consumers time to adjust. And so I view, for example, the renewable electricity standard as a different tool that is also necessary because a renewable electricity standard then creates a market place, a guaranteed market place, for things like wind, solar, new geothermal, the river hydro, things of that nature. And that guarantees the market place so if I were an investor and said do I want to invest tens to hundreds of millions of dollars, will I have a market for that?

Mr. MATHESON. Do you think no carbon emission coal production should be included in that mix then in terms of encouraging investors?

Mr. CHU. I think the overall goal should be to encourage all forms of no or very low carbon emissions, but I would be glad to be working with the committee on these issues. But just say that the renewable electricity standard is a different mechanism that is somewhat orthogonal to cap and trade. It is to create a market, to create a draw that will guarantee the investors that they can actually have a customer.

Mr. MATHESON. Thank you, Mr. Chairman.

Mr. WAXMAN. What was that word, octagonal?

Mr. CHU. Pardon?

Mr. WAXMAN. You said a word that I didn't understand.

Mr. CHU. Oh, orthogonal. That means—sorry. It means the carbon cap and trade is a way of overall globally putting the real cost of energy into the market place and letting the market then seek solutions. It is overall what we need but in addition to that it is something that more quickly stimulates investment in new technologies I think is also needed so in that case it is not exactly the same thing in a different way. It satisfies a different need.

Mr. WAXMAN. Thank you. Mr. Scalise.

Mr. SCALISE. Thank you, Mr. Chairman. Administrator Jackson, in your opening statement you talked about the jobs that would be created, green jobs that would be created, under a cap and trade bill. Can you quantify how many jobs you estimate would be created under this legislation?

Ms. JACKSON. I believe what I said, sir, is that this is a jobs bill and that the discussion jobs bill in its entirety is aimed to jump start our moving to the green economy.

Mr. SCALISE. And I think you quoted President Obama saying that it was his opinion that this bill would create millions of jobs. I think you used the term millions. Is there anything that you can base your determination on how many jobs would be created?

Ms. JACKSON. EPA has not done a model or any kind of modeling on jobs creation numbers.

Mr. SCALISE. Because you did do the analysis, and there are definitely a number of questions I have with the assumptions that are made in your analysis. I wasn't sure since you used the term a jobs bill in your opening statement, I just wanted to know if you had anything to quantify or back that up.

Ms. JACKSON. Well, I back it up on somewhat common sense which is that if we are trying to move to a clean energy economy, and we heard Secretary Chu talk about the fact that the innovations that we come up with in this country are being used by other countries and manufacturing is moving there. The rhetorical question is what is the plan to keep them here and how do we convince the private sector that we mean it, that we are going to be using the technologies.

Mr. SCALISE. And this isn't something that you said, some people in the Administration have claimed that there is no alternative plan. That is not an accurate statement because clearly there is an alternative plan that was presented last year on comprehensive energy. There is one that is being worked on this year on an alternative plan to cap and trade that would create jobs, pursue alternative sources of energy, but also make sure we don't lose the jobs we have. And I think that has been a big concern raised by many groups predicting the number of jobs and with the term millions thrown around many industry groups have used the term that millions of jobs would be lost, exported out of the U.S. economy into countries like India and China. Do you have any estimates on how many jobs will be lost by cap and trade?

Ms. JACKSON. All I know—I am not a jobs expert. All I know is that jobs have been lost and our economy is hurting, and this is a plan to address that by moving a manufacturing sector here that the world will need and that our country will need.

Mr. SCALISE. While you might not be a jobs expert, you obviously are talking about and touting this bill as a jobs bill. If you would claim that it would create jobs, are you making an assumption that it won't lose any jobs, that no jobs will be lost or if you don't make that claim, how many jobs would you expect to be lost? Groups have made very large claims. I mean the National Association of Manufacturers claims our country would lose 3 to 4 million jobs as a result of a cap and trade energy tax, so I just wanted to know if you or any other members of the panel want to answer that question.

Ms. JACKSON. I will go first and then I will turn it over to the other panelists, but I know that lobbyists claim large doomsday scenarios, quiet deaths for businesses across the country. That is what lobbyists said about the Clean Air Act in 1990, and it didn't happen. In fact, the U.S. economy grew 64 percent while this country cut acid rain by more than——

Mr. SCALISE. So you don't think that there will be job losses. You are saying those doomsday scenarios by those groups——

Ms. JACKSON. I believe one of the tasks in moving forward as this committee discusses is to figure out the cap and trade process and the other aspects of the bill can be used to jump start and move us forward——

Mr. SCALISE. A lot of those details that aren't in the language and that has been one of the expressions that has been by many members of this committee is that a lot of those details still are not written in this bill, the allowances. A big portion of the bill how this trading program would even work isn't in the bill. Since it is silent on allowances, does the Administration have a position on allowances and how many allowances should be given for free to industry groups, to consumers? Do you all have a position on how allowances should be given away because that is an unanswered question in this bill? Do you have a position? Does your department have a position?

Ms. JACKSON. The President has said that he believes that there should be a 100 percent auction of allowances.

Mr. SCALISE. Should that be rebated to consumers because one of the concerns is how much and many predictions are out there backed up by a lot of evidence on how much money taxpayers, American families would pay. Peter Orszag, the President's own budget director, last year gave testimony that a 15 percent reduction in carbon emissions would lead to a $1,300 a year increase in utility bills for every American family on top of the fact that they would be paying higher for gas prices, which many of you have already acknowledged, as well as other energy-related items, so some members of the Administration have actually put some quantified numbers there. So on the rebate side, would you be willing to rebate any amount that a consumer would have to pay in higher utility rates back to them based on the allowances?

Ms. JACKSON. The President has also called for allowance value to be returned to those——

Mr. SCALISE. And I am running out of time so just yes or no.

Mr. WAXMAN. The gentleman's time has expired so we will give the witness a chance to answer the question.

Ms. JACKSON. Thank you. The Administration looks forward to working on those questions, and the President, though he has called for 100 percent auction, is interested in working with this committee on ways to mitigate impacts on the economy, and believes that the bones of that are in this discussion draft. And there is flesh to be put on those bones but that challenge could be addressed.

Mr. WAXMAN. Thank you, Mr. Scalise. Ms. Christensen.

Ms. CHRISTENSEN. Thank you, Mr. Chairman. Three questions, I think. Administrator Jackson, I even asked several times about the recently proposed finding that greenhouse gases endanger public health which list in particular 6 gases. As you know, the Congressional Black Caucus and the Health Brain Trust, which I chair, also have as priorities the same population groups that you identify as being most vulnerable. And I realize you are still in the comment period and you have been asked a couple questions about this, but are you satisfied that this bill could do what is necessary to address this finding, and, if not, is there anything that could or

would be added to this comprehensive bill which among other things reduces harmful emissions to address this?

For example, I think we list 5 greenhouse gases. We don't list the floral carbons, and I am a little rusty on my organic chemistry, but should we add that to the list?

Ms. JACKSON. I do believe we need to address floral carbons and I do believe that there are easy ways to do that. I know that one of the things being considered is a Montreal protocol like address. To answer your larger question, yes, I believe this bill does a much better job than what EPA could do now under the authorities it has. This is a better solution. There are other solutions. The Clean Air Act offers some direction but it is incomplete at best, and so I believe this bill is a much better way of addressing the endangerment finding, the proposal that we released last week.

Ms. CHRISTENSEN. Thank you. Secretary LaHood, your department lists in your testimony several very active programs that reduce greenhouse gases and advocate cleaner energy in many areas, and I particularly appreciate the livable communities effort because as we try to address health, we look at the larger picture and the social determinants, and I think that this gets to that. And don't forget, we talked about adding the Secretary of Health and Human Services with HUD, the HUD secretary in this effort. But do any of the projects that you have referenced specifically reach out to blighted, distressed communities, poor communities, minority communities that need this help the most?

Mr. LAHOOD. Absolutely, and that is the reason that we are working with the HUD secretary. And I might mention that I am working with my two colleagues that are here with me today on the whole livable-communities issues. But Secretary and Dunham and I have had numerous discussions about this, how we can really share the resources from both departments in looking at communities, not only in terms of housing and different types of housing, but the transportation needs that need to be met so people can go to work and go to their doctors appointments. And we are going to include rural areas in this, too, because the rural areas have as great a need as any part of our country, and there will be a real collaboration within the administration to make the whole livable community include housing, not only in the urban area, but in the rural areas, and incorporate some of the activities that are going on in these departments, too.

Ms. CHRISTENSEN. Dr. Chu, it seems as though the nuclear-energy questions have kind of let up for a while, but just so I am clear, and it follows up on Congressman's Rush's question, where the bill refers to low-carbon energy producers, doesn't that automatically include nuclear-energy producers.

Mr. LAHOOD. I would agree with you that nuclear energy is a low-end, near-zero-carbon energy source.

Ms. CHRISTENSEN. So when we talk about supporting and promoting low-energy carbon producers, we are, in essence, including nuclear energy.

Mr. LAHOOD. Yes, I mean, as I have pointed out before, there are other bills; whether it is incorporated in this bill is something that the administration will be working with this committee on. But cer-

tainly the restarting nuclear energy has been supported, has been included in other bills, including the Economic Recovery Act.

Ms. CHRISTENSEN. Right, and I think you have been very clear about the administration's position. Thank you.

Thank you, Mr. Chairman.

Mr. WAXMAN. Thank you very much. The chair now recognizes the gentleman from Illinois, Mr. Shimkus.

Mr. SHIMKUS. Thank you, Mr. Chairman. I do appreciate the panel here. It is good to see my friend Ray LaHood, who was a mentor and a friend, and I am really excited about your position. Dr. Chu, I look forward to meeting with you personally and having another chance in this committee to talk about the numerous things that are going on with the Department of Energy. I know your background. I have been following your experience, and I really do look forward to spending some time with you, and I hope we can get that arranged. Let me start out, those who have been following this debate for many, many years, there is no hiding where I am at. This is the largest assault on democracy and freedom in this country that I have ever experienced. I have lived through some tough times in Congress, impeachment, two wars, terrorist attacks. I fear this more than all of the above activities that have happened, and I will tell you why as I go through, but I have some questions.

Secretary LaHood, has China agreed to a low-carbon fuel standard? Yes or no?

Mr. LAHOOD. I don't know.

Mr. SHIMKUS. I think it is no. How about India? Have they agreed to some type of low-carbon fuel standard?

Mr. LAHOOD. I don't know.

Mr. SHIMKUS. I would think that would be important to this debate if we are going to be world competitive.

Dr. Chu, has China agreed to an international regime to cap carbon dioxide?

Mr. CHU. Not yet.

Mr. SHIMKUS. Not yet. How about India? Has India agreed to an international regime to cap carbon dioxide or other greenhouse gasses?

Mr. CHU. No, they have not.

Mr. SHIMKUS. Administrator Jackson, what is the largest emitter of methane gas?

Ms. JACKSON. I believe we determined earlier, sir, that it is probably livestock.

Mr. SHIMKUS. And I don't think that is correct. I think that the largest emitter of methane gas is wetlands. So if wetlands is the largest emitter of methane gas, you are not proposing that we drain wetlands, are you?

Ms. JACKSON. Sir, we are talking about anthropogenic causes of global warming. Wetlands are a natural feature. We are not going to regulate wetlands.

Mr. SHIMKUS. So the answer is, no, you are not proposing draining wetlands.

Ms. JACKSON. No, we are not proposing draining wetlands.

Mr. SHIMKUS. Thank you. Let me follow up on Congressman Green's line of questioning. The problem that we have on the anal-

ysis of what Administrator Jack Newjew proposed to us is not your fault. It is the fault of this draft which has a big gaping hole, and that is what are the costs of the credits? What are the allocations? And my fear or my belief is that this is an intentional move to deceive us so that we are not allowed to do the cost-benefit analysis. Now, we know the cost-benefit analysis of the Lieberman-Warner Bill because the allegations were addressed, and those numbers have that the cost of energy cost of natural gas is an increase from 26 to 36 percent by 2020, and 108 to 146 by 2030. Now, this is a bill that is less stringent than this proposal. The electricity cost in 2020 under the Lieberman-Warner Bill was 28 to 33 percent increase, and in 2030, 101 percent to 129 percent. Do you dispute that analysis of the Lieberman-Warner Bill, anyone?

Ms. JACKSON. I believe that analysis was done between EPA and DOE, and that is part of the analysis. The analysis of this discussion draft does not show skyrocketing.

Mr. SHIMKUS. Because we don't have all of the data. We don't have all of the credits. It is the height of hypocrisy for this administration and this leadership to bring a bill to a hearing when we don't have the data to ask the great questions about the cost. And here is why: we talk about the Clean Air Act Amendments and No Job Lost, but I will tell you, my committee, these folks, have seen these. This is Kincaid-Peabody Number 10, Kincaid, Illinois. The Clean Air Act of 1990, do you know how many miners lost their jobs? And I have the ONIDIR stats; 1,200 mine workers lost their jobs. In the State of Ohio, we have got colleagues in this committee. Do you know how many jobs were lost in Ohio under the Clean Air Act Amendments? Let me ask this to Administrator Jackson. Do you know how many coal-miner jobs were lost in Ohio because of the Clean Air Act Amendments which you were addressing earlier?

Ms. JACKSON. No, sir.

Mr. SHIMKUS. Thirty-five thousand, so those of us who want jobs are going to try to defeat this bill, and we are going to hold our colleagues on the other side accountable, especially if they are from areas that depend on the fossil-fuel economy.

And I yield.

Mr. WAXMAN. The gentleman's time has expired. We will now hear from Ms. Castor.

Ms. CASTOR. Thank you, Mr. Chairman, and thank you to our panel for your leadership and your testimony today. The American people are hungry for a new direction and a modern energy policy. I think the American people are so far beyond a lot of the partisan discussions in Washington. This really isn't a partisan debate. That's not what I hear back home.

First of all, I want to thank you for your efforts on the recovery plan, because it shouldn't be lost on us, for a historic foundation for a new direction for energy policy has already been laid under the recovery plan, and it is marrying job creation with our new energy future. The weatherization programs to save people money on their electric bill, greater energy efficiency, the transmission grid, these are vital investments for the future of this country. But we have got a whole lot more to do, and this discussion draft is a good starting point, but as you can tell, it is not going to be easy.

Dr. Chu, a couple of months ago, the State of Florida received a final report on Florida's renewable energy potential assessment, received by the Florida Governor's Office. The Lawrence Berkley National Lab was involved as well. It states that solar technology has the largest renewable energy potential in the State of Florida. I guess this is not any surprise for the Sunshine State, but right now, we produce maybe two percent of our energy in Florida from renewable, and the leading producer isn't even solar energy. It is biomass.

It has been interesting, because even just with the discussions at the federal level and the state level, our electric utilities have started to invest in solar technology. The FPL is making a significant investment in South Florida in solar technologies, so I think this lends credence to your marketplace ideas and how important it is going to be.

Will you go into greater detail on what we can do to make solar technologies more affordable? And is it going to be on the large scale? Are we doing enough in the discussion draft? Could you highlight certain concepts in the discussion draft? And what role do homeowners have to play, because there is a hunger out there to install solar panels if they were affordable and it made sense.

Mr. CHU. Well, I think the first thing is the wonderful thing about solar energy, and I would agree with you in that report, is it has an enormous potential in the long run, if you consider how much sunlight energy is hitting the earth. I did a quick calculation a couple of years ago which suggested that a few percent, less than five percent of the world's deserts, if you can harness solar energy, 20 percent of the energy hitting that, and distribute it and store it, that would satisfy the world's current electricity needs, just five percent of the world's deserts.

So the first thing I think one can do is there are lots of programs statewide, and also the federal government encouraging solar, but one of the things is that solar energy is generated at a time when you need the most amount of energy, during hot summer days, when the air conditioning is taxing the ability to generate electricity. So I would advocate to encourage all states to evolve into what we call real-time pricing. If you ask, on those hot summer days where people are running their air conditioning, what is the real cost of energy, well, it is quite high because the utility companies have to have installed backup generation systems for those one or two percent of the days, where in order to avoid a brownout, you have to have them running. But a lot of the time, most of the time, they are sitting idle, so that is invested capital sitting idle. So if you do real-time pricing so that on those hot summer days the real price of electricity for the electricity company, for the generators, is quite high. But alternatively, at nighttime, it is quite low. So that will encourage both businesses and homeowners to start to, if they can put off the use of energy at night, and use it during the day, that means we have to build less new power plants. The return on a particular investment will be much higher, which will drive the energy costs down for the businesses and for consumers. Real-time pricing will allow solar energy to give a big boost, because it is producing that energy when it is the most expensive.

So that is one thing. The other thing is, quite frankly, we should be taking a leadership in inventing new solar technologies. Our first loan the Department of Energy approved was to a company that is going to next-generation thin-film solar technology. The company estimates that thousands of new jobs will be created. The jobs are incredibly important, and we are also trying to develop the technologies so the United States resumes its leadership position in new solar technologies that can drive the cost down considerably. And that is the other important part of this.

Mr. WAXMAN. Thank you, Ms. Castor.

Now, the chair recognizes Mr. Radanovich.

Mr. RADANOVICH. Thank you, Mr. Chairman. I want to welcome the secretaries and administrator to the committee. Mr. LaHood, it is great to see you back in the Congress.

I represent the San Joaquin Valley in California. A lot of farming happens there, and there is a lot more my constituents are worrying about than global warming right now. We have got an imposition from the Endangered Species Act that has shut down the pumps in the delta, and a lot of my farmers are getting a zero allocation this year. It is costing 40,000 to 60,000 jobs, and it is going to result in about a $9 billion in the state's industry. And I honestly think that my state is suffering more from environmental alarmism than it is global warming, and added to that, this concept of cap and trade to me just seems to make the problem worse.

Secretary Chu, welcome. I noticed that you paid a visit to California recently. I think you were quoted in the LA Times saying that because of global warming, agriculture in California was going to be gone in about 30 years. And one other quote, and I just want to have a dialog on this, was a quote that somehow we have to figure out how to boost the price of gasoline to levels in Europe, which at the time was $8 a gallon. My concern for my constituents is that if you adopt something like a cap and trade system, the math doesn't work. You add a price of gas onto the fact that we have a manmade drought in California, taking the water away. If you increase the price of a gallon of gas or diesel from $5 back up to $6 a gallon, the way it was last year, you are going to see the state's largest industry, $90 billion, the main supplier of fruits and vegetables to the nation, farm out. And if you don't like the fact that 70 percent of your energy comes from foreign countries, how would you like to have 70 percent of your food supply leave the country, because that is what happening in my neck of the woods?

I, for the life of me, can't figure out how you think that you can do something like this without dramatically increasing the national debt and deficit by subsidizing a false economy and by raising the price to consumers on energy. I think when the public finds out the true cost of this thing, you are going to see a smack down that the World Wrestling Federation would be proud to see by the public towards this plan, which is unreasonable. I think research, developing efficiencies in energy, and smoothing this transition to another source of fuel, I think, is a great idea. But this cap and trade notion, once the public finds out what their price is in the home at the fuel pump, they are not going to buy this. This will stop. This will not go anywhere when you see the true cost of this thing come down.

In the energy portfolio of the United States, 70 percent of it consists of fossil fuels, 20 percent is nuclear, 10 percent is renewable, and of that renewable portion, 10 percent of it is hydroelectricity. That is about three percent. So you are proposing to take seven percent of our energy portfolio and make it how much, how long? And I guess my question to anybody who is going to answer this is what do you think is going to be the cost to the household, because I see numbers of $3,000 or over $3,000 of the cost of this plan to the household. And then, we have talked about the high price of gas, Secretary Chu, $8 or whatever. I mean it is an increase on the energy supply of the United States. How on earth do you think you can pull this off without breaking the back of the government and of the consumer?

Ms. JACKSON. I will go first, and then, I will turn it over to the secretary.

EPA's modeling shows not at all those cost ranges, sir. It shows $98 to $140 for the average household per year, not $3,000. That is a misstatement of an MIT study that actually shows something close to——

Mr. RADANOVICH. In your opinion.

Ms. JACKSON. Well, certainly it is my opinion.

Mr. RADANOVICH. I mean I am not sure I trust you for the facts as much as I would trust that study. How can I know? I mean how do I know your modeling is correct, and what are your assumptions? You mentioned 40 percent of the cap and trade revenues goes back to the household. How does that work? How does that happen?

Ms. JACKSON. The history of EPA's modeling shows that we are usually conservative, that we usually overestimate the cost, not underestimate.

Mr. RADANOVICH. How does that 40 percent get back to the consumer?

Mr. WAXMAN. The gentleman's time has expired. The witness will have a chance to answer briefly.

Mr. RADANOVICH. If you could answer, how does that 40 percent get back?

Ms. JACKSON. The 40 percent was modeled as a rebate back to American consumers, to American households.

Mr. RADANOVICH. A check in the mail?

Ms. JACKSON. It gets back to them. I don't know the model.

Mr. RADANOVICH. Could you let me know how that gets back to the consumer, please?

Ms. JACKSON. Well, sir, it is not my decision to make.

Mr. RADANOVICH. Well, then, maybe you better remodel so you can explain to people how that is going to get back in their pockets. Thank you, Mr. Chairman.

Mr. WAXMAN. Will the gentleman yield to——

Mr. RADANOVICH. Well, I don't have any time left, but I——

Mr. WAXMAN. The statement about California agriculture being gone, that wasn't because of the bill. That was because of global warming. Is that correct?

Mr. RADANOVICH. An interpretation of the results of global warming 40 years from now.

Mr. CHU. Actually, if that was the quote, it was inaccurate, because I know about this. I was citing some studies, two studies, in fact, of predictions of what will happen if we continue on a business-as-usual model, and they took two scenarios. An optimist scenario, you keep carbon below 500 parts per million, a target that we are all trying to work towards, and in that study, in the first part of the century, by 2050, the snowpack in California will be reduced, and the optimistic scenario, by 26 percent. We will have 74 percent of the snowpack that we have today. And in the more pessimistic scenario, business-as-usual scenario, it would be down to 60 percent. By the end of this century, the 21st Century, it is considerably less, as much as 93-percent decrease in the snowpack in California if we continue as business as usual. And so it was that concern for the agriculture of California that I was speaking of.

Mr. RADANOVICH. And I respect that. If I could respond, Mr. Chairman? Environmental alarmism in the form of the Endangered Species Act that is a runaway locomotive, and the cost of this cap and trade system will kill agriculture long before global warming does. Thank you, Mr. Chairman.

Mr. LAHOOD. Mr. Chairman, I have a letter here from John M. Riley, correcting the statement that they made, and it is a leader to the Republican leader, which has a much lower cost per family, and if it is possible to have this put in the record, if not, I will distribute it to the committee, but it is a corrective letter, which states, correctly, the right information.

Mr. WAXMAN. Without objection——

Mr. SHIMKUS. I would object, Mr. Chairman.

Mr. WAXMAN. The gentleman would object.

Mr. SHIMKUS. Just so if my former colleague can do that, I would like the article from the Weekly Standard that debunks those numbers also included into the record.

Mr. WAXMAN. Without objection, we will take both documents and put them in the record.

[The information was unavailable at the time of printing.]

Mr. WAXMAN. Ms. Sutton?

Ms. SUTTON. Thank you, Mr. Chairman. And thank you for your testimony. It has been very, very insightful.

I think that at the beginning you all laid out the challenge that we face. We talked about the potential for jobs under this bill and your desire to jumpstart us towards that new green economy. And Secretary Chu, you also agreed that there is great potential, but you really put your finger on the point when you said that the question is how do we transition from here to there? And that is extraordinarily important to the people that I represent to the people in Ohio, and I think it is extraordinarily important to people far beyond Ohio. This is something that is going to require all of us to be a part of and all of us to benefit from, so not just in the long term, but in the near term. And so I think it is that near-term challenge that is the one that is so difficult for us to get past.

Now, some comments were made by one of my colleagues a little while ago, and I think that the statement was those of us who want jobs are going to try to defeat this bill. I am not somebody who is going to try to defeat this bill. I certainly want jobs. I want them in the future, and I want them now for my folks. They need

them both now and then. I do want to find ways—and I believe it can be done-to collaborate, to get to those jobs of the future, without sacrificing the livelihood of the people in the process, because that gap in the middle is where we can lose so much. So that is where I come from with respect to these complicated issues and challenges we face, but it has to be done. We have to go where we know we need to go and we all agree we should go, but we can't lose people in the process.

So the first question I have, Secretary Chu, is regarding coal. Of course, about 86 percent of electricity consumed in Ohio, and more than half of the country's electricity is produced by coal-fired power plants. Even with aggressive gross scenarios, and your testimony reflects this, the renewable energy, combined with energy efficiency measures, coal will still me a major U.S. energy source, at least in the near term, and probably well into our future.

Clean coal technology is critical to address climate change here and abroad, yet there are no commercial scale carbon capture and storage projects worldwide. Secretary Chu, you have stated that we must develop an inexpensive way to capture and store carbon emissions from coal-fired plants, and that the U.S. has to take a lead. The Recovery Act, obviously, provided significant funding for CCS demonstration projects, but how does the administration plan to accelerate the development of these technologies, including those that offer very high levels of CO_2 capture?

Mr. CHU. Well, what we are doing is the following: we have had a certain amount of Economic Recovery Act money, $3.4 billion, in total, devoted towards trying to accelerate the progress on capture and sequestration of carbon from coal. We are moving forward as fast as we can. We have decided to fund a number of projects. We are looking forward to exploring all of the avenues we think have a reasonably good change of leading to the beginning of deployment in the next eight year, or optimistically, even less. So right now, what technology we should use is not there. Gasification is a promising technology. We would like, very much, to bring that to a commercial demonstration scale to see if it is economically viable. But there are other things. We also have to capture carbon at the stack. There are existing coal plants that have just been put up. A modern coal plant is a couple of billion dollars, and you are not going to turn this investment off, and as I said before, China is rapidly expanding their coal facilities, so we have to develop technologies that can capture the carbon at the stack, so we are looking a myriad of ways. I should also say that there are very active discussions. There are roughly ten projects being considered in Europe and several in Asia to really collaborate so that our dollars go as much as possible. So this is something very important to the United States. We have the largest coal reserves in the world.

Mr. WAXMAN. Thank you, Ms. Sutton.

Ms. SUTTON. Thank you.

Mr. WAXMAN. Mr. Burgess.

Mr. BURGESS. Thank you, Mr. Chairman.

Like representative Bono, I have one of the most beautiful districts, at least in North Texas. We have solar. We have research and development at Entech. We have got academic research at the University of Texas at Arlington that is on my Fort Worth campus.

Wind energy, we manufacture the big windmill blades at what was formerly an oil-field-services warehouse up in Gainesville, Texas. We don't have geothermal. We have got a lot of landfill and landfill methane, but when you think of the State of Texas, we have and have had a fairly robust renewable portfolio standard. We are the leader in wind energy. This is, of course, the result of the current governor and the previous governor, Rick Perry and George W. Bush, who made a commitment to wind energy, but Texas produces a lot of energy. So in order to meet a percentage in the renewable portfolio standard by 2020, even though we are the nation's leader, by far, in the production of wind energy, if we are not able to count the energy that we produce with landfill methane, if we are not able to count, pound for pound, the amount of carbon dioxide that we save with energy efficiency, then we will have a very, very difficult time meeting energy-efficiency standards. Can you address that? Are there ways that we may write the regulations such that we could get credit for what we are doing with energy efficiency?

Administrator Jackson, you said it was up to 40 percent of the energy that we consume now could be saved, but we are going to be restricted on how much of that we can count towards our renewable portfolio standard. Is that correct?

Mr. CHU. Well, I will speak first. I am not sure about the details of the bill. I mean this is a good point of discussion, whether you can consider if you begin to capture the methane from landfills and sewage treatment plants, this is methane, otherwise, that would have escaped in the atmosphere.

Mr. BURGESS. Let me interrupt you because I only have a limited amount of time, and we have made the point for the chairman, and I think he heard you.

Dr. Chu, you said in response to a question, United States is losing jobs, losing being the leader in technology development. Administrator Jackson, you said in your testimony that we are going to be producing clean-energy jobs, jobs that cannot be shipped overseas. Yet Dr. Chu is concerned because many of the photovoltaics, many of the wind turbines are manufactured overseas, and if we make an enormous investment in photovoltaic and wind turbines, are those jobs not already shipped overseas?

Mr. CHU. Actually, no, there are agreements——

Mr. BURGESS. But Secretary, with all due respect, you answered a question saying we have lost the leadership position in this country because that manufacturing has gone overseas, so we are no longer the leader.

Mr. CHU. Well, I said that the technology leadership has gone overseas. The wind turbines were developed overseas, the modern wind turbines. But right now, today, the president is in Iowa.

Mr. BURGESS. The second wind-producing state.

Mr. CHU. Yes.

Mr. BURGESS. Well under Texas, for the record.

Mr. CHU. But my point is that it is an old Maytag plant where jobs were lost, but it is now manufacturing the towers for wind turbines.

Mr. BURGESS. But still the point is that those jobs can go overseas. There is nothing in the legislation that I have seen before us that would prevent those jobs. When we make a statement was

made in the testimony submitted to us, "jobs that cannot be shipped overseas," how are you going to ensure that those jobs are not going to be shipped overseas? Are we going to have trade barriers or tariffs? What are going to be the mechanisms that we will use?

Ms. JACKSON. Sir, most people refer to energy-efficiency jobs. Those cannot be shipped overseas because energy-efficiency work must be done at home.

Mr. BURGESS. Photovoltaics and wind turbines?

Ms. JACKSON. Now, renewable sources can certainly go overseas and some have gone. We are in a race to get them back and to keep them here.

Mr. BURGESS. Let me interrupt because I am going to run out of time, but Dr. Chu, this last question will be for you. We heard Dr. Radanovich talk about the major economic convulsion that perhaps could result from the legislation that we are considering before this committee. We heard Ranking Member Barton talk about how did the oil get so far up north where it is so cold to begin with. Mr. Dingell is gone. Mr. Rogers is gone, but the great Michigan glacier from 15,000, 20,000 years ago actually melted because of global warming. I will stipulate that warming is happening. But we have not heard from anyone who has come and testified in this committee as to the smoking gun, if you will, that demonstrates that mankind is responsible for the global warming that is occurring as an aberration outside of naturally occurring solar cycles. So major economic convulsion, yet we lack the fundamental piece of evidence that would tell us that this is what we must do because we are, after all, causing the problem to occur.

You are a scientist, Dr. Chu. Can you, perhaps, give some comfort to Mr. Radanovich's constituents and my constituents that we indeed have that missing link that mankind is responsible for what is occurring. Perhaps the carbon dioxide is going up because the solar cycles have changed and the planet is warming. There is another plausible explanation.

Mr. WAXMAN. Mr. Burgess, your time has expired.

Mr. BURGESS. So I will yield to Dr. Chu for an answer.

Mr. WAXMAN. Dr. Chu, you can give an answer, and then, we have to move on.

Mr. CHU. In brief, I think there is very strong, compelling evidence that the lion's share of what we are seeing, the warming that we are seeing, is due to human activity. I would be glad to meet with you and to go over the details of what that——

Mr. BURGESS. I wish you would. Your NOAA scientists could not provide us that information, so I would very much like to hear it from an expert such as yourself.

Mr. WAXMAN. Mr. Gonzalez. Let me announce as I recognize Mr. Gonzalez, Administrator Jackson and others on the panel were promised they would be able to leave at 1:00, and I regret that all of the members won't have a chance to ask questions. He will be the last one to ask questions, and then, we will proceed with the next panel, for those who did not get a chance to ask questions of this panel ask the first questions for the second panel. Mr. Gonzalez.

Mr. GONZALEZ. Thank you very much, Mr. Chairman. My question will be directed to Secretary LaHood. It is great to see you, and we do miss you.

First of all, the general observation is that we all believe that as a result of this piece of legislation that the cost of energy will increase, and the consumption behavior is going to be modified, and that is a good thing, actually, and as I have said before, these are not insurmountable obstacles in passing a piece of legislation that is reality based. My concern is going to be more on fossil fuels and the need and the use of them during this transition or conversion period as we adopt new technologies, as more efficient vehicles are made available, alternative-fuel vehicles, battery operated, and such, because I think that is going to take time.

Taking into consideration some of the following: we assume that we have a fixed number of vehicles now on the road, and we have to figure out how many of those are going to be retired, where are going with sales of vehicles and so on. Historically, 15 to 16 million vehicles were sold in the United States. For 2008, that was reduced to about 12 or 13 million. In 2009, it is projected it will be 8 or 9 million. Historically, I guess I will call it the shelf-life of the vehicle, before you turn that over, is about 11 years. And I don't know when you put all of these figures together where we are going to end up. I am trying to get an idea from Secretary LaHood of how long he thinks this transitional period will occur as we gain greater efficiencies and such.

We also know that out of all of the millions of cars in the United States, which I have been told 200 million, and I will need to check that, there may be only 116,000 that are powered by natural gas, and that the market share of hybrids comprises no more than 2.2 percent of our entire vehicle population in the United States. Taking into account how long it will take the technology, how long it will take the manufacturers to make the vehicles available and such, can we determine the need for the traditional fossil fuels, what I call the transitional or conversion fuels, as we leave one stage where we presently find ourselves to that which we are trying to attain when it comes to greenhouse gas emissions. Secretary LaHood.

Mr. LAHOOD. Well, we complied with the president's executive order to have a rule that will require the car manufacturers to have a much higher CAFE standard by 2011. And now that that work is done, we are working with EPA and others to try and figure out the path forward beyond 2011 to develop with car manufacturers and other the idea that we can get o a higher gasoline standard. So the direct answer to your question on fuel efficiency, the car manufacturers have to meet a much higher standard on CAFE standard by 2011 on the cars they manufacture. On the battery powered, they are way ahead of the curve on this. GM is going to be rolling out an automobile that is run on batteries. The hybrid vehicles are taking off. The flex-fuel vehicles are taking off. But we know that within the next couple of years, the American automobile manufacturers will have automobiles that will be powered by batteries, and we know that the fuel efficiency standards will be set much higher by 2011, and then, even higher than that be-

yond that. So those are sort of the benchmarks that we are working with, with the American and other automobile industries.

Mr. GONZALEZ. And it does trouble me, because I want to support this final piece of legislation, that we are not dealing with realistic expectation of what the manufacturers will be able to provide out there for a willing and able buyer. We are not factoring in the economic hard times for the next few years, because I think they are going to be there, and people retaining their cars for longer periods of time. Manufacturers not being able to even meet the needs of vehicles that are totally more efficiently, but if they are, they are probably going to be hybrid, meaning that they still have an internal combustion engine that is going to be run with traditional fossil fuels. That doesn't mean we are throwing in the towel and giving up on this endeavor. All I am saying is let us be realistic about the need for a domestic production and refining capacity in the United States.

Mr. Secretary, in looking at energy independence when it comes to fuels, do we need to increase or decrease domestic production and refining capacity of fossil fuels in the United States in the foreseeable future?

Mr. LAHOOD. Well, I can't be specific in answering that question, but it is something that everyone is investigating, looking into, debating. But I don't have a specific answer for that at this point.

Mr. GONZALEZ. Thank you very much. I yield back, Mr. Chairman. Thank you.

Mr. WAXMAN. Thank you very much, Mr. Gonzalez.

I want to thank our three witnesses. You have been very, very helpful to us and patient in answering the questions, and we thank you so much for you input, and we will look forward to working with you on this legislation. Thank you.

[Recess.]

Mr. MARKEY [presiding]. The hearing will reconvene. We thank all of you for your patience, and we would ask our next group of witnesses to please come up and to take their seats in front of their names on the witness table.

Thank you all very much for being here. Our next witness is Mr. Chad Holliday. Mr. Holliday was the CEO of DuPont until his retirement on January 1 of this year, and now serves as the chairman of its board. He is also the past chairman of the Business Roundtables Task Force on Environment Technology and Economy for the World Business Counsel for Sustainable Development. He coauthored the book Walking the Talk, the Business Case for Sustainable Development. Mr. Holliday, we welcome you. Please begin when you feel comfortable.

STATEMENTS OF CHARLES HOLLIDAY, JR., CHAIRMAN, DUPONT; RED CAVANEY, SENIOR VICE PRESIDENT FOR GOVERNMENT AND PUBLIC AFFAIRS, CONOCOPHILLIPS; JIM ROGERS, CHAIRMAN, PRESIDENT AND CEO, DUKE ENERGY CORP.; FRANCES BEINECKE, PRESIDENT, NATURAL RESOURCES DEFENSE COUNCIL; MEG MCDONALD, DIRECTOR, GLOBAL ISSUES, ALCOA INC.; AND DAVID CRANE, PRESIDENT AND CEO, NRG ENERGY, INC.

STATEMENT OF CHARLES HOLLIDAY, JR.

Mr. HOLLIDAY. Thank you very much. It is an honor to be here today. We appreciate you taking time for our presentation. I do come here in two roles. I come as the chairman of DuPont and also a member of the U.S. Climate Action Partnership, a group of companies and NGOs who have come together to forge a consensus view regarding the U.S. action on climate-change issues.

Mr. MARKEY. Mr. Holliday, could you move the microphone in just a little bit closer.

Mr. HOLLIDAY. We have put together this blueprint, which I think you are familiar with, which was the result of two years of work of discussing, greatly, the different options, and I believe that has been useful, and we are very glad to see that you have taken this into account in the bill that is before us today. We look forward to working with you and your colleagues to further improve the bill as you advance through this legislative process.

DuPont's approach to greenhouse gas production is for and by our experience the chlorofluorocarbons, or CFCs in the 1980s, when atmospheric research on the role of CFCs became actively involved in what is called the Montreal Protocol. This international agreement allowed us to phase out the use of ozone-depleting substances, while providing adequate time and market signals to develop affective alternatives. These reductions also had great greenhouse gas benefits.

The reduction for the Montreal Protocol were six times greater than the full reductions from the Kyoto Protocol, if it was fully enacted. So what we have seen from this experience is great benefits can come from this kind of activity. I am very proud of my company's work in that, and I am also very proud of our country's work in making that a success.

As DuPont has become more aware of the potential business and environmental implications of climate change, we have looked for ways to contribute solutions. Since 1990 to 2004, we have reduced our own greenhouse gas emissions by 72 percent, while every project returned a positive return to our shareholders. We did it by using what we call an internal cap and trade mechanism that mirrored what a cap and trade would do in the external environment, inside, allowing the recourses to flow to the very best project. We think that is critical as we do something across the entire economy.

Yet I want to be clear: voluntary efforts are not enough by themselves. We need a program that will focus the work and resources on the best opportunities while we drive the lowest cost, and that will take legislation across our entire economy.

I firmly believe this is an opportunity for American industry to reinvent itself. There has never been a bigger opportunity that is

more perfectly sized to what American company and American universities can come together to make happen. So we are fundamentally behind this approach, and we believe it will have a very positive long-term impact to our overall economy.

U.S. CAP is this diverse coalition I have described earlier, and we have worked very hard to resolve very difficult issues with our different perspectives from NGOs and companies from different industries, and we think it has been very helpful. We have made substantial progress, but we would be the first to say we have not answered all of the questions, and we are very glad to see that you have included much of this in the work that you have before us today.

We are pleased to see this taking great forward steps, and we look forward to working with you as we go forward to hopefully come out with something that has the same power as the Montreal Protocol did once before. Creating an effective climate-change program will not be easy, but it is necessary, and the discussion is moving in the right direction. We appreciate all of the steps that you are doing to make this a success, and we believe these steps must be very aggressive and must recognize and encourage early actions for it to be very successful. Many companies have taken early actions, and undoubtedly, there will be a start date to whatever legislation you end up with. The last thing we want is all action to stop until that start happens, so including early action is very critical. We must also encourage innovation, research development, demonstration and deployment programs throughout the entire spectrum of our economy to make it a success. We believe that will be the best way to ensure that consumers are no unduly burdened by this bill. And we must use policy tools and offsets to keep the costs of the program manageable while achieving our long-term goals.

In closing, I will refer to an old saying I think you must know very well. We must lead, follow, or get out of the way. Gentlemen, this is a time our country should lead. Thank you very much.

[The prepared statement of Mr. Holliday follows:]

Statement of Chad Holliday

Chairman

E.I. DuPont de Nemours and Company, Inc

before the House Energy and Commerce Committee

April 22, 2009

Thank you, Chairman Waxman and Representative Barton for convening a hearing today on this important topic. I am pleased to be here representing DuPont. I am also here as a member of the U.S. Climate Action Partnership, a group of companies and NGOs who have come together to forge a consensus view regarding US action on the challenging issue of climate change. I would also like to applaud the draft bill we have before us today. It provides a sound basis for moving the US forward on this important issue and it reflects thought, deliberation and real leadership on the part of its authors. We look forward to working with you and your colleagues to further improve the bill as you move through the legislative process.

At DuPont our goal is sustainable growth, which we define as the creation of shareholder and societal value while reducing our environmental footprint along the value chains in which we operate. Our sustainable approach to climate change is informed, in part, by our experience with chlorofluorocarbons in the 1980s. When atmospheric research on ozone depletion led to the realization of the role of CFCs, we actively engaged in the development of the Montreal Protocol and an international agreement to phase out the use of CFCs. Our experience with the Montreal Protocol showed us the vital role for policy in creating a predictable pathway for change. With the Protocol in place we knew where we were headed and we put our science to work to get serious about phasing out CFCs and developing better replacement materials.

That experience helps inform our efforts today. DuPont and the other members of USCAP believe that the science on climate is sufficient to compel prudent action. Over the last twenty years DuPont has become more aware of the potential business and environmental implications of climate change, and we have looked for ways to contribute to solutions. In 1994 we publicly committed to voluntary global greenhouse gas reduction goals. Between 1990 and 2004 we reduced our own greenhouse gas emissions by 72% globally through a variety of efforts. By 2015, we will further reduce our greenhouse gas emissions by 15% from a base year of 2004. We have also committed to help our customers reduce their greenhouse gas emissions by providing products that help them do so, including our new automobile air conditioning refrigerant. This new product has one fifth of one percent the global warming potential of the current product in use. That is a 350 times improvement. And so the path we began many years ago with the Montreal Protocol of using science to deliver better solutions continues.

However, voluntary efforts alone will not solve the climate problem – we need sound policy that takes broad, coordinated, economically sustainable action across the entire economy. We need clear, strong and workable emission reduction goals that will show us the pathway to a low-carbon economy. And we need a cap-and-trade program that will allow a carbon market to emerge and focus our efforts on the emission reduction opportunities that offer the most environmental benefit for the lowest cost. The current economic situation has reminded us all of the importance of using our resources efficiently and wisely, and a federal climate program must be both environmentally effective and economically sustainable. At the same time, we cannot allow the current economic conditions to slow our efforts. I believe that this may be the single greatest opportunity to reinvent American industry, putting us on a more sustainable path forward. A federal climate program has the potential to create real economic growth through innovation.

DuPont will continue to do its part, working not only to further reduce our own footprint, but also by using our science to bring new products to market that help others reduce their emissions. Our sustainable solutions contribute to the growing alternative energy market, in windmills, photovoltaic solar cells and next generation biofuels. We create value-adding materials produced from agricultural feedstocks rather than petroleum, like our DuPont™ Sorona® polymer, and products that enable greater energy efficiency, such as next generation refrigerants and DuPont™ Tyvek® HomeWrap®. Effective climate legislation will provide companies like DuPont the certainty we need to increase our investment and accelerate development and deployment of technologies that will be critical to a low-carbon economy.

The diverse members of USCAP bring a range of perspectives to this coalition. That diversity has meant that consensus has at times been difficult to achieve and has required extensive analysis and deliberation. I have spent many hours with my USCAP colleagues in this endeavor, and our staffs many more. We have worked hard to resolve many of the difficult and often contentious issues that an effort of this magnitude will inevitably raise. In many, many areas we have made substantial progress. We believe that the consensus achieved by the members of USCAP, who represent a tremendous breadth of the US economy and civil society, provides a useful guide for policymakers such as yourselves who ultimately bear the responsibility of finding a politically viable solution and transforming ideas into law. This was the core idea behind the formation of USCAP, and we are pleased to see that many of the ideas we have developed are reflected in this bill. If the members of USCAP can reach this level of agreement we believe that the US Congress can as well, taking advantage of the natural leadership role for the US in addressing this serious global issue. If we don't lead, other countries will.

As a result of the time we have spent within USCAP deliberating these issues that you address in your bill, we have a greater appreciation for the complexity and magnitude of the task before you. Creating and implementing a comprehensive, effective climate change program will not be easy, but it is necessary, and the draft bill makes genuine progress. We appreciate your recognition of the inextricable linkages between climate

and energy policies that must provide the diverse and adequate low-carbon energy supplies we will need as we combine economic growth with greenhouse gas emission reductions. The legislation must encourage continued early actions to reduce emissions in the years before a federal climate program takes effect, and recognize the actions of those who have already taken steps to make voluntary reductions in their own greenhouse gas emissions. It must also drive innovation and open up new markets by funding aggressive technology research, development, demonstration, and deployment programs. And the bill must use policy tools, such as the sound use of offsets, to keep the costs of the program manageable while achieving our environmental goals.

In closing, DuPont has taken these actions and policy positions because they are the right things to do, both for business and the environment. We will continue to work hard to bring new products and technologies to market that will help address the global climate challenge. But business cannot solve the problem alone. Federal legislation will help create the marketplace that will drive innovation, economic growth, and environmental progress. DuPont is proud to be part of USCAP, which reflects both a growing group of businesses who believe that it is time for the US to take action on climate change and diverse NGOs working hand in hand to address this challenge. We appreciate this opportunity to exchange views with you, and look forward to working with you to enact effective legislation.

Mr. MARKEY. Thank you, Mr. Holliday, very much. Our next witness is Mr. Red Cavaney, a senior vice president for government and public affairs for ConocoPhillips. Mr. Cavaney is the former president and chief executive officer of the American Petroleum Institute and American Plastics Council. He has served on the Senior White House Staffs of Presidents Ronald Reagan, Gerald Ford, and Richard Nixon.

Welcome, Mr. Cavaney. Whenever you are ready, please begin.

STATEMENT OF RED CAVANEY

Mr. CAVANEY. Thank you, Chairman Markey, Chairman Waxman, and Ranking Member Barton, and members of the committee. On behalf of ConocoPhillips and our chairman and CEO, Jim Mulva, I am pleased to participate in this important hearing. ConocoPhillips supports the development of a comprehensive national climate protection program that addresses greenhouse gas emissions, while at the same time, ensuring the supply of secure and affordable energy that is necessary for our nation's continued economic recovery and future growth.

We believe the integrated set of policy regulations contained in the U.S. CAP blueprint for legislative action represents a viable path forward to this end. I have been asked to offer U.S. CAP's insights on options to reduce the impact of climate-change technology on transportation-fuel consumers. In addition, I will touch on some policy areas that are of particular interest to ConocoPhillips and our industry.

Our company recognizes that public policy to address climate change will come at a cost to U.S. consumers and businesses, but we believe, in the long run, the benefits to the overall American economy will outweigh these costs; however, in these challenging economic times, individuals and companies may not take much comfort in the promise of future benefits as they struggle to make a mortgage payment or to make payroll. This is why U.S. CAP believes it is critically important that any climate-change policy includes provisions aimed at dampening the impact of policy on both consumers and businesses.

As a major provider of transportation fuels to the U.S. consumer, ConocoPhillips is keenly aware of how sensitive most consumers are to increases in the price of gasoline at the pump. To address the impact of climate policy on transportation-fuel consumers, U.S. CAP recommends the judicious use of allowance value to ensure the consumers transportation-fuel impacts from allowance prices are generally proportionate to their electricity and natural gas impacts. Allowance value for transportation consumers could be applied over a range of options that reduce transportation-fuel consumption.

The impact of climate policy on companies that produce and deliver transportation fuels will also have implications for the consumer. Under the provisions of the discussion draft, the U.S. refining sector would face a multibillion-dollar annual compliance obligation while serving an accounting function for the government as the point of regulation for the end-users transportation-fuel emissions. This would be in addition to our compliance obligations associated with our own greenhouse gas emissions, with the current re-

newable fuel standard, and with any low-carbon fuel standard in the future.

Based on the scale of our potential compliance burden, we are deeply concerned about our ability to fully pass on these costs, given the potential implications that even a small percentage of unrecoverable costs could have on this historically low-margin business. The consequences of not getting the policy right could be premature reduction in U.S. refining capacity, additional increases in gasoline prices, rising transportation, fuel imports, and further loss of American jobs.

We stand ready to offer constructive suggestions for fair and equitable allowances for improving the low-carbon fuel standard included in the discussion draft, and in a variety of areas, from containment to market oversight to incentives for carbon capture and store. Based on the recent and ongoing work of the committee, we are encouraged by the potential of a path forward that could gain broad support, both within the halls of Congress and within homes across the land. We commend the comprehensiveness with which Chairman Waxman and Chairman Markey are approaching this legislation and their careful consideration of U.S. CAP's blueprint for legislative action.

In closing, Mr. Chairman, and on behalf of ConocoPhillips, I thank you for your leadership and for the opportunity to participate in today's hearing. We look forward to continued work with your committee on this very important matter.

[The prepared statement of Mr. Cavaney follows:]

ConocoPhillips Testimony for House Energy and Commerce Committee
The U.S. Climate Action Partnership Hearing
April 22, 2009

Mr. Chairman and Members of the Committee,

Thank you for your invitation to appear before you as a member of USCAP. I am Red Cavaney, Senior Vice President, Government Affairs for ConocoPhillips. I am pleased to be here today to participate in this important hearing on behalf of USCAP and to reiterate ConocoPhillips' support for development of a comprehensive, national climate protection program that addresses greenhouse gas {"GHG"} emissions while ensuring the availability of the secure, affordable and reliable energy supply necessary for continued economic recovery and growth. ConocoPhillips supports the integrated set of policy recommendations contained in the USCAP *Blueprint for Legislative Action* {"Blueprint"} as a viable path forward. We are pleased that the Committee members and their staff have found the USCAP proposal useful when drafting the American Clean Energy and Security Act of 2009 discussion draft {"Draft"}. For the purposes of this hearing I have been asked to speak on behalf of USCAP about the potential impact of climate policy on American transportation consumers. In addition, I will also mention several policy areas that are of particular importance to ConocoPhillips and our industry.

ConocoPhillips recognizes that human activity, including the burning of fossil fuels, is contributing to increased concentrations of GHGs in the atmosphere that can lead to adverse changes in global climate. We joined USCAP in the spring of 2007 because we believed the energy industry has much to contribute to the U.S. climate policy dialogue. Our partnership with USCAP represents a unique opportunity for effective public policy engagement. We have valued the mutual learning that has taken place among USCAP members and we are pleased with the reception that the Blueprint has received both within the halls of Congress and with a variety of other stakeholders.

ConocoPhillips' view is that a mandatory U.S. national climate protection program linked to other national and international programs offers the best policy approach for achieving meaningful

global GHG reductions. We continue to hold this position not only because of the environmental, social and economic significance of the issue but also because we believe there is a firm business case for this position. First, we believe that a well-designed federal climate protection program, as opposed to multiple state/regional initiatives and other alternatives, would result in a more efficient and less costly approach to addressing GHG emissions and the impacts of climate change. Second, industry needs a consistent and enduring climate change program to provide the regulatory certainty necessary to make informed, long-term investment decisions regarding the development and use of future energy supplies. Finally, we believe such policy can create business opportunity. For example, we believe U.S. climate policy should be designed to optimize the use of cleaner burning natural gas as a transition fuel to a low carbon economy. In addition, well designed climate policy will create new opportunities in areas such as deployment of carbon capture and storage, and development of new energy technologies.

ConocoPhillips recognizes that public policy to address climate change will come at a cost to U.S. consumers and businesses, but we are confident that in the long run the benefits to the overall American economy will outweigh those costs. However, to quote economist John Maynard Keynes, the "long run is a misleading guide to current affairs. In the long run we are all dead." In these challenging economic times individuals and companies may not take much comfort in the promise of future benefits as they struggle to make a mortgage payment or make payroll. This is why USCAP believes it is critically important that any climate change policy includes provisions aimed at dampening the impact of the policy on consumers and business. It is evident from the details of the Draft that the Chairman Waxman and Chairman Markey share this belief.

During the transition to a low-carbon economy, the USCAP Blueprint addresses the need to mitigate the financial impacts of climate policy on consumers, businesses and the overall economy. Specifically, USCAP believes a significant share of the allowance value should be used to buffer the impacts of increased costs to consumers at the end of the energy supply chain. The purpose of directing allowance value to end-use energy consumers is to avoid disruptive

price shocks that could accompany the initial phase of implementing the climate protection legislation described in the Blueprint.

As a major provider of transportation fuel to the U.S. consumer, ConocoPhillips is keenly aware of how sensitive most consumers are to increases in the price of gasoline at the pump. While fully embedding the cost of GHG emissions from the consumption of gasoline in the price of gasoline will add approximately 10 cents per gallon for every $10 per ton cost of CO2, we know that even this increase may cause hardship for many of our customers. Perhaps as important is the fact that for many, the gasoline pump will be where they come face-to-face with the cost of climate policy on a daily basis, and public reaction to that cost will have implications for public acceptance and continued support for U.S. climate policy. Because GHG emissions from the use of transportation fuels represent nearly one-third of total U.S. GHG emissions, they must be addressed as part of any comprehensive climate change policy. To address the impact of climate policy on transportation fuel consumers, USCAP recommends the judicious use of allowance value to ensure that consumer's transportation fuel impacts from allowance prices are generally proportionate to their electricity and natural gas impacts. The Blueprint suggests that allowance value for transportation consumers could be applied, for example, to providing vouchers or subsidies to consumer purchase of high efficiency and electric vehicles, to public transportation and to other means of reducing transportation fuel consumption.

Reducing end-use emissions from the transportation sector will be complicated, requiring a systematic approach that involves fuel providers, vehicle and equipment manufacturers, consumers, public officials and policy makers. ConocoPhillips believes it will be important for policy makers to fully consider all the various direct and indirect cost impacts to the consumer associated with the regulation of transportation sector GHG emissions. In addition to direct costs to consumers from carbon regulation, there will be costs associated with implementation of fuel and vehicle emissions standards, with transportation infrastructure improvement, and potentially with disruptions to the US refining system that could result if fuel providers are forced to close

facilities due to an inability to pass along the full cost of compliance, including the management of consumer emissions.

In addition to the direct application of allowance value to mitigate the initial financial impacts of a climate program on consumers, other Blueprint recommendations in areas such as cost containment and technology support will have the effect of keeping the cost of compliance with the program within acceptable limits and continuously driving down the cost of low carbon energy sources and solutions.

The U.S. faces an urgent need to make the country more energy secure and to take meaningful action to slow, stop and reverse GHG emissions to address climate change. The country needs an environmentally effective and economically sustainable national climate protection program that includes both quantitative GHG emission reduction goals and robust provisions to protect the U.S. economy. The American Clean Energy and Security Act discussion draft represents a meaningful step towards that end. As a major U.S. producer of oil and gas and major producer of refined transportation fuel, ConocoPhillips has significant interest in a wide range of issues addressed in the Draft and we stand ready to work with the Committee, particularly on those areas where we have the most to contribute.

The oil and gas sector is a critical component of the U.S. economy, responsibly developing our domestic reserves, fueling our transportation system, and directly or indirectly creating millions of U.S. jobs. Under the provisions of the Draft, this sector would face a multi-billion dollar annual compliance obligation as the point of regulation for emissions from end-use transportation fuels. This would be in addition to compliance obligations associated with our own GHG emissions and with the current Renewable Fuels Standard {"RFS"}. It is vital that the mechanisms for allowance allocation to trade-exposed energy-intensive industries are applied fairly and in a way that comprehends the fundamentals of how these markets work. We are deeply concerned about our ability to fully pass on these costs of compliance and the potential implications that even a small

percentage of unrecoverable costs could have on what is historically a low-margin business. The reduction in U.S. refining capacity that could result would lead to increased transportation fuel imports, erosion of our national energy security, and further loss of American jobs.

We are also actively evaluating provisions in the Draft that would result in an overlay of a Low Carbon Fuel Standard with the existing RFS, a condition that would not be aligned with the USCAP Blueprint. We are ready to offer suggestions on this provision of the Draft. In addition, we share the concerns of other USCAP members who feel that the cost containment provisions of the Draft may not be adequate to protect the economy against sustained high allowance prices.

ConocoPhillips is actively conducting research and development and evaluating projects to deliver low carbon energy to meet a growing world's needs. We believe carbon capture and sequestration {CCS} holds significant promise to enabling the continued use of secure fossil fuels. We were pleased to see several provisions in the Draft to support development and deployment of CCS and we would urge the Committee to ensure those provisions apply without discrimination to all applications of this important technology.

Finally, like other key stakeholders, we have additional suggestions for the Draft that we feel would contribute to development of an effective and efficient climate bill. ConocoPhillips and the other members of USCAP remain committed to helping this Congress find cost-effective approaches to addressing the dual challenges of climate change and energy security.

Based on the recent and ongoing work of this Committee, we are encouraged by the potential of a path forward that could achieve broad support both within the halls of Congress and in homes across America. We applaud the deliberate speed with which Chairman Waxman and Chairman Markey are moving to enact legislation.

Again Mr. Chairman on behalf of ConocoPhillips we thank you for the opportunity to participate in today's hearing. We look forward to continued collaboration on this important issue.

Mr. MARKEY. Thank you, Mr. Cavaney, very much.

Our next witness is Mr. Jim Rogers. He is the CEO of Duke Energy Group. Mr. Rogers has more than 20 years' experience as a chief executive officer in the electricity-utility industry. In addition to his position with Duke Energy, he is the chairman of the Edison Foundation and co-chair of the Alliance to Save Energy.

We welcome you back, Mr. Rogers. Whenever you are ready, please, begin.

STATEMENT OF JIM ROGERS

Mr. ROGERS. Good afternoon. Thank you very much, Chairman Waxman, Chairman Markey, Ranking Members Barton and Upton, and members of the committee. I am Jim Rogers, CEO of Duke. I am delighted to be here today and delighted to have an opportunity to support and discuss the discussion draft before us.

More than 30 years ago, I started my career as a consumer advocate, fighting rate increase at utility companies. I sit here today as a consumer advocate on behalf of the 11 million customers that we provide electric service to in five states, also as a consumer advocate for those consumers in the 25 states where more than 50 percent of the electricity comes from coal.

To supply our customers, we are the third largest generator of electricity in this country, third largest coal, third largest nuclear. We have a very diverse mix of coal, nuclear, natural gas, hydropower, and we reflect much of the mix of generation in this country. We also have invested in renewable such as wind. We have 500 megawatts under operation and 5,000 megawatts under development in the Western United States. We are also investing in biomass, where our goal is to build 10 to 12 50-megawatt bio power plants throughout the U.S. over the next five years.

I have been an early, long-time advocate for climate-change legislation. I was a founding member of U.S. CAP. In our business, we plan for 40 to 50 years, and one of the reasons that I have been such a supporter of clear legislation on carbon is so that I will have the certainty that it will allow me to plan. I would have the certainty with respect to the roadmap forward. And most importantly, because we are the third largest emitter of CO_2 in the country, I recognize that I am part of the problem and that we need to be part of the solution. And as I look out over the next period of time, between now and 2050, we recognize that every plant that we own and operate today will be retired and replaced. So if the mission is to provide low-carbon generation in the future, but we need to get started now with a clear path forward, and so I appreciate the work that you all have done in bringing this discussion draft forward at this time.

But while I support climate-change legislation, I also recognize the importance of getting the carbon legislation, so it works not only for the environment but also for our customers. I know how difficult it is to achieve the right balance. U.S. CAP's blueprint was developed after years of difficult discussion and seemingly endless negotiations. We are pleased the discussion draft includes many of our key recommendations from the blueprint, including a market-wide cap and trade program, a cap trajectory that falls within the blueprints recommendations, although I would note the early caps

are on the aggressive end of the range, where someone has said they have to hit the goalpost. It provides for cost-containment mechanisms, such as offsets, banking and borrowing, and multiyear compliance. It also provides provisions for research and deployment of carbon capture and storage to ensure that coal remains a choice.

The environment is indifferent as to how the allowances are distributed. Consumers and businesses are not. Timetables and targets, in my judgment, assure the environment integrity of the bill. The key is in the transition. Of course, the elephant in the room is the mission section on how allowances will be allocated, a critical issue for many of us at the table, and most importantly for our customers. And I know that you all plan to work on this because there is much work that needs to get done to make this a reality.

The other thing I would point out is that it is critical to get this transition right, and we at U.S. CAP spent a lot of time focusing on that, and within the blueprint are specific provisions that really address how we make the transition and why getting the transition right is so critical.

In closing, I would briefly mention nuclear power. Earlier today, Secretary Chu mentioned it and his support for it. Any serious long-term carbon-reduction plan is an empty plate unless we, as a nation, commit to building zero-emission nuclear power plants. Other countries meeting carbon-reduction commitments will be relying on nuclear, and we shouldn't count it out.

In concluding, we believe it won't be cheap; it won't be easy; it won't be quick. But I must be fair, and legislation must be now. Thank you very much.

[The prepared statement of Mr. Rogers follows:]

TESTIMONY OF JAMES E. ROGERS

CHAIRMAN, CEO AND PRESIDENT

DUKE ENERGY CORPORATION

BEFORE THE

COMMITTEE ON ENERGY AND COMMERCE

U.S. HOUSE OF REPRESENTATIVES

WEDNESDAY, APRIL 22, 2009

Mr. Chairman and members of the Committee: I am delighted to be here today to share with you my thoughts on climate legislation and, specifically, the discussion draft that was circulated on March 31. My name is Jim Rogers and I am Chairman, CEO and President of Duke Energy Corporation. Duke Energy provides electric power to more than 11 million people in five states: North Carolina, South Carolina, Ohio, Indiana and Kentucky. Our diversified generation portfolio of 37,000 megawatts mirrors the mixture of supply in the U.S. as a whole with a blend of coal, nuclear, natural gas and hydropower. We have also made sizeable investments in renewables, notably wind where we have more than 500 megawatts in operation and another 5,000 megawatts under development in the western United States.

I was an early and outspoken advocate of climate legislation. But just as I have spoken of the need for the United States to move forward to address climate change, I have also discussed the importance of getting carbon legislation right, so it works not only for the environment but also for our customers, our 18,000 employees and millions of investors and the U.S. economy in general.

For Duke Energy, this is especially challenging. We are the third largest consumer of coal in the country and we emit, a little more than 100 million tons a year of carbon dioxide. In our Midwestern service territory, coal accounts for more than 90 percent of our electric generation, meaning those customers are particularly vulnerable to the cost increases that will occur when carbon becomes a regulated emission.

Our customers, and the millions of others who live in the 25 states where coal comprises a majority of electric generation, have been foremost in my mind as I have advocated for a federal economy-wide cap and trade program. Many of these people are hurting right now. The Midwest recession started long ago and has only deepened with the financial meltdown of 2008. I am mindful of my customers' concerns and fears as we move forward on climate change legislation.

And yet, we must move forward and so I congratulate Chairmen Waxman and Markey for continuing to advance the debate, educate members, test ideas and proceed toward mark-up. Science tells us we must act now. If we delay, it will be harder and more costly to manage the risk of climate change.

We also need to act now because the rest of the world is waiting. We can't solve this problem alone but I don't believe we can expect it to be solved at all unless we assert the leadership expected of a great power.

I am particularly pleased today that I have been invited to testify as a member of the United State Climate Action Partnership (USCAP). Duke Energy is a founding member of this unique coalition that includes both industry and environmental organizations. It has worked hard for more than two years trying to create a path forward for Congress to address climate change. I am proud of the consensus *Blueprint for Legislative Action* that emerged. While not resolving every issue, it does provide policy recommendations that, when combined, we believe will be economically and environmentally sustainable. We are pleased that the Committee has incorporated many of our recommendations into the discussion draft that is now being considered.

When we created this coalition back in the spring of 2006, we did so with no illusions – only hope. We knew that reaching consensus on an effective climate change policy would not be an easy task for such a diverse group. And trust me when I say this – it wasn't easy. But I believe the degree of difficulty and the diversity of our membership makes the agreements we forged that much more significant and, I hope, helpful to you.

As I have said many times, sound climate change legislation should be based on three equal tenants – protecting our environment, protecting the economy, and protecting consumers from unacceptably high price increases. Where this trio of goals intersects is the sweet spot where both political consensus and good public policy exists.

The discussion draft proposes an economy-wide cap and trade program and a cap trajectory that falls within the recommendations of the Blueprint, though I note that they are at the aggressive end of the range. It also proposes a greenhouse gas registry and acknowledges the need for significant cost containment mechanisms, including allowance banking and borrowing, multi-year compliance and the use of offsets as a low-cost emissions reduction strategy. It allows for a periodic assessment of the science to ensure we are on the path necessary to make a positive impact on the climate. Finally, there are provisions for implementation of a strategic reserve pool and recognition of the need to accelerate the development, deployment and commercialization of zero- and low-carbon technologies, including carbon capture and storage (CCS).

There is a good foundation here to build upon and the draft's 648 pages present enough material to start several lively conversations about a proposal that isn't just about climate change but, in fact, proposes a fundamental shift in U.S. energy policy.

Then there is the case of the missing pages. Those are the ones that contain the critical decision on how allowances will be distributed. Those pages, for Duke Energy and its customers, are the key to that third tenant of sound climate policy – protecting consumers from prices that increase so rapidly that they disrupt livelihoods. Ensuring that electric customers are treated fairly and not burdened with unnecessary cost increases is a mission from which I will not retreat.

In the last few weeks, I have been encouraged that our message linking allowance allocation and customer protection seems to be getting through. Unfortunately, this issue has been misunderstood and mischaracterized, confused with the environmental integrity of the cap, compared unfairly to the European Union Emissions Trading Scheme, and used to suggest utilities using coal were going to use the allowances to make windfall profits.

The fact is that USCAP has presented the Congress and this Committee with a path to smooth the transition to a low-carbon economy. To avoid any possibility of windfalls and to dampen the impact of climate policy on electricity consumers, USCAP proposes to allocate allowances to local distribution companies (LDCs). State regulators, who oversee these companies, will assure consumer costs are kept as low as possible. This concept has also been endorsed by the National Association of Regulated Utility Commissioners.

Let me be clear. There will be no windfall profits for utilities under this proposal – only customer protection. While the cap preserves the environmental integrity of the new regulatory program, the allowance allocation ensures cost impacts are mitigated for end-use energy customers. This is especially important for states where climate change will have the largest economic impact.

Conversely, a full auction of allowances hits consumers harder. While it may provide a steady revenue stream to the federal government, it will impact customers in coal-dependent states disproportionately by requiring utilities and their customers to buy allowances just to keep current facilities running. These same customers will then pay even more when their utilities make the significant capital investments necessary to meet the increasingly stringent cap.

The result? Let's take Indiana as an example. If carbon prices hit $20 a ton in the first year of the program – which is not unrealistic – Hoosier customers under a full auction would see an immediate 30 percent rate increase from today's prices. If the same allowances, however, were allocated, customer cost increases probably could be kept in the single digits. And the difference in the two allocation methods in terms of the environment integrity of the program is zero...absolutely zero.

This 30 percent rate increase, by the way, does not include the 18 percent rate increase these customers will be paying for the next-generation integrated gasification combined cycle (IGCC) coal facility that Duke Energy is building in Edwardsport, Indiana, which we hope will become the first large CCS facility in the U.S. So, for anyone worried that allowance allocations will mask the carbon price, take a look at Indiana and you will see the future for all customers in our coal states. The transition of our current electricity generating fleet to zero- and low-carbon technology will be costly and consumers will feel a price signal.

While the discussion draft tracks the USCAP proposal fairly closely, there are a few specific recommendations I would like to make that I hope the Committee will consider.

- Targets and timetables: The discussion draft proposes to begin the program in 2012, using a 2005 baseline. The start-up date is the same that was used in the last Congress and now allows too little time to begin compliance. The early targets, while within the USCAP range, are very

aggressive. I would recommend the Committee follow President Obama's proposal of setting a near-term goal of achieving 1990 levels by 2020.

- Offsets: USCAP members recognized the need to promote offsets as a viable tool to provide cost-effective emission reductions. However, I was surprised the discussion draft discounts these allowances, requiring covered entities to turn in 1.25 offset credits in lieu of one emission allowance. I believe the Congress and subsequent rules will ensure these offsets are verifiable, permanent, measurable, enforceable and additional. They will be limited either legislatively or through a regulatory process that will make it challenging for projects to qualify. So why then, after the gold-plating, should they be discounted? Why, if companies can use them to achieve the same environmental benefit at a lower cost for their customers, does the government treat them as a compliance step-child?

- Strategic Reserve Pool: I am pleased the discussion draft recognizes the importance of the Strategic Reserve Pool as an essential cost containment measure. However, the details include a significant – perhaps prohibitive – barrier to effective use of the pool by initially including a minimum bid of two and a half times the price EPA estimates an allowance will cost. This trigger mechanism should be dropped and the Committee should encourage the viability of the pool by permitting these allowances to be released into the market when allowance prices reach a specific threshold price. This price should be set at a level that prevents undue economic harm from excessively high allowance prices (e.g. increases in the underlying price of natural gas due to fuel switching) and encourages technology transformation. The reserve pool trigger price should start out at a reasonable level and escalate over time to align with the establishment of commercially available technology that allows reductions to occur in an economically efficient manner. In order to be effective, the strategic reserve pool should contain an unlimited supply of offsets and the government must be empowered to fill and replenish it as needed.

- Coal technology: I appreciate that the discussion draft recognizes the importance of developing carbon capture and storage technology and incorporates Congressman Boucher's funding proposal. I do think more funding is needed, however, if this technology is to be accelerated and, to ensure the funding is stable and reliable, it needs to be provided outside the appropriations process. I also urge the Committee to provide more

guidance to EPA with respect to the legal, liability and storage rules they are directed to write. Early resolution of the rules is vital so that the earliest demonstration plants can come on line.

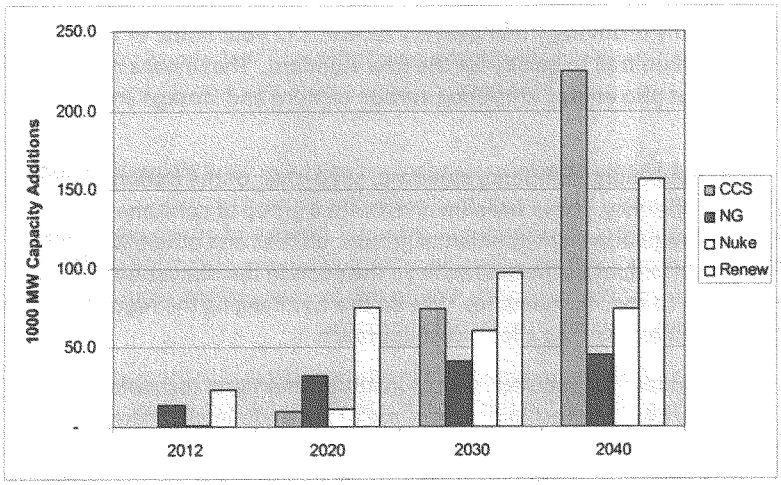
- Citizen suits: The proposal reducing legal barriers to filing citizen lawsuits either against the government or companies that emit greenhouse gases, I believe, is a prescription for regulatory chaos and uncertainty. We should spend our time, energy and money in addressing the problem – not tying the courts up in endless litigation.

Finally, I'd like to say a few words about the myriad of standards and mandates that are included in the discussion draft with this ambitious carbon reduction program.

Embedded in and surrounding this market-driven approach to carbon reduction is a proposed renewable electricity standard, an energy efficiency standard, a clean fuels standard, electric vehicle infrastructure requirements, a coal plant performance standard, a smart grid requirement and even a peak load shaving requirement. Some of these we have agreed to as part of the USCAP Blueprint; others, however, go above and beyond what the Blueprint ever anticipated.

My position on a renewable electricity standard is clear. I think this issue belongs, appropriately, to the states – 30 of which have already adopted one. These standards are not uniform, but neither is their renewable energy potential. Over the last few years, we have had an explosion in renewable energy development in the United States and the world. Wind consistently has been the fastest growing segment of energy production for the last five years or so. But even with this leap forward, we still have no evidence that wind or solar can be commercially viable in many parts of the country.

The fact is that a study by ICF International showed that, under a "medium" price scenario starting at $22/ton CO2, renewables enjoyed a steady growth through 2040, adding more than 156,000 megawatts of new capacity. It also showed that these were not spread out evenly throughout the country. This same analysis showed the deployment of 225,000 megawatts of coal with carbon capture and storage, demonstrating this isn't a problem that can be solved with only one technology.



So, if renewables are going to slide into the new economy because they become the lower cost option, why do we want to establish a public policy that forces them in at a higher price?

I understand there is passion on this Committee and elsewhere to push renewables to the front of the line. Renewables have been promoted heavily by Congress through numerous subsidies such as tax credits and grants. The proposed renewable electricity standard is just another way to push these technologies forward faster than the market may allow. This, of course, means the price of inserting these technologies will be higher.

The aggressive timeline to increase renewable generation, which currently stands at about two percent, is not about addressing climate change. It's a pre-determination as to technology choice and the speed of its installation. The discussion draft requires 6 percent renewables by 2012 and 8.5 percent by 2014. The timetables and levels are, in my judgment, unrealistic. We cannot design, permit and build a three-fold increase in renewable generation – as well as the necessary transmission -- in less than the two and a half years remaining before the first deadline. Instead of picking the technology, if we must have a standard, let's take the renewable electricity standard and the energy efficiency standard

and combine them into a single low-carbon electricity standard, without mandates for specific technologies.

Let's encourage any technology that delivers kilowatts to your home or business and leaves no carbon trail to qualify for the new standard. That means not just wind and solar but also energy efficiency, carbon capture and storage and nuclear.

As for the proposed energy efficiency standard, as co-chair of the National Action Plan on Energy Efficiency, I have been involved with a group of consumer advocates, state regulators, environmental groups, utilities and others which has developed a set of proposals that will achieve the goals in the discussion draft without resorting to specific mandates. We do this by changing the regulatory incentives for utilities, assuring a least cost approach.

On top of this standard are requirements to institute smart grid technologies which, despite my keen interest in this area, are as yet undefined. There is also a peak load shaving requirement and a host of electric vehicle infrastructure mandates. Combined, these efforts constitute an effort by Congress to remake the electric power system – a goal that I believe we should and will attain, but one that must be done thoughtfully and systematically.

USCAP did not come to an agreement on nuclear but I have said before and say again that a truly serious long-term carbon reduction plan is an empty plate unless we, as a nation, commit to making it possible once again to build nuclear power plants. Other countries will be deploying this technology to meet their carbon reduction commitments, and so should we.

I thank you again for the opportunity to testify and I trust you will treat my comments as they are intended – as positive contributions and suggestions to a discussion draft that, I sincerely hope, marks the beginning of constructive legislative process that ends within the next year to 18 months on the desk of President Obama.

Mr. MARKEY. Thank you, Mr. Rogers, very much. Our next witness, Ms. Frances Beinecke, is the president of the Natural Resources Defense Council and is on the Steering Committee of the U.S. Climate Action Partnership. She has worked with NRDC for more than 30 years and has held leadership roles in several other environmental organizations.

We welcome you back before this panel, Dr. Beinecke. Whenever you feel comfortable, please, begin.

STATEMENT OF FRANCES BEINECKE

Ms. BEINECKE. Thank you very much, Mr. Chairman, and members of the committee, thank you for the invitation to testify to testify today on this Earth Day as a member of the U.S. Climate Action Partnership. I am Frances Beinecke, President of NRDC.

Chairman Waxman and Markey and Ranking Members Barton and Upton, thank you for holding this hearing on the American Clean Energy and Security Legislative Proposal. The discussion draft is an excellent starting point for enacting comprehensive energy and climate legislation this year. Passing effective climate legislation to address the eminent threat of global warming is NRDC's highest priority, and it is vital to enact legislation as quickly as possible.

We have known for several years that the scientific data on global warming points towards urgent action, and now the economic data is telling us that action is required as well. Rather than a reason for delay, the current recession amplifies the importance of acting quickly. If this Act were enacted tomorrow, millions of clean-energy jobs would be created, starting right away, and we anticipate there will be minimum increased energy costs in the near term, because the limits on carbon emissions proposed in this would not go into effect until 2012, and by that time, the current recession should be in the rearview mirror.

Inaction is simply not an option. Carbon regulation is moving forward. Last week, the EPA acted on what the law and science require and formally found what we have known for many years, that carbon dioxide emissions endanger public health and the environment. Congress has the opportunity to shape how carbon is controlled, going forward, and this committee is at work on it right now. If we delay and emissions continue to grow, it will become much harder to avoid the worst impacts of climate going haywire. In short, a slow start means a crash finish, with steeper and more costly emission cuts required for each year of delay. If we enact legislation this year, we can unleash American innovation and tackle this global challenge right now.

Today, I want to focus on three critical issues: allocation of allowance value, cost containment, and international action. The allocation of the allowance value is a major issue for the committee to consider and was a central component of the U.S. Climate Action Partners Blueprint for Legislative Action. U.S. CAP strongly endorses an approach for distributing emission allowances that leads to achieving public objectives and not private windfalls. U.S. CAP believes that we can jumpstart the transition to a clean-energy economy without creating undue burden on consumers by initially distributing a significant portion of the allowances to capped enti-

ties and economies sectors particularly disadvantaged by the secondary effects of a cap. This free distribution should be phased out over time with a transition to a full auction.

The Blueprint identifies principals to guide the fair and equitable allocation of allowances. First, they should go to end-use consumers of electricity, natural gas, and transportation fuels. Specifically, a significant portion should to regulated electric and natural gas local distribution companies, LDCs, on behalf of their customers, particularly in the early years of the program. The overall costs of achieving the environmental goals will be minimized if utilities used this value first to ensure that they are investing in all cost-effective energy-efficient opportunities, and then, rebate the remaining value to their consumers in a transparent matter.

Second, allowances should be given to energy-intensive industries with trade-exposed commodity products that face international competition, such as cement and steel. And this will limit the outsourcing of U.S. jobs and the outsourcing of U.S. emissions.

Third, allowances should also be allocated for competitive power generators, low-income consumers, and worker transition and training, programs that drive low-emission technology to commercial viability, programs to reduce emissions from deforestation and forest degradation, 20-percent of emission sources, and adaptation needs of vulnerable people in ecosystems at home and abroad.

Previous major environmental initiatives, such as controlling sulfur dioxide emissions, have proved far less costly to accomplish than predicted. Nonetheless, there is uncertainty about the cost of reducing global-warming pollution, and that is why the U.S. CAP Blueprint addresses cost containment. Although there are some material differences, the ACIS discussion draft reflects many of the measures discussed in the Blueprint. These include a broadly inclusive cap, emissions trading, unlimited banking of allowances, and effective multiyear compliance periods. The discussion draft also includes a larger role for emission offsets, provided that they meet, and I think this is crucial, strong environmental quality standards.

Finally, the discussion draft includes a strategic offset and allowance-reserve pool, intended to prevent allowance price spikes by releasing additional offsets and/or borrowed allowances into the market in the event of excessively high allowance prices.

The third issue I want to discuss briefly is international action. It is critical that the United States provides a path forward in environmental discussion as we lead to Copenhagen in the fall, and we need to provide key tools in the legislation to aid our climate negotiator in delivering a strong global warming solution, and we think the draft addresses this effectively as well. I want to thank you for the opportunity to testify and look forward to questions.

[The prepared statement of Ms. Beinecke follows:]

Testimony of Frances Beinecke
President, Natural Resources Defense Council

Before the
Committee on Energy and Commerce and the Subcommittee on Energy and Environment
U.S. House of Representatives

Hearing On
"The American Clean Energy and Security Act of 2009"
April 22, 2009

Mr. Chairman and Members of the Committee:

Thank you for your invitation to testify today as a member of the United States Climate Action Partnership (USCAP), regarding the American Clean Energy and Security Act of 2009. My name is Frances Beinecke. I am the President of the Natural Resources Defense Council (NRDC). NRDC is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.2 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles and San Francisco, Chicago and Beijing.

Chairmen Waxman and Markey, Ranking Members Barton and Upton, thank you for holding this hearing on The American Clean Energy and Security Act (ACES) legislative proposal. The ACES "discussion draft" recently circulated by Chairmen Waxman and Markey, is an excellent starting point for enacting comprehensive energy and climate legislation this year. The draft bill draws heavily on recommendations of the U.S. Climate Action Partnership. We recognize the challenge facing this Committee in crafting comprehensive legislation and we very much hope that the Committee will continue to draw upon our partnership.

Passing effective climate legislation is NRDC's highest priority. It is vital to enact legislation this year. As President Obama said last week, the foundation for growth and prosperity in the 21st Century must be built on solid pillars. Clean, sustainable energy is one of those pillars, and promptly enacting comprehensive energy and climate legislation is the way to put that pillar in place. Rather than being a reason for delay, the current recession amplifies the importance of acting swiftly. If the American Clean Energy and Security Act were enacted tomorrow millions of clean energy jobs would be created, starting right away. There will be no impact on energy costs in the near term, however, since limits on carbon emissions would not go into effect until 2012. By that time the current recession should be in the rear view mirror.

The stimulus package enacted earlier this year will jump-start significant clean energy investments, but it is necessarily a temporary measure. In the absence of a long-term policy framework many investment decisions and projects are currently on hold due to uncertainty about future carbon emission rules. By clarifying those future rules, this legislation will unlock large-scale private sector capital investments starting today, saving companies money in the short and long term and boosting the recovery.

Inaction is simply not an option. Not only would the economic and environmental consequences be untenable, inaction is also illegal. Reversing years of denial and delay by the previous administration, last week EPA acted in accordance with what the law and science require, formally finding what we have know for many years: carbon dioxide emissions endanger public health and the environment.

Action on global warming has already been delayed too long. Every day we learn more about the ways in which global warming is already affecting our planet. This is most evident today in the Arctic, which I had an extraordinary opportunity to witness first hand last summer. In contrast to some claims in the media, earlier this month the National Snow and Ice Data Center confirmed that the alarming arctic melting trend is continuing. The scientists found that the fraction of arctic ice made up of stable ice that is more than two years old reached its lowest point in 2009 since reliable data became available in 1979. The impacts of rising carbon dioxide levels and global warming are also beginning to hit home in the form of more intense storms and droughts, deadly heat waves, and disrupted ecosystems.

We must act now to begin making serious emission reductions if we are to avoid truly dangerous levels of global warming pollution. Climate scientists warn us that we face extreme dangers if global average temperatures are allowed to increase by more than 2 degrees Fahrenheit from today's levels (equivalent to 2 degrees Celsius over pre-industrial levels). The Intergovernmental Panel on Climate Change reports that it is still possible to stay below this temperature increase if atmospheric concentrations of CO_2 and other global warming gases are kept from exceeding 450 ppm CO_2- equivalent and then rapidly reduced. This will require us to halt U.S. emissions growth almost immediately and then achieve significant cuts continuously for the next several decades. In view of the grave risks we are running, NRDC supports the proposed targets in the draft legislation before the Committee as the minimum we can responsibly undertake. These targets are equivalent to the more stringent end of the range contained in the USCAP Blueprint. We need to get on that path as soon as possible to maintain a reasonable chance of avoiding the worst effects of global warming.

We also strongly support the integrated approach to energy and climate legislation embodied in the American Clean Energy and Security Act discussion draft. Combining a comprehensive cap on carbon pollution with effective measures to accelerate investments in energy efficiency and clean energy innovations is the best way to get our economy moving again and build a foundation for sustainable economic growth for years to come. Only a framework that addresses large scale energy development in the context of a

declining cap on carbon pollution will avoid policy conflicts and mobilize clean energy capital to build the energy infrastructure we need to thrive in the 21st Century.

If we delay and emissions continue to grow, it will become much harder to avoid the worst impacts of a climate gone haywire. In short, a slow start means a crash finish, with steeper and more disruptive emission cuts required for each year of delay or insufficient action.

The Role of USCAP

As a leading environmental organization, NRDC believes Congressional action will be facilitated if we can find common ground among differing interests on as many controversial issues as possible. We joined USCAP two years ago in recognition of this reality. USCAP demonstrates the ability of very diverse interests to come together to act for the common good while recognizing and addressing the complicated set of issues posed by global warming legislation.

USCAP is united in the belief that we can and must take prompt action to establish a coordinated, economy-wide, market-driven approach to climate protection. The members of USCAP believe that properly constructed policy can be economically viable, environmentally responsible, and politically achievable. We support enactment of an economy-wide, market-driven approach which includes a well-crafted cap-and-trade program as its core element. In addition to specified limits on global warming emissions, USCAP supports robust cost-containment measures, complementary policies and measures to supplement the cap, and a fully funded federal technology research, development, demonstration, and deployment program for climate-friendly technologies. Properly designed legislation will encourage innovation, enhance America's energy security, foster economic growth, improve our balance of trade, and provide critically needed U.S. leadership on this vital global challenge.

Swift legislative action will encourage innovation and provide needed U.S. leadership on this global challenge. Given that USCAP includes major environmental groups, fossil energy producers and users, and leading members of the manufacturing sector, we believe that we have achieved a remarkable level of consensus regarding global warming legislation and we hope that this level of consensus will be helpful to the Committee and the Congress as it moves forward in crafting legislation.

Policy Solutions for Curbing Global Warming and Building the Clean Energy Economy

As the Administration and Congress grapple with climate, energy, and economic policy this year, they should focus on driving investment that will increase efficiency and reduce global warming pollution at the lowest possible cost. The following policy tools will be needed to curb global warming and secure a clean energy future:

1. A gradually declining mandatory limit or "cap" on pollution.
2. Codes and standards that rid the marketplace of the worst-performing products and technologies.
3. Performance-based incentives to drive investment in energy efficiency and clean energy solutions (funded through targeted use of the value from pollution permits or allowances).
4. Targeted financing support to enable clean infrastructure investment.

Strong American leadership in these areas will not only help strengthen our long-term economic, national, and environmental security, but it will also bolster our position during international negotiations toward reaching a global solution to this global problem.

The American Clean Energy and Security Act discussion draft includes these key policies by combining standards and incentives for rapidly deploying clean energy and energy efficiency technologies with firm economy-wide limits on the carbon pollution that is driving global warming.

USCAP Blueprint

The discussion draft is consistent with the USCAP *Blueprint* in a number of key areas including: emissions targets and timetables; scope of coverage and point of regulation; incentives and performance standards for deploying carbon capture and sequestration technologies; the use of cost containment mechanisms that preserve the integrity of the emissions cap; principles for allocating allowance value (discussed in more detail below); and the importance of international action (discussed in more detail below).

Allocation of Allowance Value:

While the ACES discussion draft provides detailed proposals on most issues, it is deliberately open-ended on how to distribute the valuable emissions "allowances" that polluters must have at the end of each year to cover their global warming emissions. How many will be given away, and with what performance conditions? How many will be auctioned, and how will the revenue be used? These are key questions for this committee.

The diverse membership of USCAP believes that the approach for distributing emission allowances must lead to achieving public objectives, not private windfalls. The discussion draft opens the door to using the value of the allowances for a wide range of critical needs - supporting investments in the clean energy economy, protecting consumers (especially low-income consumers), dealing with unavoidable climate change impacts, and doing our part to achieve international cooperation against global warming.

The allocation of the allowance value is a central component of the USCAP *Blueprint for Legislative Action*. Emission allowances in an economy-wide cap-and-trade system will represent trillions of dollars in value over the life of the program. USCAP believes the distribution of allowance value should facilitate the transition to a low-carbon economy for consumers and businesses; provide capital to support new low- and zero-GHG-emitting technologies; and address the need for communities and natural resources to adapt

to climate change. It is critical that a climate bill help to safeguard our water resources, oceans, lands, wildlife, and public health from the harmful impacts of global warming, especially as some serious impacts can no longer be avoided even with strong emission reductions in place.

USCAP recommends facilitating the transition to a clean energy economy by initially distributing a significant portion of allowances to capped entities and economic sectors particularly disadvantaged by the secondary effects of a cap and that this free distribution of allowance value should be phased out over time with a transition to a full auction. The *Blueprint* identifies specific principles to guide the fair and equitable allocation of allowances to:

- End-use consumers of electricity, natural gas, and transportation fuels, with a significant portion of emission allowance value being allocated to regulated electric and natural gas local distribution companies on behalf of their customers, particularly in the early years of the program.
- Energy intensive industries with trade-exposed commodity products that face international competition, to prevent outsourcing of US jobs and emissions overseas to countries that have not committed to commensurate global warming pollution limits;
- Competitive power generators and other non-utility large stationary sources which face substantial compliance costs they cannot pass onto consumers;
- Low-income consumers and worker transition and training;
- Programs to achieve technology transformation such that these investments combined with the cap are sufficient to drive key low-emission technologies to commercial viability;
- Programs to reduce emissions from deforestation and forest degradation;
- Adaptation needs of vulnerable people and ecosystems at home and abroad.

Cost Containment Measure:
Previous major environmental initiatives, such as dramatically reducing carbon monoxide emissions from tailpipes and sulfur dioxide emissions from smokestacks, have proved far less costly to accomplish than predicted prior to making the commitment to achieve these goals. Nonetheless, there is considerable uncertainty about the cost of reducing global warming pollution and therefore cost containment measures are a critical component of the USCAP *Blueprint*. Although there are some material differences, the ACES discussion draft reflects many of the cost containment measures included in the *Blueprint*. These include a broadly inclusive cap, emissions trading, unlimited banking of allowances, and effective multi-year compliance periods. The discussion draft also includes a large role for emission offsets, provided that they meet strong environmental quality standards, as recommended in the *Blueprint*. Finally, the discussion draft includes a strategic offset and allowance reserve pool intended to prevent allowance price spikes by releasing addition offsets and/or borrowed allowances into the market in the event of excessively high allowance prices.

International Action:
The American Clean Energy and Security Act discussion draft can also help the US and the world secure a strong agreement to address global warming pollution in Copenhagen,

Denmark later this year. US leadership to drive energy solutions and cap our global warming pollution is an essential precondition for securing a strong international agreement that establishes an equitable and effective framework for robust action by all major emitting countries. We need to provide a number of key tools in the legislation to aide our climate negotiators in delivering a strong global solution. This discussion draft includes some of these key tools by:

- designing international carbon market access rules to encourage developing countries to take concrete action to reduce their emissions;
- providing incentives to reduce emissions from international deforestation;
- creating incentives for exporting clean energy technologies which can help generate US jobs and provide leverage for securing a strong agreement from major emitting countries; and
- helping developing countries adapt to global warming, which will reduce threats to our national security as well as ease the burden on vulnerable communities.

The current economic crisis presents enormous challenges for American workers and virtually every sector of our economy. The crisis, however, also provides a tremendous opportunity to address the threat of global warming in a way that ensures long-term environmental and economic sustainability. In the next 20 years, the United States will invest more than $3 trillion in our energy infrastructure—electric power plants, fuel refineries, and transmission and transportation infrastructure—and trillions more on energy consuming buildings, appliances, and vehicles.[1] We can avert the growing climate crisis by redirecting our resources toward cleaner, more energy-efficient technologies that will reduce emissions of global warming pollution, create millions of quality jobs, and bolster our national security.

Chairman Waxman and Markey, you have stepped forward at a key moment in history and you are to be commended for your vision, leadership and courage on this profoundly important issue. We look forward to working closely with you and all the other members of the Subcommittee and the Committee to report a comprehensive and effective energy and global warming bill to the United States House of Representatives by Memorial Day.

Thank you once again for the opportunity to testify and I would be pleased to answer any questions that you may have.

[1] World Energy Outlook 2006, International Energy Agency.

Mr. MARKEY. Thank you, Dr. Beinecke, very much. Our next witness is Ms. Meg McDonald, who is the director of global issues, Alcoa. She also served in Australia as Australia's Ambassador for the Environment, where she was the lead negotiator for the Kyoto Protocol and has advised several Australian Government Trade Ministers. We welcome you, Ms. McDonald.

STATEMENT OF MEG McDONALD

Ms. MCDONALD. Thank you, Mr. Chairman, Chairman Waxman, Ranking Members Barton and Upton, and members of the committee. Thank you for the opportunity to testify today as a member of the United States Climate Action Partnership, or U.S. CAP.

I am here today to express Alcoa's support for comprehensive climate legislation this year. We and others in U.S. CAP have welcomed the comprehensive approach taken it the American Clean Energy and Security Act. We, like the other colleagues at this table that you have heard, believe that climate change is a global issue, which requires leadership and immediate action from every sector of society.

Alcoa is one of the world's largest producers of aluminum and alumina. We are active in all segments of the industry from mining, refining and smelting to rolling and extrusions with some 850,000 employees in 34 countries. The majority of our manufacturing base is here in the United States, and two-thirds of our smelting capacity, representing 30,000 U.S. jobs. The current global economic situation has meant significant and difficult changes in that manufacturing profile here in the United States and elsewhere.

Aluminum is a globally and heavily traded, energy-intensive commodity, for which the global price is benchmarked according to the London Metal Exchange. Since last June, we have experienced dramatic drops in global demand, and the price of aluminum has dropped by more than 60 percent. Alcoa has put in place a detailed plan to weather the economic storm, with the hope of emerging stronger when the economy recovers.

The energy-intensive nature of primary aluminum smelting has meant that the location of aluminum production is driven by energy costs. It has also meant that the industry has been a leader in energy efficiency. We also believe that aluminum is part of the solution to climate change because of its properties of lightweight into transport solution and because of its infinite recycling potential.

Since 1990, Alcoa has reduced own direct greenhouse gas emissions by 36 percent, and that is despite a significant increase in our production over that same period. Alcoa has been part of U.S. CAP as a founding member and here today because we believe an economy-wide cap and trade program, as part of a comprehensive U.S. climate program can be constructed as to minimize the impact on the economic competitiveness of U.S. business like Alcoa as we make our transition to a lower carbon economy.

There is a board consensus that the leakage cause must be solved to achieve effective climate legislation, and we and our U.S. CAP colleagues look forward to working with the committee to achieve this. There has never been such a critical time for us to be

focusing on this issue as many businesses like Alcoa, our workforce, and our communities confront the very difficult challenges created by the current economic downturn. During the evolution towards a comprehensive global emissions trading regimes, transition arrangements for energy-intensive trade-exposed sectors like ours will be necessary to protect our competitiveness and our employees' jobs. It will be essential to protect the employment base and contribution to the U.S. economy that industry such as aluminum, steel, chemical, glass, and paper represent, and we think the most important way of doing this is through the allocation process as well as additional complimentary measures. U.S. CAP set out our own detailed thinking on the importance of inclusion of these in climate legislation in our blueprint, and we have included in that additional cost-containment measures, such as offsets in banking, the technology program, international linking of trading, and movement to a global system. Importantly, we also believe there should be specific credit for early action by companies such as ours, which have been reducing our emissions voluntarily.

Alcoa believes that a cap and trade program that follows this approach will be successful in reducing emissions while avoiding shifting jobs, investments, and emissions from the U.S. to other nations. This sort of leadership from the United States is essential for setting the stage for reaching global agreement on climate change. We also believe that a climate-change framework established on this basis will bring a new vision and policy direction which will spur innovation through the U.S. economy and elsewhere. And we think if we act wisely and swiftly, this will assist in restoring growth, increasing jobs, and providing the means for America to be a global leader in low-carbon technology.

Chairman Waxman and Markey, Alcoa joins our other U.S. CAP colleagues in looking forward to working with you, the subcommittee, and the committee in your objective in reporting a comprehensive and effective energy and global warming bill to the United States House of Representatives by Memorial Day.

[The prepared statement of Ms. McDonald follows:]

TESTIMONY of MEG McDONALD of ALCOA INC.

before

U.S. HOUSE OF REPRESENTATIVES

COMMITTEE ON ENERGY AND COMMERCE AND THE SUBCOMMITTEE ON ENERGY AND ENVIRONMENT

Hearing on

"THE AMERICAN CLEAN ENERGY AND SECURITY ACT OF 2009"
APRIL 22, 2009

Mr. Chairman and Members of the Committee:

Thank you for your invitation to testify today as a member of the United States Climate Action Partnership, or USCAP.

My name is Meg McDonald and I am Director, Global Issues of Alcoa Inc.

I am here today to express Alcoa's support for comprehensive climate change legislation this year. We and others in USCAP have welcomed the comprehensive approach taken in the American Clean Energy and Security Act (ACES). We believe climate change is a critical global issue which requires leadership and immediate action from every sector of society.

Alcoa is one of the world's largest producers of aluminum and alumina. We are active in all segments of the industry - from mining, refining and smelting to rolling and extrusions, with some 85, 000 employees in 34 countries.

The majority of our manufacturing base is here in the United States and two thirds of our smelting capacity.

The current global economic situation has meant significant and difficult changes in that manufacturing profile here in the United States and elsewhere.

Aluminium is a globally and heavily traded energy- intensive commodity for which the global price is benchmarked according to the London Metal Exchange. Since last June, we have experienced dramatic drops in global demand and the price of aluminum has dropped by more than 60%.

Alcoa has put in place a detailed plan to weather the economic storm and emerge stronger when the economy recovers.

The energy intensive nature of primary aluminium smelting has meant that the location of aluminium production is driven by energy costs. This has also meant that the industry has been a leader in energy efficiency.

We also believe that aluminium is part of the solution to climate change because of its properties of light-weighting for transport solutions and because of its infinite recycling potential.

Since 1990, Alcoa reduced our direct greenhouse gas emissions by 36 percent.

And that's despite a significant increase in production over that same period.

I am here to testify today about how we believe an economy-wide cap-and-trade program as part of a comprehensive U.S. climate program can be constructed so as to minimize the impact on the economic competitiveness of US business as we make the transition to a lower carbon economy.

There is a broad consensus that the leakage problem must be solved to achieve effective climate change legislation and we and our USCAP colleagues look forward to working with the committee achieve this.

Never has there been such a critical time for us to be focusing on this issue as many businesses, our workforce and our communities confront the very difficult challenges created by the current economic downturn.

During the evolution toward a comprehensive global emissions trading regime, transitional arrangements for energy intensive trade exposed sectors will be necessary to protect our competitiveness. This will be essential to protect the employment and contribution to the US economy that industries such as aluminium, steel, chemicals, glass and paper represent.

We think the best way of doing this is through the allocation process and additional complementary measures.

USCAP has set out our detailed thinking on the importance of inclusion in climate change legislation of additional cost containment measures such as

1. offsets and banking
2. technology program
3. international linking and
4. movement to a global system

Importantly, we believe there should also be specific credit for early action by companies, such as ours, which have been reducing emissions voluntarily.

Alcoa, as a member of USCAP believes that a cap-and-trade program that follows this approach will be successful in reducing emissions whilst avoiding shifting jobs, investments and emissions from the U.S. to other nations. This sort of leadership by the United States is essential for setting the stage for reaching global agreement on climate change.

We also believe that a climate change framework established on this basis will bring a new vision and policy direction which will spur innovation through the economy. We think if we act wisely and swiftly, this will assist in restoring growth and provide the means for America to be the global leader in low-carbon technology.

Within such a legislative framework with market signals and incentives, the American entrepreneurial spirit will deliver the sustainability solutions required to meet our many economic, energy, environmental and national energy security challenges.

Chairman Waxman and Markey, Alcoa joins our other USCAP colleagues in looking forward to working with you, the Subcommittee and the Committee in your objective of reporting a comprehensive and effective energy and global warming bill to the United States House of Representatives by Memorial Day.

Thank you for the opportunity to testify and I would be pleased to answer any questions that you may have.

Mr. MARKEY. Thank you, Ms. McDonald, very much.

And our next witness is Mr. David Crane. He is the president and CEO of NRG Energy. Mr. Crane has been the president and CEO of NRG, a wholesale power-generation company, since December of 2003. We welcome you back, Mr. Crane, and we look forward to your testimony.

STATEMENT OF DAVID CRANE

Mr. CRANE. Thank you, Chairman Markey and Chairman Waxman, Ranking Member Barton and Upton. Chairman Markey, as you mentioned, we are a competitive power-generation company, or wholesaler, as you say. We produce approximately 70 million megawatt hours per year, and like others in our industry, we do it in as a safe, inexpensive, and environmentally benign manner as postwar technology permits, and when I talk about postwar in this case, I am talking about post-World War II technology permits. But as global concern over climate change has grown, the management, employees, and possibly most importantly, the shareholders of NRG are aware that we have a moral imperative to reduce substantially the carbon intensity of our electricity production. Today, I welcome the opportunity to appear at your committee as you begin consideration of whether there should be an economic imperative aligned alongside that moral imperative to reduce emissions.

And I wanted to also offer you three general observations. First, combating climate change is inextricably linked to our country's future energy usage and to a national energy policy, and the best answer lies in the center, where both environmental protection and energy security can be enhanced while avoiding the prospect of short- to medium-term dislocation to the economy. This, in my mind, is the fundamental principal upon which U.S. CAP was founded, and it informs virtually all of the recommendations set forth in the U.S. CAP Blueprint. A shared concern of five environmental groups and 25 major American corporations led, over the course of two years, to a carefully calibrated and interlinked set of recommendations. As such, we believe all members of the committee should carefully consider these recommendations, whether you are more motivated by reducing emittances of carbon in the atmosphere or by reducing remittances of American wages and wealth to the Middle East in order to pay for foreign-source fossil fuel.

My second major point is that the potential embedded within climate-change legislation for regional wealth transfer and value destruction is real but can be effectively addressed with a sensible balanced between auctioned allowances and allowances allocated on a year-end basis and with complimentary measures for clean coal and other core technologies, including new, advanced nuclear projects. Wind, solar efficiency, and smart meters are all worthy technologies that our company is investing in, and they all deserve government support. But the fact is that if you run the numbers, it is nearly impossible to see how we win the battle against climate change without the successful demonstration and global deployment of clean coal technology and advanced nuclear plants.

The transitional, partial allocation approach, which France has referred to, will help drive these investments as well as easing re-

gional imbalances. It will give emitters like us a financial runway of sufficient length to gain lift in our efforts to innovate and invest in low-carbon technologies that are critical to success in the fight against global warming. This is important because carbon will not be conquered just through increased funding of the Nation's research. It will be conquered when companies in the electricity sector, like Duke and NRG, lead the way in demonstrating cutting-edge, low-carbon technology at scale and deploying it en mass.

To illustrate, in 2006, NRG announced a plan to invest up to $15 million and 10,000 megawatts of new low- or no-carbon projects in this country. Since that announcement, we have made significant advances in major investments in wind, solar, CCS, and advanced nuclear development. We are doing all of this as part of our philosophy that NRG wants to be a first-mover in the technologies, the projects, and the businesses that will be spawned by sustainability and climate change.

Third and finally, the electricity industry, currently, is the largest emitting sector in the United States, but as it decarbonizes, it will become a central part of the solution, both in our ability to export our new technology to electric industries in other emitting nations, and in our ability to displace other forms of carbon-producing energy in other sectors in this country. At the center of our fossil fuel energy basis right now are the car, the high-voltage transmission system, and the base-load powerplants that feed it. Congress is in the position, right now, to alter fundamentally and for the better each of the three, but the electric car or the smart grid and low- to no-carbon base load power, emphasizing clean coal and advance nuclear, they need to be advanced together as part of a coherent and coordinated national energy and environment policy, and I believe it is exactly right to base that energy and environmental policy on a free-market basis like the cap and trade approach contemplated by the Waxman-Markey discussion draft. That will enable us to unleash the power of our free-market system on this issue. And even in the weakened state of the American economy, as an unabashed capitalist, I would say American capitalism remains the most potent peacetime force for a change on this planet.

To do this, if we do this, I think all of us need to work, again, to define and find the common ground in the center. If we succeed, I am convinced that when the history is written of our age, it will be said that the first giant leap for mankind into the post-hydrocarbon age began in the ninth year of the third millennium, when the United States Congress pointed the American public away from consuming the earth's resources in a non-sustainable way so that the life experience that all of us have enjoyed will be enjoyed equally by future generations of Americans. Thank you, Chairman.

[The prepared statement of Mr. Crane follows:]

Testimony of
David Crane
President and CEO, NRG Energy, Inc.

Before the Committee on Energy and Commerce and the Subcommittee on Energy and Environment
US House of Representatives

Hearing on
"The American Clean Energy and Security Act of 2009"
April 22, 2009

Mr. Chairman and Members of the Committee:

Thank you for the opportunity to testify today regarding the American Clean Energy and Security Act. My name is David Crane, and I am the President and Chief Executive Officer of NRG Energy. NRG is a wholesale electricity generator, so while ours is not a household name, we nonetheless produce enough electricity to supply roughly 20 million American households. Those homes, together with our facilities and our employees, are located in California, Massachusetts, New York, Connecticut, Delaware, Maryland, Louisiana and Texas, in the districts of a number of members of this committee. We work hard to ensure that the electricity we produce, approximately 70 million megawatt-hours a year, is generated in as safe, inexpensive and environmentally benign a manner as the technology permits. But as global concern over climate change grows, the management, employees and shareholders of NRG are aware that we have a moral and, potentially, a future economic imperative to reduce substantially the carbon intensity of our electricity production.

It is for this reason that I welcome the opportunity to testify today on the importance of what your Committee is about to engage in as you take up consideration of the Waxman – Markey discussion draft. I will confine my remarks to three general observations, which I will elaborate on briefly:

1. *First, when it comes to combating climate change, which is inextricably linked to our Country's future energy usage and national energy policy, the best answer lies in the center, where both environmental protection and the energy security of*

the United States can be enhanced while avoiding the prospect of short to medium term dislocation to the economy.

This, in my mind, is the fundamental principle upon which USCAP was founded and it informs virtually all of the recommendations set forth in USCAP's *Blueprint.* Five environmental groups, motivated by their extreme alarm over climate change but who also recognized that the public and policy-makers would not be willing to sacrifice the American way of life to address an issue of little impact to their daily lives, combined with 25 CEOs of many of America's largest energy, industry, transportation and even consumer product companies, who share that environmental concern, but are also mindful of their mission to provide the American public affordable goods and services and well-paying jobs. These overlapping circles of shared concern led, over the course of two years, to a carefully calibrated and interlinked set of recommendations which we believe all members of the Committee, whether you are more motivated by reducing ***emittances*** of carbon into the atmosphere or by reducing ***remittances*** of American wages and wealth to the Middle East in order to pay for foreign-sourced fossil fuels, should carefully consider.

The USCAP *Blueprint* is based on a market approach which, through sensible regulation, essentially harnesses the strength of American capitalism to solve the carbon problem, as quickly as necessary and as seamlessly and affordably as possible as far as the American consumer is concerned. That is the right approach. Even today, with our economy in a temporarily weakened state, American capitalism remains the most potent force for peacetime change that exists on this planet. It is my deeply held believe that if Congress passes and the President signs legislation that provides us a clear framework of targets and timetables for carbon reduction and provides us with the new tools we need – and facilitates our continuing to use some of the tools we already have – American business, operating within the context of our free market system, will take the lead in solving the problem of greenhouse gas emissions in a manner that shields the American consumer.

2. *Second, the potential for significant dislocation and value destruction both to individual companies and regions of the United States is real but can be*

effectively addressed with a sensible balance between auctioned allowances and allowances allocated on an interim basis and with complementary measures for clean coal and other core technologies, including new advanced nuclear projects.

Wind, solar, efficiency and smart meters are all worthy technologies that deserve Government support, but the fact is that if you run the numbers, consider the enormous reduction in global emissions that the scientists are telling us are necessary and note the type of power plants that are coming on line every week in the developing countries, it is nearly impossible to see how we win this battle without the successful demonstration and global deployment of clean coal technology and advanced nuclear plants.

This is doubly important because clean coal and advanced nuclear are also key to addressing the significant wealth transfer that might occur within the United States through climate change legislation and/or a federal renewable energy standard to the detriment of the coal-rich Midwest and the nuclear-powered South. Complementary coal measures, of the type called for by the USCAP Blueprint and that could be supported by Congressman Boucher's "wires charge" bill, are very important in this regard, as are USCAP's proposal for a partial allocation of carbon credits to emitters on an interim and declining basis. That portion of initial allowances would be allocated on the basis of net compliance costs to avoid any potential for a European Union-like carbon "windfall".

By keeping emitters initially neutral to carbon impact in the early years of a carbon regime, but then reducing that allocation over time until it disappears, you give emitters a financial runway of sufficient length to gain lift in our efforts to innovate and invest in low and no carbon technologies and projects that are critical to success in the fight against global warming. This is important because carbon will not be conquered just through the increased funding of the nation's research universities and labs with auction proceeds. It will be conquered when companies like Duke and NRG lead the way in demonstrating cutting edge low carbon technology at scale and deploying it en masse.

For our part, in 2006, NRG (which is a $5 billion market cap company) announced a plan to invest up to $15 billion in 10,000 megawatts of new low and no carbon projects in the

United States. Since that announcement, we have spent several hundred million dollars developing wind farms; we recently acquired a very large solar thermal development program that, if it comes to fruition, represents more than a $1 billion investment in total; we have announced a scale post-combustion carbon capture and EOR project at our largest coal plant and we are one of the lead proponents of new advanced nuclear development, with a $8 billion project under consideration by the DOE's loan guaranty office. We are doing all of this in anticipation of comprehensive federal climate change legislation as part of our philosophy that NRG wants to be a first mover in the technologies and the projects that will be spawned by climate change legislation. As you can see, we at NRG have the will and the capability to drive decarbonization in our fleet and in the industry. What we need from Congress is a market price signal for carbon, a transitional "no windfall" allocation approach that doesn't take away our means to invest these billions of dollars, and the other complementary measures and policies of the USCAP *Blueprint*.

3. *Third, the Committee should recognize that the electricity industry, currently the single largest emitting sector in the United States, as it decarbonizes will become a central part of the solution – both in our ability to export our new technologies to electric industries in other emitting nations and in our ability to displace other forms of carbon-producing energy in other sectors. Of course, I am alluding in particular to the mass displacement over time of the internal combustion engine by the all electric car.*

Energy production does not exist in a vacuum. It is fundamentally connected to the society we keep and the type of civilization we are and we want to be. At the center of our fossil fuel energy-based society right now are the car, the high voltage transmission system and the base load power plants that feed it. Congress is in a position right now, with the economic straits we find ourselves in as a country, to alter fundamentally and vastly for the better each of the three:

- By jump-starting Detroit's ability to bring about electric vehicles and electric refueling infrastructure;
- Through funding, standards and incentives for a smart grid and smart meters; and

- Through complementary measures for clean technologies, most notably baseload clean coal and advanced nuclear.

You can act as a catalyst for a virtuous cycle begetting a cleaner, more sustainable, more affluent society. I ask each of you simply that you always keep in mind the context in which we produce power and what should be our common goal. If you do this, and if all of us work to define and find the common ground in the center, I am convinced that when history is written three generations from now, it will be said that the post-hydrocarbon age began when, in the ninth year of the third millennium, the United States Congress led the way in turning Americans away from consuming the Earth's resources in a non-sustainable way, to focus instead on the type of value creation and life experience that can be sustained and enjoyed fully by their own grandchildren.

Thank you again for the opportunity to testify. I would be pleased to answer any questions you may have.

Mr. MARKEY. Thank you, Mr. Crane, very much, and we thank all of you.

And now, we will turn to questions from the committee members, and we will begin by recognizing the gentleman from California, Mr. McNerney.

Mr. MCNERNEY. Well, thank you, Mr. Chairman. I want to thank the panel for coming here today, and I find your testimony good and interesting.

In your testimony, Mr. Holliday, you mentioned that DuPont reduced greenhouse gas emissions while reducing costs. Am I correct on that?

Mr. HOLLIDAY. Yes, we reduced 72-percent greenhouse gas emissions over the period of time described, and we did it by letting the resources go to the very best projects, so every project we authorized at least earned 12-percent return, which was good for our shareholders, and so that is what we think is so key about the cap and trade approach, that it allows the resources to go to the best projects so people can trade and develop those. We think it makes a big difference.

Mr. MCNERNEY. Was there a net job gain or net job loss, or was it neutral?

Mr. HOLLIDAY. For the United States, it was a net job gain from that.

Mr. MCNERNEY. Ms. McDonald, I am going to ask you a similar question. You said that Alcoa reduced the GHG emissions by 36 percent. Was there an increase in cost or a decrease in cost for operations as a result of that program?

Ms. MCDONALD. It was a result of some major changes in reducing our process emissions, and that has resulted in not only decreased costs but has increased our efficiency greatly.

Mr. MCNERNEY. Well, thank you, and that brings me to my point, which is the thing that excites me about this bill is that if we do it correctly, we can get to the point where we pay less for energy and have better results and create a lot of green jobs in the process.

I would like to ask the other panel members that I haven't asked yet if they agree with that optimism. Do you think we can reduce energy costs and have a better quality of life and create jobs at the same time? Starting with Mr. Cavaney.

Mr. CAVANEY. I believe on the front end, one of the things that is particularly important about looking at a framework as U.S. CAP has pulled together, it has a number of linked elements that help reduce the higher costs and the more volatility that we are likely to see in the earlier years. But as time goes on, as my colleague had mentioned, what you will find is you find over time the efficiencies will get better, and better, and better, and therefore, there is less need and less volatility in the system, and then, you will end up having made that transition in the most effective way.

Mr. MCNERNEY. Thank you. Mr. Rogers.

Mr. ROGERS. I think, over time, you are going to see the price of electricity rise. I think that is inevitable, and that is why it is critical that we get the regulatory models correct so that there are adequate investments in energy efficiency so that we are able to give consumers control over their use of electricity, and over time,

they can reduce their bills by reducing their usage levels and productivity gains.

But it is inevitable that the price of electricity is going to rise over the coming decades, and that comes off a decade-and-a-half where the real price of electricity has actually fallen.

Mr. MCNERNEY. Well, that is going to happen. Electricity prices are going to rise anyway, but I believe we can get ahead of that cost curve with efficiency gains, and that is the point that I am trying to make.

Mr. ROGERS. I don't want to mislead you. I think the price of electricity is going to rise in every event. It will rise in compliance with carbon legislation, but the way we address that is with productivity gains in its use, because what I envision is not only do we retire and replace existing plants with new plants that will drive prices up, but as we go from an analog grid to a smart grid, that will drive prices up. In 30 states where they have adopted renewable portfolio standards, that will drive prices up, and over time, you are going to see prices continue to rise.

The big question is can we incent energy efficiency investments to control usage and get productivity gains.

Mr. MCNERNEY. Thank you. Ms. Beinecke?

Ms. BEINECKE. I would just like to emphasize that there are tremendous opportunities in energy efficiency. In California, you've had great experience. Even though the cost may be higher per kilowatt hour, the usage is left because of the very great mandate for energy efficiency there, so energy efficiency is the cheapest, fastest way to get real reductions in carbon emissions and that will decrease the direct cost to the consumer, so the quicker that we can unleash that opportunity, the better it will be for the consumers across the country. And there's just huge opportunities in the building sector, in the appliance sector, in commercial buildings, at home, et cetera, so there is a huge opportunity there.

Mr. MCNERNEY. Mr. Crane, you've got about six seconds, but they will give you another 30, maybe.

Mr. CRANE. Thank you, Chairman. Congressman, to me, the answer to your questions depends on what your view of future fossil fuel prices are. Our company's view is that they are more likely to be like they were last June than they are right now. And if you think about that, and you think about where there money for fossil fuels goes, that there is no doubt in my mind that the American public will be more prosperous with the adoption of the type of technologies that will be incented by this legislation.

Mr. MCNERNEY. Thank you.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentleman from Texas, Mr. Barton.

Mr. BARTON. Mr. Chairman, are there members on that side that haven't asked any questions yet? Have we recognized all of them?

Mr. MARKEY. No, we have not.

Mr. BARTON. Then, let us recognize that.

Mr. MARKEY. Thank you. We appreciate that. That's very generous. Thank you.

We will recognize next the gentleman from Maryland, Mr. Sarbanes.

Mr. SARBANES. I appreciate it very much, and I appreciate that courtesy as well.

Mr. BARTON. Just give me a vote when we go to mark up.

Mr. SARBANES. There's no free lunches anymore in America are there?

Thanks for your testimony. I want to come back a little bit to the discussion you just had about the extent to which the expectations about consumer efficiency effect the models or the projections. And obviously, my view of the auction question, in other words how much free distribution there should be, at what levels and for how long, versus auctioning these allowances, as well as my view of what percentage of the proceeds ought to be coming back to the ratepayers, is significantly affected by my confidence or lack of confidence in the consumer, with some kind of rapidity, put these efficiencies in place. And I assume that the models that you have done are putting kind of assumption in place as to how quickly you can move with respect to the consumers efficiencies.

But it is very elusive, and there is a kind of leap-of-faith element in many different aspects of this issue. I was curious of what the incentives are that you are thinking of offering to your ratepayers to become more efficient themselves, to take ownership of this, beyond, simply, their desire to escape the added burden that is going to come from increased electricity cost as you indicated. I mean what kind of partnerships are you going to enter into? What sort of programs will there be? And anybody can answer that.

Mr. ROGERS. I think what is going on in virtually every state that we operate in, there is a total rethink of the regulatory model. In California, they adopted decoupling, but quite frankly, that leaves companies just economically indifferent and not much gets achieved through economic indifference. What will fundamentally change investment in energy efficiency will be a model that incents companies to invest in reducing megawatts in the same way we are incented to meet the growing demand to building a megawatt.

So we have proposed in each of the states we operate in a save-a-watt approach, which basically compensates us in the same way for reducing megawatts, so what you can see is that we will take hundreds of millions and billions of dollars over time, once the regulatory model is in place, to actually invest in our customers, to help them have productivity gains in their use of electricity, and I believe what will come, if we look back 5 to 10 years from now, what we call energy efficiency today will be very primitive compared to what will be done over the next decade. And I believe that will be driven at the state level. That will be driven by changing the regulatory models.

Mr. SARBANES. So your investment could be seen as another way as giving the consumer kind of a rebate or a reward for being more efficient, and then, it kind of feeds on itself.

Mr. ROGERS. Well, I actually think that technology is really the key here. I have come to believe to that putting a list of 15 things on the refrigerator for a family to do to reduce their usage is going to get the job done. Yes, there will be 10 percent of the people or 15 percent of the people that would do that, but the ability to deploy technology, where you are writing software for the home, software for business, so you are using technology to match up to the

comfort and convenience of the customer, and that automatically happens, so it is back of mind in the same way when somebody walks into a room and throws a switch, the lights come on. Nobody asks is that nuclear? Is that coal? Is that wind?

We hope that the technology will evolve and the software will be written that it automatically occurs, and those energy efficiency gains occur in the home by the way is been programmed.

Mr. SARBANES. OK, my time is up. I just wanted Mr. Chairman to note, for the record, this morning, I was at the U.S. Coast Guard yard in Baltimore, which, today, became the only U.S. Coast Guard facility in the world that is now going to be powered 100-percent by renewable energy. It is a landfill. They are capturing methane, piping it under the highway and bringing it into the Coast Guard Yard, and it is a real model for the federal government in partnership with private enterprise to take the lead. Thank you.

Mr. MARKEY. I thank the gentleman very much, and we now turn and recognize the gentleman from Vermont, Mr. Welch.

Mr. WELCH. Thank you, Mr. Chairman and Chairman Waxman. I thank the panel members for your leadership on this.

As we have been having discussions and getting questions from both sides of the aisle, a major concern is the economy and what the impact is of taking action. And I would say there is two schools of though here. One is that if we take action, it actually will threaten jobs, and I think many of people who take that position, it is not just political. It is a legitimate concern. And the other, and I think this is embodied by the bill that Mr. Waxman and Mr. Markey have presented to us for discussion, embraces the confidence that we can actually create jobs, and it is the better way for our economy.

I want to get your comments on that and how we address these concerns that some people are making about jobs, because we can either get stalled or answer the legitimate concerns that are raised. And I will start, Mr. Holliday, with you. I mean you have heard all of the concerns, and probably, you have had those discussions within your own company.

Mr. HOLLIDAY. Exactly, and that is why we think in our Blueprint, the way we have talked about phasing things in, taking into account how the allowances are allocated so we don't have a sudden shock to the system is very important.

What I see from our company is in solar systems, biofuels, energy efficient systems for home, there are so many opportunities, if we had the market here, we would develop the manufacturing and new jobs here. It is a very complex situation. I don't want to say it is simple, but I think it is very possible.

Mr. WELCH. But your company is affected. I mean if we get it wrong, then employment could be adversely affected in your company, and obviously, you have got a responsibility to maintain your bottom line for your shareholders, so you have come to this conclusion that it is better to act.

Mr. HOLLIDAY. Absolutely, without question.

Mr. WELCH. And Mr. Rogers, how about you? Same thing, I mean you are in an industry where the more you produce and sell, the better your bottom line, and you are talking about a new way of doing business.

Mr. ROGERS. We believe now is the time to act. First, we are going to get more bang out of the buck that is spent in that part of the stimulus, the Green Stimulus, if we have a price of carbon and a roadmap going forward. So we think that gives us a chance to amplify on the dollars that have been spent.

Secondly, I believe it is not shovel-ready jobs that we are going to produce. We are going to produce real 21st century jobs. As you start to look at deployment, in Indiana, we are building a coal gasification facility, and that will be the cleanest coal plant, but it also will become a site where we can do carbon capture and sequestration and start to scale it. So in my judgment, there will be lot of jobs developed and tied to having a price on carbon and having a clear vision with respect to the roadmap forward.

Mr. WELCH. Thank you. Ms. McDonald, how about Alcoa? They have considered this, obviously.

Ms. MCDONALD. Yes, we have, and we think that the long-term certainty that this legislation can provide is really important in providing that sort of confidence over the long term, because we believe that this is an issue that really requires action and requires U.S. leadership. And we believe the sort of technology that will be unleashed if we get the framework right will provide a basis for us to invest and for the lightweight technology has to be a marketfaring product.

Mr. WELCH. I want to get your opinion on a thought that came to me as I was listening to the concerns raised by folks who were worried about us taking action. It is about jobs, and the people have their points that this will help or will hinder. And I share the view that you have expressed that it will help.

But will there be any problem, as people on the panel see it, if we put into the bill some mechanism by which we could do an assessment every six months or so about what the impact was of renewable electricity standards or what the impact was of the cap and trade so we are answering the question specifically as we go along and building into the legislation some capacity to make adjustments that in the implementation of anything complicated will require adjustments?

I will start, Mr. Crane, with you.

Mr. CRANE. I don't exactly about the six-month thing, but I think the U.S. CAP blueprint talks specifically about cost-control mechanisms to make sure that you are moderating the system as it goes along and looking at impact.

Mr. WELCH. OK, Ms. Beinecke?

Ms. BEINECKE. I think it is a good idea. I think that there has been a lot of studies done by different organizations, looking at what the job potential is. There certainly a lot of believe that the jobs are there, documenting it, and then calibrating areas that need incentives and those that don't. It is a good thing to note.

Mr. WELCH. Thank you. I think my time is up. I will yield back. Thank you all very much.

Mr. WAXMAN. Thank you, Mr. Welch. Mr. Blunt?

Mr. BLUNT. Thank you, Mr. Chairman. I don't want to unnecessarily repeat anything that has already been done here, but I do have some questions. I know Mr. Rogers, in his submitted testimony, raised the issue about the renewable electricity standards

that were included and had concerns about those. Does anybody else share the concerns about the renewable standards?

Mr. Rogers, can you talk to me just a little bit more about that, how you think those standards could better serve the purpose of the bill here?

Mr. ROGERS. My judgment is, as a cap and trade, once you let the market work, the market will select the right technologies, and the price on carbon will allow that to happen. We already have 30 states with a renewable portfolio standard, so we are on the way to that happening. And what you will note is every one of them is different, because every state is different in terms of the availability of renewables.

The other point I would make is, in a sense, a renewable portfolio standard, the way it is designed, it is picking technologies when those technologies have already got significant tax stimulus that are investment tax credits, bonuses. We are all aware of that as a wind producer, the availability of those incentives. So I think, in a sense, having a cap and trade system and a renewable portfolio standard, in a sense, is belt and suspenders, and a picking of technologies is not needed under a robust cap and trade system.

Mr. BLUNT. Should nuclear be one of the available renewables?

Mr. ROGERS. If the goal line is a low-carbon future, you would expand and transform the renewable portfolio standard into a low-carbon standard. But now, we are on the road to command and control, and it raises a fundamental question about whether you really need a market approach cap and trade if all of a sudden you are moving to a 60-percent renewable low carbon portfolio because you are picking the technologies rather than letting the market pick it.

Mr. BLUNT. Now, you think it would be practical at all for the states to determine in their state what their renewable standard should be for their states? I thought I heard you almost suggest that that was a workable alternative.

Mr. ROGERS. I think it is a workable alternative, and that is why 30 states have stepped up and done it, but you will notice in many of the states, what they have done is they have included energy efficiency as a component. The other thing they have done is they have a provision that provides an economic out because people on the state level are concerned because they are closer to the consumer. They are concerned about the price impact of a renewable portfolio standard, particularly if the prices are extremely high and will drive the price of electricity up in a sharp and unyielding way for consumers.

Mr. BLUNT. Thank you. Mr. Holliday or anybody else can address this as well. Do you have any sense as where w move into where we are less competitive because of our utility rates that the two huge developing nations, India and China, would not try to move in and take advantage of that option, and is there any evidence that they have ever held back to not compete in a way that takes advantage of their new situation?

Mr. HOLLIDAY. Well, I think we ought to see China and India as serious competitors to the country, and that is why I believe this action that we are talking about today is the right step if we can become leaders in more efficient energy. The overall equation is

how efficient is our energy? How about the cost of our energy versus the cost in China or the cost in India? So we have to make sure that that is the case. Very much, they are our competitors.

Mr. BLUNT. And is the timeframe that we are getting there the right timeframe in your opinion?

Mr. HOLLIDAY. I think we need to lay out the game plan, and the industries will know what the opportunities are. My judgment is that science and the technology will come along faster than we currently think once we know exactly where the goal line is.

Mr. BLUNT. So how long do you think it would take us to get to the point that we were a lower-cost energy producer? The transition here is actually what bother me the most. It is not the goal. It is getting there at a time that doesn't create a competitive disadvantage for us.

Mr. HOLLIDAY. We are working on solar technology now. Solar is only 15 percent efficient. Fifty percent of the solar cells are made in China. They are my customers. I make the raw materials here for those solar cells. So if we could put in the right systems, I don't see why we couldn't move that solar cell manufacture here very fast and start making a difference with only a 15 to 30 percent efficiency. I can't give you an exact timeline how long that will take, but it will be over a decade.

Mr. BLUNT. Well, how does cap and trade make this more utility efficient?

Mr. HOLLIDAY. If cap and trade does, as Jim Rogers described, lets the resources move to the most efficient system, which is what is critical about it. That is what we have done inside our company, but it will take time. This is not a one- or two-year fix.

Mr. BLUNT. But aren't you adding cost to the system? I guess that is the timeline that I am most concerned about. And Mr. Rogers, I am going to let you answer this, too, because you obviously have an answer here, but go ahead, Mr. Holliday.

Mr. HOLLIDAY. Yes, I think there will be some increase in the costs in the system, just as Jim described. I think it is critical that as you enact this legislation that it have the right safeguards that if China and India don't ultimately follow, we have got some ways to make adjustment.

Mr. BLUNT. And is it your opinion are any of those safeguards in the legislation now as you have looked at it?

Mr. HOLLIDAY. What we have proposed in our Blueprint from U.S. CAP, there is. I haven't studied the detailed legislation to be 100-percent sure.

Mr. BLUNT. Mr. Rogers?

Mr. ROGERS. Congressman, I think that you have really focused on one of the key issues, and that is this: we have go to get the transition right, and that is to smooth out the cost impact on consumers on a long enough period, and we have got to map up the transition period to our technology roadmap and the availability of technologies at prices that make sense. And I think we can do that.

And I would say one other thing, and this really goes to the earlier question. I believe now is the time to address carbon legislation, when the economy is in a recessionary period, because we will be more focused on the economics of this than the theology of it. And what I mean by that is this: we can address climate. We can

put a price on carbon. We can put a cap on emissions and let it decline over time. The key is to get the transition right, and that is a longer discussion about allocation of allowances.

Mr. BLUNT. Thank you.

Mr. WAXMAN. Thank you, Mr. Blunt. We have several members who should be recognized next, because they didn't get a chance to ask questions of the last panel, but I would ask their permission, since I have leave for another appointment to be able to say some points and ask some question first.

Without objection, I am grateful to my colleagues for this opportunity.

Let me just say I have been involved in environmental battles for all of the time I have been in Congress, and I have never seen anything like U.S. CAP and this panel that is making this presentation today. So often what we have seen is one side environmentalist and the other side is industry, and then they fight it out. What you have done is come together over a two-and-a-half year period and discussed these issues and tried to figure out some way to accomplish the economic goals and the low-carbon future that we are going to need, so I want to thank you very much for the work you have done.

Mr. Rogers, just to follow up on some of the points that came out in your answers to Mr. Blunt's questions, when Secretary Chu was asked why do we need a renewable portfolio, and why don't we just have the cap and trade get us to where we want to do, his response was that it would take awhile for cap and trade to get us to some of these points. It would be quite a while down the road, and he though a renewable portfolio, which doesn't specific whether it is solar or wind but specifies among different renewables, that would get us some reductions right away. Do you disagree with that?

Mr. ROGERS. I listened carefully to Secretary Chu's answer this morning that you suggested, and my point of view kind of rolls out like this: one is, if you look at the study by EPA, you see a significant increase in wind already. And that is driven, and I say that as someone who is in the wind business, by the tax incentives that exist today, and with the new incentives, we are driven even more to invest.

I think the key point from my standpoint, you have got 30 states with renewable portfolio standards. An approach would be to say every state should have a renewable portfolio, but leave it up to the states to determine what makes the most sense for them. And a way forward to that would be have a date certain for the states to design one, because quite frankly, not one size fits all, and the fact that you have 30 very different renewable portfolio standards today reflects the differences that exist in the different geographies and the different sensitivities around the country.

So we can achieve what Secretary Chu is talking about by having every state have a renewable portfolio standard, but let each of them design their own.

Mr. WAXMAN. Well, that is an interesting concept. Would you also allocate some help to the ratepayers in all of those states where there is a renewable portfolio standard driving up the cost.

Mr. ROGERS. What do you mean by help?

Mr. WAXMAN. Well, under the U.S. CAP proposal, the utility would be able to lower the rate for the ratepayer as a result of the increase of cost from the cap and trade. Here we would be talking about an increase in costs as a result of the renewable portfolio. Do you think that the ratepayers ought to get some assistance from the money generated from the cap and trade system?

Mr. ROGERS. It would be my judgment, and maybe I am just a purist, but to the extent you have a cap and trade system, and you did the allocation of allowances, I would tie it to the cap and trade system, and I wouldn't try to add or subtract from it, because it puts us on a slippery slope that if you are going to do it for that, why not for this, or why not for the next thing. Or as we have seen, some people have suggested using these revenues for purposes far beyond solving our climate challenge. I am a purist when it comes to——

Mr. WAXMAN. Well, I would object to that, but this is related to our climate problems.

Dr. Beinecke, what are your thoughts on both of the issues?

Ms. BEINECKE. I think that one of the things that we have seen, particular in the renewable area is that the uncertainty with sort of stop-and-start annual tax credits, and one of the things that Secretary Chu said and I think is really important is long-term consistent signals to allow investors to really make a commitment in the sector of renewal. And I think a renewable electricity standard actually does that because it provides a long-term, consistent signal to the investor to allow major investment in that are and increase the percentage that renewables provide.

We have seen, just over the last year, sort of stops and starts and uncertainty in investments, and if we are really thinking about unleashing clean energy over the long term, a signal for that long-term consistency is important, and I think a renewable electricity standard does that.

Mr. WAXMAN. Well, I see my time is about to expire, but we have heard repeatedly today concerns that passing legislation like the discussion draft would cripple the economy, yet you represent the core of our economy, manufacturing, utilities, and energy, so you are giving us the exact opposite message. You are saying that our economy and your company's success depends on the passage of our legislation. Is that the conclusion I am to draw? And I guess that could be a yes-or-no answer.

Mr. ROGERS. If you get the transition right, I think the answer is yes.

Mr. HOLLIDAY. Yes.

Mr. CAVANEY. Transition, yes.

Ms. MCDONALD. Transition is the key. That is why we are here, but certainly, as well, it is critical that we have legislation which provides long-term certainty.

Mr. CRANE. I agree with my colleagues, yes, on the transition.

Mr. WAXMAN. Thank you.

Mr. Sullivan, you didn't get a chance to ask questions, so I am going to recognize you next.

Mr. SULLIVAN. Thank you, Mr. Chairman. My question is for Mr. Cavaney. How are you doing?

The Waxman-Markey Discussion Draft would include petroleum refiner within the definition of covered entities in the cap and trade provision of this bill. Recognizing that the legislation is currently silent on the choice between allocation and auction, can you please provide your thoughts on this issue?

Mr. CAVANEY. We are covered, and we are also unique in our classification. We are covered for both our own greenhouse gas emissions that our refineries and other facilities make, but we are also, if you will, the point of regulation for the end users of our products that we manufacture for all of their greenhouse gas emissions, so we really dip in two buckets like no one else does.

One of the challenges that we have is that unlike LDCs and others, we don't have any legal mechanism where we can pass along costs or talk among colleagues. That's basically prohibited by law. There are a number of studies that have been out in the public that would indicate that if we got zero allocation, that would assume we are able to pass along 100 percent of our costs, and that is just not the case.

There are only two conditions where you can assume you might be able to pass along all of your costs. One is that you have perfectly inelastic demand, and the other is if you have totally elastic supply, and the U.S. refining industry has neither of those, so what we are trying to do is working with the staff and trying to update some studies, because any former studies really don't reflect the world that we are going to be in. And we believe that we will come up with some situation that we would like to present that will show there is some merit to considering us in an allowance allocation system as a result of our uniqueness.

Mr. SULLIVAN. And one other question, Mr. Cavaney, retention of good-paying American jobs is at the forefront of policymakers minds as we debate this bill. The Waxman-Markey discussion draft contains a provision that would supply additional credit, known as rebates, to energy-intensive industries that produce products that are heavily traded in the international commerce. However, it is unclear whether petroleum refining would qualify for these rebates in the discussion draft. Your thoughts on this?

Mr. CAVANEY. We are the second most energy intensive industry in America. We employ really good-paying jobs, and it is not quite clear to us whether we are qualified under that, but certainly, we would think we should be, because as a result, right now, there is about 6,500,000 barrels of oil of refining capacity that is being built outside of our borders, much of which is being targeted to come into this country, so if we don't have some similar protections and some guidelines, we are concerned about leakage and ultimately increasing imports at the expense of our domestic production.

Mr. SULLIVAN. Thank you, Mr. Cavaney.

Mr. WAXMAN. Mr. Braley.

Mr. BRALEY. Thank you, Mr. Chairman. I want to apologize for my voice. But I want to share the chairman's enthusiasm for seeing such a diverse group of people here today, talking about such an important issue to the future of our economy, our national security, and our country.

I was very pleased, Ms. McDonald, to see Alcoa's presence with the U.S. CAP. They have a huge production facility in Bettendorf,

Iowa, which I am very proud of, and I am proud of the jobs they create, and the incredible contribution they make to our national defense. But I am also very proud of companies like John Deere, who also has a presence in my district, and saw fit to exercise a leadership role in this important topic. And I think nothing brings that home more than the reason I was late getting here is because I was meeting with representatives IBM in the city of DeButte, which is the oldest city in Iowa and is my district, and IBM and DeButte are embarking on an important new partnership that grew out of IBM's decision to locate a global delivery facility in DeButte, creating 1,300 jobs. And because DeButte has been at the forefront of some innovative leadership in a small- to medium-sized city in sustainability, there is a perfect combination of forward thinking by corporate America and a progressive community that want to completely change the way they look at their energy footprint.

What I would like the panel to do is start by sharing some of the vision that each of your companies embarked upon to lead you to this table today and why this bill is so important to the future of corporate America. Mr. Crane?

Mr. CRANE. I thought with such a far-reaching question I would maybe get to go at the end. But our vision starts from the fact that we recognize that we are a major emitter of carbon, and that was not sustainable in the future, and we expect to be around for a long time, and we needed to get there.

But to us, again being the capitalist and believe in free market solutions, the opportunity here to sort of change the society we live in and to create, for us, what is essentially a low-growth industry, the electric industry as it is now, this is a high-growth opportunity for us, and particular when you look at the electric car, which for our industry is really the air conditioner of the 21st century in terms of electricity demand, we could be the solution, not only for our sector, but for the transportation sector, so that is what brought us to this place in time.

Mr. BRALEY. Ms. McDonald?

Ms. MCDONALD. We have had a similar journey, because we recognize that by its primary production, it is a very energy-intensive process, and we have found that we could successfully reduce our own process emissions, particularly in our smelting business, and engage in a lot of energy-efficiency projects. And we saw that this is something on which we must act, and there were ways of doing so which would be beneficial. And like Mr. Crane, we can see that moving to a world where there is increased emphasis on recycling, saving energy, using more recycled aluminum, and it is an opportunity for us to reduce our energy demand, but also to lower the resource overall. And so we can see growth in using recyclable aluminum, using more aluminum in transport for lightweight vehicles to save energy, to use aluminum in buildings, not only because it is recyclable, but also because it can create some more highly energy efficient buildings, and so we see the opportunity for setting up a long-term framework that will actually award those sorts of energy efficiency and lower resource use, and so we can see that that is going to be good for our company long-term and help us re-

structure into that world and keep locations like Bettendorf healthy and growing.

Ms. BEINECKE. There are so many clean tech companies around the country who come into our company every day with new ideas, new inventions, new technology. You see a huge opportunity to unleash. And what they want to know are what are the rules? What is the system that we can do this under. There is just a clamor out there right now.

Mr. BRALEY. Mr. Rogers?

Mr. ROGERS. In the 20th century, it was our company and our industry's mission to provide universal access to electricity. The reason we joined U.S. CAP is because we believe in the 21st century, our mission will be fundamentally different. One will be to decarbonizes our supply. Two will be to help our communities be more energy efficiency. And thirdly, we believe that this translates into energy security. Two statistics: 40 percent of the emissions today comes from the power sector; 30 percent comes from the transport sector. I can envision a world where you decarbonizes the generation fleets in this country. With plug-in hybrids and electric vehicles, we will have weaned ourselves from foreign oil, and we will have the energy security and independence that we all have dreamed about, and I believe our industry can play a role in making that happen. This is a first step on that journey.

Mr. MARKEY [presiding]. The gentleman's time has expired. The Chair recognizes the gentleman from Texas, Mr. Barton.

Mr. BARTON. Thank you, Mr. Chairman. Mr. Crane and Mr. Rogers, the current draft has a renewable portfolio standard for electricity generation that does not include nuclear power. It doesn't include new hydro, I believe, or old hydro, and it doesn't include clean coal. Would you gentleman support a clean energy standard that included those energy sources?

Mr. CRANE. I would, yes.

Mr. BARTON. OK, Mr. Rogers?

Mr. ROGERS. It would be my judgment with a cap and trade system you don't need a renewable portfolio standard or a clean technology standard, but if you are going to embrace and pick wind, and solar is a winner because of their low carbon, you should include nuclear as part of the low-carbon standard.

Mr. BARTON. So your preference, Mr. Rogers, is to have no renewable standard at all.

Mr. ROGERS. My preference is to leave it to the states to make judgments about whether they need a renewable portfolio standard in their state.

Mr. BARTON. OK, Dr. Beinecke, do you have a position on that?

Ms. BEINECKE. Yes, I should just say that U.S. CAP doesn't have a position on the renewable electricity standard, so we are all speaking individually on this point. We actually support the renewable electricity standard for the reason that I said earlier, which is predictability of investment, long term.

Mr. BARTON. Would you expand the definition to include some other things?

Ms. BEINECKE. I like the definition that is in the bill now.

Mr. BARTON. So you don't want to include nuclear and you wouldn't include clean coal?

Ms. BEINECKE. I wouldn't, no. I wouldn't.

Mr. BARTON. That is fair. Now, here is the $64 question. All of you gentlemen and ladies that support this cap and trade system, do you support it if they keep the current draft and there are no free allowances? It is a pure auction system. Mr. Crane?

Mr. CRANE. If it was 100-percent auction from the first year, no, we would not.

Mr. BARTON. All right, Ms. McDonald.

Ms. MCDONALD. Likewise, no, we would not support.

Mr. BARTON. Dr. Beinecke?

Ms. BEINECKE. We support what I talked about earlier which is in U.S. CAP, we designed an allocation system which the free allowance is going to——

Mr. BARTON. I just need to know whether you want a total auction like they current have or you think there should be allowances. I don't need a lecture on——

Ms. BEINECKE. No, I am just saying that we designed a model, and that is what we support, the model in U.S. CAP.

Mr. BARTON. So you do not support the current draft because it doesn't have any free allowanced.

Ms. BEINECKE. My understanding was that current draft hadn't really defined how the allowances would get allocated, and that was on of the discussions which is why were proposing U.S. CAP's——

Mr. BARTON. I guess that is fair. Mr. Rogers?

Mr. ROGERS. I would oppose any legislation that had 100-percent auction.

Mr. BARTON. OK, Mr. Cavaney?

Mr. CAVANEY. Oppose 100-percent auction.

Mr. BARTON. And Mr. Holliday?

Mr. HOLLIDAY. Oppose 100-percent auction.

Mr. BARTON. All right, how many of you are CEOs or at least decision makers in your company? I know Mr. Crane is and Mr. Holliday is. I think Mr. Rogers is. How many allowances does DuPont need, Mr. Holliday, either in tons or in millions or billions of dollars?

Mr. HOLLIDAY. I don't have a specific number, but they are not nearly as critical to us as they would be to some other companies in the equation.

Mr. BARTON. OK, Mr. Rogers?

Mr. ROGERS. As I started the testimony, because of the fact that we are regulated in the five states we operate in, I am really speaking on behalf of my customers, and I would say that any cap and trade system that allocates allowances would start with a base period, and I would be looking at 100-percent allowance allocation, year one.

Mr. BARTON. OK, that's fair. Total free allowance, year one. Mr. Crane?

Mr. CRANE. You know, we operate in competitive power-generation markets like Texas.

Mr. BARTON. We love that you are in Texas and that Mr. Rogers' company. I am all for you guys being in Texas.

Mr. CRANE. The U.S. CAP approach is based on net compliance costs, so we produce, as an overall company in the U.S., 64 million

tons of carbon a year. We don't need carbon allowances to cover all that because the cost of electricity will rise to cover part of that. But the European system, which as you know——

Mr. BARTON. Doesn't work.

Mr. CRANE [continuing]. Lead to some windfalls, we can learn from that and do it in such a way so there are no windfalls, and all we are seeking in the early years is to cover our net compliance costs and then to ratchet down on a transitional basis.

Mr. BARTON. My time is about to expire, Mr. Chairman. But there is a dichotomy. To go back to what Mr. Holliday said, you cannot have a system that puts a price on carbon and doesn't raise costs. If you have these free allowances, whether it is for a little bit of time or all of the time, then you don't get any benefit because you don't price it, and you don't bring the usage down.

Now, there is another way to do it, and that is to use the Clean Air Act model where you set a regulatory compliance. You actually set a performance-based standard, do away with cap and trade, and there will be a Republican alternative that puts that on the table here in the very near future, Mr. Chairman. With that, I yield back.

Mr. MARKEY. The gentleman's time has expired. The Chair recognizes the gentleman from Arkansas, Mr. Ross.

Mr. ROSS. Thank you Mr. Chairman, and thank all of you for coming today. While I believe there are some good things in this bill, there are others that cause me to pause and give me concern, and hopefully, some of you in these panels can help me with some of that.

I am going to speak first about the shorter the answers, the more questions I can ask, but I value your opinion, and I want to hear it.

Renewable electricity standard, if the whole point to this bill is to get carbon neutral, then, should it really matter where the energy comes from; and therefore do we need a renewable electricity standard? To any of you. Don't be shy.

Ms. BEINECKE. I think there is a real opportunity to unleash new technologies. As Secretary Chu mentioned earlier, even with the cap, the cap is not going to get going until after 2012, and we need to unleash technologies now. We need to figure out how to incentivize them. That is one way to do it. And certainly, we need more renewables to get to a clean-energy economy, so that is a design to do it. There may be other mechanisms, too, but unleashing that renewable opportunity, I think, is key.

Mr. ROGERS. I would suggest, Congressman, that with the tax incentives we have, that is going to stimulate investment in renewables. The fact that 30 states have renewable portfolio standards and other states are looking at it, that is going to unleash investment in these technologies, and in a sense, we don't need a national standard for a variety of reasons that I have discussed that is included in my testimony.

Mr. ROSS. Let me ask you this. You know, I believe that in states where renewable works, we should be doing it. Unfortunately, I come from a state that is not a wind state. Our options for renewable electricity are limited, which means they would largely have to be imported at a higher cost to our consumers.

Let me ask you as it relates to the renewable electricity standard, what you do think that means for those of us in the Southeast, those of use in States like Arkansas, where we are not wind states? Would it mean higher electric bills for our working families and seniors, or how would we go about trying to meet such a standard. I mean there is a reason why the states that do not have one don't have one, as it relates to a renewable electricity standard. You know, if you were a working family, a senior in Arkansas, what would this mean if the standard is passed? What would it mean, do you believe, for them?

Mr. ROGERS. Congressman, I recently spoke at the Clinton school, and this issue came up there in the questions and gave me a chance to kind of think about it and respond to it. And my judgment is if you look at the 30 renewable portfolio standards we have today, they are all different because every state has different resources. And clearly, our company does business in the Carolinas, in Kentucky, in Ohio, and in Indiana, and every state is different in terms of the ability to produce wind or the availability of solar. All you have to look at is a wind map of the United States or a solar map to see the uneven distribution of those resources.

The short answer to your question is for us that are not blessed with wind or the right solar concentration, it is going to mean higher prices without the ability to invest in the technology within the state.

Mr. ROSS. I guess my concern is we are not a wind state. And I think, you know, where we have wind, we should use it. Where we have solar, we should use it. I think we need to use more coal, but we need to clean it up and hold the company's feet to the fire to invest in the new technologies as they become available. We need to do more nuclear if we are serious about global warming. There are very few cleaner options. Natural gas, we need to do it all, and everything we can move from the science lab to the marketplace, I think we should.

Anyone on this panel want to speak to how biomass is defined in this, and a lot of us believe if the definition was expanded that would help us some, but we still think we would have a difficult time getting to the required percent in the time allowed. Does anyone know anything about biomass and how we might be able to expand the definition of that to help states like Arkansas that simply don't have enough wind? No? Wrong panel.

Finally, let me just ask this: I know there is going to be some exemptions early on for steel, but I notice they are not for refineries, and yet we are too dependent on other countries for our energy. Should there be some type of exemption on the front end for refiners, just as we have for steel today?

Mr. CAVANEY. Yes, sir, the refineries are the second most energy-intensive industry within the country. We now currently import 10 percent of our crude oil to use in our refineries. There is about 6½ million barrels of world-class refinery construction underway, a good measure of it targeted for the United States, and if we don't protect those 150-odd refineries we have here and the good jobs that they have, we are going to experience both loss of our own production capability here, we are going to significantly increase our

imports, and we will have some leakage of jobs elsewhere as people try to figure out how to compete.

So we would like to work with the committee to take a look at how we might be treated. We are unique. We are the only covered entity who is both on their own emissions as well as consumer emissions.

Mr. MARKEY. Thank you, Mr. Cavaney, and we want to work with you and with the gentleman from Arkansas.

The chair recognizes the gentleman from Texas, Mr. Hall.

Mr. HALL. Thank you, Mr. Chairman.

I guess I would ask all of the witnesses this. You know, most of us on this side, and most of the people I deal with and hear from are convinced that we are going to have a very weakened competitive position in the United States under cap and trade, and I think you all recognize that and you probably observed it from the questions from this side, and maybe from folks that you have talked to on the streets that think we are really going to be affected by it. I would like to ask each one of you, what evidence does U.S. CAP have that China and other developing nations would not take strategic advantage of what is going to be a weakened competitive position in the United States under cap and trade. You may not agree with this. Do you all disagree when I say I think we are going to have a weakened competitive position in the Unites States under cap and trade? Is there anybody that disagrees with that?

Mr. HOLLIDAY. We must have provisions in the bill you are preparing to take into account if China and India and other key countries don't follow in a significant way that keeps us competitive to make adjustments. But I think just the opposite is true. If we start first, we have a much better lead than letting them start first, and I think in the long run it will help us to be more competitive.

Mr. HALL. But however we start, if it goes in the direction it is going now, do you see any way in the world that it can't present us with a very weakened competitive position under cap and trade?

Mr. HOLLIDAY. Absolutely, I think it will mean that we will be the leaders in developing the new technologies.

Mr. HALL. We will be paying, too.

Mr. HOLLIDAY. Absolutely, and that is what creates the incentives to create the new technologies, but I think there is a real opportunity for us, but there will be dislocations in doing that, and we must take that into account for the retraining of people for the new jobs.

Mr. HALL. For any of you that have ever been in Sears or Wal-Mart or anywhere, when you bought something, you noticed a piece of equipment there between you and the door that you had to go by, and it is called a cash register, and you have to pay for what you get. And the United States is going to have to do that, and there is just one way to do of that I know, and that is in continued and increased taxes on a generation not even born yet if we carry out the program that this bill sets in motion.

So if you don't agree that we are in a weakened competitive position, just assume that we are going to be in a weakened competitive position. Give me some evidence that you might have that U.S. CAP has that China and other developing nations wouldn't take strategic advantage of it.

Mr. CRANE. Congressman, again, we think safeguards should put in against that. But I would also say there is an opportunity cost here and that is there is very strong evidence right now that China, as an industrial entity and as an exporter, is moving right now to take the lead in the electric car, to take the lead in gasification, to take the lead in nuclear power. These are all areas that are partially driven by concern about carbon, so in a sense by moving forward from where we sit, this give us, as a country, and opportunity to lead.

Mr. HALL. You mean you think we have a good opportunity under cap and trade? You think the United States does as this proposes?

Mr. CRANE. I absolutely think that a well-though-out cap and trade system will create incentives for innovation that this country is still the best at that can lead to development of great export opportunities.

Mr. HALL. Do you think China is going by the cash register?

Mr. ROGERS. Congressman, if I may, I would suggest to you that if we design this bill right, we get the transition right, it will not weaken our economy. It will put us in a position to be stronger over time. And I say that as someone who, about 50 percent of the customers that I serve make less than $40,000 a year, and they are in those Wal-Marts, and they are in Target, and they are looking for low prices, and they are concerned about increases, and their disposal income in the states that I serve are lower than the national average per capita. So I wouldn't be sitting here today if I thought a cap and trade bill would hurt them. One that is poorly designed could hurt them. One that is poorly designed could hurt our country vis-a-vis China or other evolving countries, but the reality is, we need to get the design right. If we get it right, it will make us stronger.

Mr. HALL. But haven't you testified or someone testified that your customer's rates would go up under the cap and trade as you see it in this bill.

Mr. ROGERS. It is my judgment that our rates are going to go up anyway as a consequence of aging infrastructure and the need to reinvest in it. It is a consequence of certain other factors.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes——

Mr. HALL. Mr. Chairman, may I just ask unanimous consent to include an article by the Washington Post on China Hopes Climate Deal Omits Exports. I ask unanimous consent to put this in the record.

Mr. MARKEY. A unanimous consent request has been made by Mr. Hall in an unprecedented gesture by Mr. Hall to ask an article from the Washington Post be put into the record, and without objection, I want us all to be eyewitnesses to this historical moment. So without objection, so ordered.

[The information was unavailable at the time of printing.]

Mr. HALL. If you are going to accept it, I may just withdraw it.

Mr. MARKEY. It will be included in the record.

The gentleman from Ohio, Mr. Space, is recognized.

Mr. SPACE. Thank you, Mr. Chairman, and I would like to thank the panel members for being here today and your testimony today,

but more so for your efforts with regards to U.S. CAP. I think it really represents a huge step forward in approaching these very challenging issues. I am convinced that there may be no more difficult issue for Congress to deal with this term, of all of those compelling issues out there, than climate change and would agree that something must be done.

A lot of us are concerned about the effects it is going to have, clearly and I just heard some testimony about the international marketplace and how this may affect our ability to compete internationally. I agree with Mr. Rogers when he says if it is done right, it may enhance our ability to compete internationally. My question, however, relates to domestic marketplaces issues, and specifically, I think most of us who come from Middle America, from coal-producing states, from heavy manufacturing states, have some concerns about the regional discrepancies and inequities that this may incur.

Mr. ROGERS. Well, one of the things that U.S. CAP Blueprint embodies is a focus on making the transition and the allocation of allowances to help make the transition. We spent a lot of time talking about that and recognized the linkage between cost containment, and the transition so that it doesn't hurt our economy during the transition, and we each can speak to that.

But I think what is missing in the bill today is really is not addressed is the whole transition issue. How is that done? I mean President Obama talks about 100-percent appears to have pivoted off that a little. There is allocation of allowance approach, and there are many approaches. So I think the important thing that needs to get done is have a robust conversation about the impact. In your state, 86 percent of the electricity in Ohio comes from coal. It would be one of the most directly impacted of all of the states of the country with respect to an auction system, for instance.

Mr. SPACE. Let me stop you, Jim, because I have a limited amount of time. I have only one more minute, and there was one more issue I wanted to talk about, and that is carbon capture and sequestration. The money that is devoted to CCS in the bill, it is my hope, will help offset some of those regional discrepancies that occur. Is that sufficient in your mind to help take care of some of those regional discrepancies?

Mr. ROGERS. I think it is great to have money invested in carbon capture and sequestration, and over time, it will make a difference in terms of developing the technology, but the short answer is, what is going to solve the impact on different regions is how you allocate the allowances, and that needs to be addressed. That is the key to getting it right.

Mr. SPACE. I have got 30 seconds. Does anyone want to weigh in? All right, thank you. I yield back my time.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentleman from Pennsylvania, Mr. Pitts.

Mr. PITTS. Thank you, Mr. Chairman.

Mr. Holliday, you said there could be dislocations or there would be dislocations as a result of cap and trade. What industry groups might suffer dislocations? I assume you mean job losses.

Mr. HOLLIDAY. I think the opportunities is what I was focusing on, and I believe that is for solar. I believe that is for bio-produced

fuels that can come from switch grass and corn or products from this country that we are not using productively today. And what we will need to do is take people that are not employed or need retraining and be trained for these industries. So I think a companion piece of this legislation should be the training to help people move into the new industries that will be growing.

Mr. PITTS. Well, how climate legislation treats the manufacturing sector is a critical issue that is sometimes overlooked. One specific concern of mine is how legislation avoids unintended consequences in the manufacturing sector. We can't pass a bill that creates huge disincentives against future growth and manufacturing. How would you propose to guard against a raid rise in energy costs for the manufacturing sectors?

Mr. HOLLIDAY. First, I agree with you completely that is very critical, and one thing we must watch very closely is natural gas, because it is a key feedstock to so many manufacturing plants in your state and across the country, and we have got find a way that the exiting U.S. industry is not totally disadvantaged, versus some places in the Middle East. We need to take that into account in the bill.

Mr. PITTS. I think it is well accepted that a cap and trade program would make our energy costs and production costs rise relative to countries without similarly stringent emissions controls systems, namely China and India.

There would be leakage. We had testimony in the hearing earlier. There would be leakage of emissions in jobs to less rigorous regimes. What would your recommendations be for reducing this leakage, anybody?

Mr. CRANE. I think we sound a bit like a broken record, but I think getting the transition right, we have a very adaptable economy with very adaptable companies in it, and avoiding a shock to the system. And that is why we think the committee should be very much focused on the transition period, and then, we think the consequences that you are referring to would not happen to significant extent.

Mr. ROGERS. One of our companies is in Indiana, and we the largest utility in Indiana, and Indiana is one of the largest steel producing industries, and NewCorp is one of our largest customers. And if prices went up there dramatically, and they could if the transition isn't done right, that could lead to a shutting down of plants and a loss of jobs, so I come back and say we have go to get the transition right, or it could have a devastating impact on our economy. The whole sport is around the transition and protecting our economy.

Mr. PITTS. Well, if we pass the bill, as drafted, do you foresee an increase in gasoline and electricity process, Mr. Rogers?

Mr. ROGERS. I think without seeing what I described in my testimony as the elephant in the room, no conversation around how the transition is going to work, I can't answer that without seeing what that transition looks like. But I do believe, over time, electric prices are going to rise in every event, whether there is carbon legislation or not, and I believe a renewable portfolio standard will add to pricing. I think going to a smart grid will add to prices of electricity. And I think, over time, carbon legislation will lead to in-

crease in prices. I think that is inevitable, and as I said a few moments ago, it is not going to be cheap, and we just need to face up to that and find a way to mitigate the impact during the transition and find a way to create new technologies and new jobs along the way.

Mr. PITTS. Dr. Beinecke, you wanted to say something?

Ms. BEINECKE. Just to follow up to what Jim said, in U.S. CAP, we actually dealt with the issue of the transition, and that is why we made the proposal that we did for how the allocation of the allowances could take place. I mean the issue of going to gas or disruption, regionally, additional increased energy costs, we addressed those directly, and the Blueprint, actually, is designed to provide a blueprint, in fact, to address how that transition could take place. I think that, in many respects, looking back at the document gives our best thinking on how to have that transition occur most smoothly.

Mr. PITTS. And did you come up with a price cost to remove a ton of CO_2 in the study?

Ms. BEINECKE. We didn't come up with a price, but we came up with both how the allowances could be allocated, and then what cost-containment mechanisms would be with offsets and other mechanisms that are designed to do that, and included a major investment in efficiency to lower the cost of the consumption, so all of these things are linked, and I guess that is another important aspect is the linkage.

Mr. PITTS. Thank you. My time is up.

Mr. MARKEY. The gentleman's time has expired. Just for the record, it is Dr. Bernanke for the banking crisis, and it is Dr. Beinecke for the climate and energy crisis. They are two different doctors for two different problems.

The chair will recognize himself. We are waiting, by the way, for two roll calls to be called imminently on the House floor, at which point we will end the questioning for this panel. We will then break for those roll calls, and then we will move onto the next panel.

I am going ask each one of you, if you could, quite briefly, just give us a brief response to the foundation principle of U.S. CAP, which is that action is needed now. Could you give your brief individual perceptions of what the consequences are for failing to act now in your opinion over the next generation.

Mr. CRANE. We are sitting on $1.5 billion that we want to invest in low- and no-carbon technology, and our assets tend to be 50- to 60-year assets, so we need certainly, and so we can start on this problem right now, but we need what the guidelines are in the Waxman-Markey Bill.

Mr. MARKEY. Thank you, Ms. McDonald?

Ms. MCDONALD. Like Mr. Crane, our business is a long-term business, and we certainly believe that this is an issue that is a global issue. We are experiencing a lot of regulatory movement in Europe and elsewhere around the world, and so we believe that it is important for the United States to act as well, and we are looking for the certainty that that would provide for our own long-term investments as well as the market stimulus that it would have for a lot of our products.

Mr. MARKEY. Thank you. Dr. Beinecke?

Ms. BEINECKE. We are part of U.S. CAP because we think that the science on global warming is powerful and overwhelming and we need action soon. We recognize that a solution that works for the environment has to work for the economy, too, and that business has to be part of it, which is why were willing to sit at the table with these companies and many more to try to work out our differences and come up with a proposal that we think can move us aggressively to reduce carbon emissions and address the economic issues that have been raised today in this hearing.

Mr. MARKEY. Mr. Rogers?

Mr. ROGERS. Mr. Chairman, I adopt all of the statements that have been made to date and would add to it by saying that by starting now, it will translate into a lower cost of compliance over time and a better ability to smooth out the cost impact on consumers.

Mr. MARKEY. Mr. Cavaney?

Mr. CAVANEY. Mr. Chairman, we are energy providers to the consumer, and we need investment certainty because the energy business is very long lead times and long investment cycles. We think a national approach gives us an opportunity to provide products without the variability of many states. We think that is important, and we feel that at the end of the day, the competitiveness that we will have globally, having gone through this period and adopting a program like outlined in the Blueprint makes great sense.

Mr. MARKEY. And Mr. Holliday?

Mr. HOLLIDAY. Two points: if we don't act, China will take the lead from us in the technology, and that is serious. Second, I lead, I lead a group of scientists, and they remind me every day, this science is real, and we need to act now.

Mr. MARKEY. Thank you. And Mr. Rogers and Mr. Crane, very briefly, what additional partnerships beyond U.S. CAP do you think your industries will have to reach with the automotive industry, with the building industry, with energy-efficiency industries, in order to put together partnerships to solve the problem.

Mr. CRANE. Well, I think where the electric industry has come up a little short is working on the transportation sector, because again, we are focused on solving our own problem, which is important, but the fact that we can solve the transportation industry's problem is a big opportunity for us, and I would like to see our industry do more in that area.

Mr. MARKEY. Great, Mr. Rogers?

Mr. ROGERS. I would say that in U.S. CAP, many of those industries are represented and have been part of this discussion, and I would say that we are investing with respect to the auto industry, and our own company has invested significantly so that our grid will be ready when the plug-in hybrid is available.

Mr. MARKEY. And what does that future portend, Mr. Rogers, in terms of the viability of the plug-in hybrid future of our country?

Mr. ROGERS. I believe, first, we need to transform our grid from an analog grid to a smart grid. We are on the way to dong that. And secondly, I believe that produces an opportunity with a plug-in hybrid, and I think it is sooner rather than later because the amount of work that is going into this is remarkable across the country. And as I talk to many auto companies, they are at work

with respect to this, and so I believe it is in the future, and it will give us a greater utilization of our fleet, and will lower cost over time on a per-unit basis.

Mr. MARKEY. Great, thank you, Mr. Rogers. And Mr. Cavaney, we will give you the final word.

Mr. CAVANEY. I think one of the key things is to establish a price of carbon that will work across industries that allows people to have metrics that are coming even though you have to cooperate rather than produce the same products, and I think that the efforts that are underway here now are the beginning to try to identify what that is, I commend you on it.

Mr. MARKEY. Thank you, Mr. Cavaney, very much. The chair's time is expired. I now turn and recognize the gentleman from Michigan, the ranking member on the subcommittee, Mr. Upton.

Mr. UPTON. Thank you, Mr. Chairman. As I indicated earlier today, I am mostly concerned about jobs and the job loss, particularly with a cap and trade bill. And Mr. Cavaney, you talked a little bit about the cost, multibillion compliance cost that you will all suffer under. And you know, that I think Aruba has got the largest refinery in the world, Venezuela. Something tells me that Aruba is never going to be underneath this legislation. We may try our best to get India and China, but something tells me that Aruba is not going to have the off ramp to proceed.

What is going to happen? Can you give some type of commitment as you look to produce gasoline for American? If you have additional costs in the multibillions to comply with this, what is the rest of the industry going to do in terms of domestic refinery production here?

Mr. CAVANEY. Well, that is one of the things that we worked on together with our colleagues in U.S. CAP was to create these complimentary measures that address situations like this. Again, ours is an energy-intensive industry. We are going to be susceptible to those threats of increased imports if we are too disadvantaged, but there are the allowance allocations. There are the opportunities of——

Mr. UPTON. But at some point, they come due. You might have a year or two off, but at some point, they are going to come back and hit you.

Mr. CAVANEY. But our other point is that if we get the certainty for investment here, we produce world-class materials in our industries for creating new opportunities. And we are investing very heavily, not only just in oil and gas, so we think that given framework similar to this that come through the system and giving that powerful signal is going to be our best effort to compete against, as Mr. Holliday as said, foreign nations which are not standing still.

Mr. UPTON. Ms. McDonald, same question for you. Alcoa produces primary new aluminum and recycled aluminum in a pretty good quantity, I think, in this country. Is that right?

Ms. MCDONALD. Indeed.

Mr. UPTON. What is going to happen to Alcoa as it relates to the percentages now, versus other countries where you might have sizable operations? Isn't there going to be a magnet to take those jobs someplace else if we impose these new cost burdens on them?

Ms. MCDONALD. I think our experience is very similar to what has been described. The producers of aluminum in Russian and China, now, are large because they have their own markets. And there is going to be a global regime impacting greenhouse gas emissions. Each country is going to be regulating it differently, but we think that for the United States to start to move now to provide that sort of long-term certainty and to provide the sort of transition and cost containment that we proposed as part of the U.S. CAP Blueprint would be the required conditions for us to get ahead of that game and to reduce the costs over the long term.

Mr. UPTON. OK, I am running out of time. Thank you. Mr. Rogers, you confessed that you are the third-largest emitter. What percentage of electricity, now, do you produce that would be considered under a sort of Upton-Rogers definition of renewable?

Mr. ROGERS. We are producing about 500 megawatts of wind.

Mr. UPTON. But as a percentage?

Mr. ROGERS. It is a very small percentage. I think, nationally, wind represents about one percent of the total.

Mr. UPTON. So are you below one-percent wind now?

Mr. ROGERS. We are, but if you look at our nuclear, about 96 percent of our electricity comes from coal and nuclear, 70 percent from coal and the remainder from nuclear.

Mr. UPTON. As you know, I am one that supports using nuclear, which is greenhouse-gas emission free, to be counted, let the market work to that end. But say we are not able to get that provision in. We are going to try, but let us say we are not able to get that in, and we have the definition that passed as the Udall-Platts Amendment in the last Congress. How much will it cost you, Duke Energy, to meet a 25-percent standard by 2025?

Mr. ROGERS. I don't have that number at my fingertips, but I will send it to you and submit it for the record.

Mr. UPTON. Would it be sizable?

Mr. ROGERS. It will.

Mr. UPTON. And the last question that I have, I have four seconds left. I had breakfast this morning with the Chairman of DTE. One in three customers in that region of Michigan are in arrears on their bills. Hundreds of millions of dollars will be uncollected. It is the same with other utilities around the country, more than 20 percent. What is the percentage today for Duke Energy that is uncollectable?

Mr. ROGERS. It is much lower than that, but it varies from state to state, but I would be delighted to submit that number to you, also.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentleman from Texas, Mr. Green.

Mr. GREEN. Thank you, Mr. Chairman, and I appreciate the opportunity for the hearing. Mr. Cavaney, I know a lot of these questions may have been asked by different members, and the whole panel, but it is kind of like Congress, we say it is not said unless all of us say it, so we may have some duplication.

I know the U.S. CAP Blueprint for legislative action called for the fuel-related GHG performance standards. Does the low-carbon fuel standard as written into the draft align with the U.S. CAP

Blueprint for legislative action that is called for, and if not, how is it different?

Mr. CAVANEY. No, sir, the Blueprint suggest that we not have an overlay of a low-carbon fuel standard on top of renewable fuel standards, and there is very good reasons why. A discussion draft has what I would call a donut hole in there. There is a period of time where from 2014 to 2022, we are to produce a low-carbon fuel with decreasing amounts, but during that entire period, we are not permitted to include all of the renewable fuels that we have already incorporated and will be incorporating into our renewable fuel standard. Also, there is a reach back to 2005, which does not give us permission to have a baseline anymore forward. We in North America and parts of South America rely on heavier fuels, which makes it much, much harder without the use of renewable and other things to reduce our standards, so we are going to have a very real problem trying to satisfy the consumer during that period, so we would suggest a closer look at the Blueprint in trying to harmonize that so we end up with one fuel.

Mr. GREEN. Having heard the question from my colleague from Michigan for Alcoa, I used to have an Alcoa plant in Houston, and it had a number of employees who were constituents. The Waxman-Markey discussion drafts contains the provision that would supply additional credits. What are you thoughts regarding whether refineries should be eligible for that, for those rebates? Do you think refineries ought to be included with chemicals and aluminum and other products?

Mr. CRANE. My view is you should take a look at each of those and look at their exposure, and find out whether or not you think that they are going to be somebody who is going to have leakage during the process. We think, looking at our industry, that we would like to work with the committee and try to be able to gain that opportunity.

I don't recall specific conversation about cogen within U.S. CAP, but I mean cogen, obviously is an exceedingly efficient form of energy, so I think it's something that should be supported as a matter of public policy.

Mr. GREEN. Thank you, Mr. Chairman, and I appreciate the time and again the responses, because energy efficiency should include cogeneration in some of our plants if we can do it. Thank you.

Mr. MARKEY. I thank the gentleman. And did you exclude the natural gas from the future base load for some reason, Mr. Crane?

Mr. CRANE. I think natural gas plays a role in the future base load, but we saw what happened when the country depends exclusively on natural gas for base load. It leads to a price spike that is not good for the economy.

Mr. MARKEY. OK, thank you, Mr. Crane.

The chair recognizes the gentleman from Florida, Mr. Stearns.

Mr. STEARNS. Thank you, Mr. Chairman. My question is for Mr. Rogers and Cavaney. It turned out in Europe, the granting of free of allowances led to this huge windfall of profits by the utilities. I guess the question is isn't the U.S. CAP just sort of a grand bargain to get the business support in exactly the same way? I mean that is what it looks like to us on this side, anyway. You might comment on that, Mr. Rogers, and then, you, Mr. Cavaney.

Mr. ROGERS. There are two important points. First of all, what happened in Europe was a consequence of not following what we did with the cap and trade system for sulfur dioxide. One, they didn't have Bashers, so they couldn't allocate it on Basher's, and secondly, they had a short-term experimental period that created some gaming in the process, and it had a fundamentally different regulatory regime for power companies. They had deregulated, entirely, the industry there. So you have a different fact circumstances here in the U.S. today.

Mr. STEARNS. OK, I appreciate that.

Mr. ROGERS. But here is the second important point, and that is this: under our proposal all of the allowances go directly to a local distribution company or a local utility, which are regulated by the state, and there are no windfalls to utilities or corporations with respect to the granting of allowances under our proposals. That is one of the great myths that have floated around, and it is just wrong.

Mr. STEARNS. OK, and Mr. Cavaney?

Mr. CAVANEY. Yes, it is called free allocation and there is a misnomer there. Really, the intent is that this allowance that is made is to cover the unrecoverable costs of implementation here so ultimately the beneficiary of this is a softening of the volatility and increased prices that the consumer may experience about that, and there is an opportunity to look at these things and we are not going to be repeating, as Mr. Rogers says, the kind of incidences that occur in Europe.

Mr. STEARNS. Dr. Beinecke, we went on your Web site, and your Web site states, "New nuclear power plants are unlikely to provide a significant fraction of future U.S. needs for low carbon energy. NRDC favors more practical, economical, environmentally sustainable approaches to reducing the United States and global carbon emissions." Now, here is a power source that emits zero carbon dioxide. Why is this not a solution to reduce carbon emissions based on what your Web site says? I mean, it seems to me that you should be at least neutral on this.

Ms. BEINECKE. I would say we are generally neutral because we don't oppose the existing 20 percent that is already provided by nuclear power. What we are really saying there is that we think there is tremendous opportunity in efficiency first and foremost, in renewables, in new technologies that need to be unleashed, that nuclear power is a mature power source in this country that has, you know, been with us for decades and it will continue to be, but what we are looking at is, what do we need to unleash in the future to really reduce carbon emissions, and those are new technologies that and new investments——

Mr. STEARNS. Well, nuclear——

Ms. BEINECKE [continuing]. That haven't been experienced yet.

Mr. STEARNS. But nuclear has zero carbon dioxide and no carbon emissions and you want to reduce carbon emissions.

Ms. BEINECKE. Well, what I said is that I wouldn't reduce the 20 percent that is there but that what we are looking for, particularly from NRDC's point of view, is, what are the new things that we have to bring online, and the bill is really designed to unleash the area of energy efficiency and appliances and homes and buildings

which is both incredibly cost effective, actually earns money rather than costs money. So what we are focusing on is what we think the solutions are going forward that are not yet on the table, and we think, you know, nuclear is on the table and it will continue to be on the table and it will be a part of the solution——

Mr. STEARNS. Do you think——

Ms. BEINECKE [continuing]. But we don't have to be the advocate for it.

Mr. STEARNS. Do you think there should be a title in this bill for nuclear? Right now there——

Ms. BEINECKE. I don't think it is necessary. I think there is a title in the 2005 energy bill, the 2007 energy bill. I don't think that all of the subsidies and programs that were developed in those two bills have actually been fully implemented yet, so do we need another one right now? I would say no.

Mr. STEARNS. This is in fact based upon we have already something that is practical, technologically efficient and you don't think that we should have any encouragement for nuclear. I understand.

Ms. BEINECKE. That isn't what I said. I am sorry, sir. What I am suggesting is that there was a lot of encouragement in the last two energy bills and that I don't think that it is necessary at this time in this bill.

Mr. STEARNS. All right. Thank you, Mr. Chairman.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentlelady from California, Ms. Harman.

Ms. HARMAN. Thank you, Mr. Chairman. I have been sitting here for a few hours. I know you have too and so have the witnesses but I want to say that the testimony of this panel as far as I am concerned is the central testimony that we need, and their ongoing advice is exactly for me the roadmap forward for this committee for a couple of reasons. Number one, most of you on the corporate side are in the business of producing materials and fuels that are going to be regulated under whatever we do. You know exactly precisely what the impact of this regulation will be on you, and I have listened carefully and all of you are saying that you want certainty so that you can plan forward, and I have also heard you say, or at least I heard Mr. Rogers say, and I applaud it, that at a time of economic downturn, which we are in, no one would quarrel with that, we can do this better because we are more focused on the economics than the theology. Does anyone want to quibble with anything I just said? No? Good.

So my next idea, Mr. Chairman, is, instead of going to the vote, we ought to lock the doors and get our members here and sit down with these folks and with the kids in the green tee shirts for our inspiration and finish this. What do you think, Mr. Chairman?

Mr. MARKEY. We will be here late tonight so we might have to—I don't think we are going to have a problem. We have every member's attention for 5 hours.

Ms. HARMAN. I have been, and I think none of you has missed it, carrying this prop around with me and holding it up at all occasions. It is at the top of my little folder of materials and I have had a chance today to read it more carefully than I had, and I would observe that it is a much more detailed blueprint than some who have been asking questions might know. It is not a bill but it sure-

ly has at least what I would use, if I were a thoughtful legislator, which I hope I am, to craft a bill, and guess what? The draft bill that we have has been based on these principles. Everybody agree with that? Good.

Let me finally say, because maybe there are a few more members who want to ask questions before we have to go, that I have made another point which is that the composition of U.S. CAP is bipartisan. I don't want to ask anyone your party affiliation but I do want to ask the group, is that statement of mine correct? Are some of the members of U.S. CAP, the leaders of these organizations, Republicans and some of them Democrats? Is that true?

Mr. CRANE. Yes, that is very true.

Ms. HARMAN. That is very true? Well, good. So let me just finally say that, Mr. Chairman, I think we should regularly call on these people and the other 20 members of U.S. CAP who have participated in this work product and I really want to commend you again for using this consensus document as the basis for the legislation. I think we are going to end up somewhere right about here and we are going to do some very good work this year and provide the certainty that industry needs. I yield back.

Mr. MARKEY. We are going to follow the gentlelady's advice and the U.S. CAP as well.

To the gentlemen from Illinois, Louisiana and Connecticut, here is where we are. The gentlemen from Louisiana and Connecticut have yet to ask questions. There is about 12 minutes left to go. If the gentleman from Illinois would agree to this, I would like to divide the time in 4-minute segments between the three of you, if that would be acceptable, and then we can adjourn with this panel being dismissed. Would you mind?

Mr. SHIMKUS. I think I can do it that way, Mr. Chairman.

Mr. MARKEY. Thank you. The gentleman is recognized.

Mr. SHIMKUS. Thank you. Let me—the devil is in the details, and with respect to my colleague from California, who we all have great respect for, there is a gaping hole in this bill, which is the credits, which is the allocations, and what we fear is a stimulus-type proposal that gets dumped for markup at 11:00 the night before a 10:00 markup in which you all don't know whether you will be incentivized or harmed and it will get rammed through. Would you not agree that airing out the allocation issue in a transparent process in a hearing just like this would be helpful? Mr. Crane?

Mr. CRANE. Well, the allocation auction issue I think took up the most of the U.S. CAP's time over the 2½ years so I agree, we all agree, I think that is a very——

Mr. SHIMKUS. Well, let us ask everyone. Ms. McDonald?

Ms. MCDONALD. We certainly support the whole approach that is contained in the blueprint, which is the allocation process.

Mr. SHIMKUS. But I am talking about, don't you think we as a Nation would be better if we had these credits here that we could have a hearing on over a period of days to discuss this allocation process? How long did it take you all to do it?

Ms. MCDONALD. We certainly said that we want to work with the committee on that basis.

Mr. SHIMKUS. Well, the question is, would we not be better to have a hearing on the credits and the allocations so that you would

know and the public would know what is in the details of this bill, yes or no?

Ms. MCDONALD. It is not up to us I guess to——

Mr. SHIMKUS. It is up to you. You are testifying. My question is to you as an individual, would it not be beneficial to your company to know the details in a transparent process in a hearing on the bill, yes or no? You don't know what to know?

Ms. MCDONALD. We certainly want to know and——

Mr. SHIMKUS. So would it be helpful to have a hearing on the credit allocations on a global climate change bill, yes or no?

Ms. MCDONALD. We would certainly participate in the process.

Mr. SHIMKUS. Why don't you say yes or no, yes or no?

Ms. MCDONALD. If we were invited to a hearing, we would certainly——

Mr. SHIMKUS. Would it be helpful to your shareholders to know the cost of doing business prior to us voting on a bill?

Ms. MCDONALD. Yes, we would certainly——

Mr. SHIMKUS. And could we not have that if we had the allocations published?

Ms. MCDONALD. We would certainly want it published, yes.

Mr. SHIMKUS. Thank you.

Doctor?

Ms. BEINECKE. If there was a hearing, we would love to come and discuss it just as we have today with the allocations.

Mr. SHIMKUS. And that would be helpful in us clearing up a lot of this issue since there is a gaping hole, a glaring hole in this bill about who is paying for what?

Ms. BEINECKE. I think a transparent process would be helpful and——

Mr. SHIMKUS. Thank you very much.

Mr. Rogers.

Mr. ROGERS. On behalf of my customers, I would recommend a hearing on that specific issue.

Mr. SHIMKUS. Great. Mr. Cavaney?

Mr. CAVANEY. If transparent is possible, we will be there anytime, anyplace, and I think you should publish afterwards how the allocation was distributed.

Mr. SHIMKUS. Thank you.

Mr. Holliday?

Mr. HOLLIDAY. It is critical you get this part right, whatever process works.

Mr. SHIMKUS. And obviously if we had a hearing and it was transparent, that would be helpful to you?

Mr. HOLLIDAY. Yes.

Mr. SHIMKUS. Let me just finish because I have limited time, Mr. Chairman. For ConocoPhillips, the section 526 of the 2007 energy bill provides a prohibition. Now, I have a great refinery collocated near my Congressional district that is really relying on the ability to use oil sand from Canada. Section 526 of the 2000 energy bill is a prohibition. Do you think that that should be addressed?

Mr. MARKEY. I ask the gentleman to allow it to be submitted for the record so the other members can get their 4 minutes. Is that possible? I thank the gentleman. I appreciate it.

The gentleman from Louisiana is recognized.

Mr. MELANCON. Thank you, Mr. Chairman. I appreciate the opportunity to ask questions.

Mr. Cavaney, if I could, one of the things that I am concerned about with the refining section of the bill has to deal with, Mr. LaHood insisted that the bill was not going to harm the refiners, but if we are going to try and hold refiners responsible for consumer emissions, then do I understand that you are going to be able to get 100 percent of your money back out of the——

Mr. CAVANEY. No, sir. Using EIA data for, I would say, 2012, and if you use a cost of $25 a ton for carbon, the allocation, our compliance obligation is going to be $68 billion. The only way we can pass all of that along, 100 percent along, is under two conditions: we either have inelastic demand or we have elastic supply. Neither one of those conditions exists in the United States refining business. So therefore zero is not the answer when you talk about an allowance allocation for the oil and gas industry. We also have to cover our own emissions so we are the only industry that is in both of those buckets, so we are in the process now. We have looked at all the studies. They don't reflect the world going forward. We are doing some work with the committee and others but some adjustment needs to be made there and we also ought to address the area call for the energy-intensive and the trade exposed because we also have a lot of opportunities for incoming imports to displace good jobs here in United States.

Mr. MELANCON. And that is one of my major concerns right there. So if I am producing oil and gas in south Louisiana, primarily oil, and I start shutting down refineries because you can't stay in business, then what are we going to do, ship oil to foreign refineries and then ship gasoline back into the country?

Mr. CAVANEY. Well, that depends on whether people want our oil. We may not be able to get our oil sold at a reliable price because other people may want to use different grades and so we will be just out in that big bucket of worldwide global supply.

Mr. MELANCON. So instead of us just being dependent upon foreign countries for our energy needs in this country, we are going to be dependent upon their energy that they produced, their refiners and their ability to supply our country and keep our economy going?

Mr. CAVANEY. It doesn't have to be that way if we design this properly so that the protections are in place and we get to cover our uncoverable costs as we go through this implementation period.

Mr. MELANCON. I would hope that the folks in your industry would work with us. I need to find a way to make sure that the United States gets as close as it can to energy independence in the future because we are definitely not anywhere close to that. This to me is important about carbon emissions but it is even more important to me about economic stability and the power of this country to stay an independent and strong Nation, and without our own energy sources, we are going to be in trouble.

Thank you. I yield back my time.

Mr. MARKEY. And we appreciate the gentleman yielding back. The chair recognizes the gentleman from Connecticut.

Mr. MURPHY of Connecticut. Thank you very much, Mr. Chairman. I thank the panel for sticking with us this long. You know,

we are all very proud of the clean new technology companies that we have in our districts but they unfortunately are I think rapidly becoming the exception rather than the rule. We used to lead the world on solar and wind development and now places like China and Japan are vying for the top spot in photovoltaic production, and so I wanted to ask just one question to the panel, which is, this bill posits that by creating new market mechanisms through an RES and a cap-and-trade system that you are going to command the kind of private investment in clean new technologies that we want and need. There is also the route that countries like Korea and China have gone in making major public investments. I think 80 percent of Korea's stimulus bill was directly invested into these technologies.

So the question is, do you believe that the market mechanisms in this bill really are going to provide real stimulus to that clean energy industry or are we going to also need a real mix of direct subsidy to try to back up the market mechanisms that we have included here?

Mr. CRANE. Jim and I just came back from a green energy technology conference in California, and the entrepreneurs are alive and well but what is happening now is, they actually have the product that they didn't have 1 or 2 years ago but the market has dried up and the market has dried up because people like us aren't ready to invest until we know what the system is going to be. So I actually believe completely that a well-drafted bill will unleash—it will create the market that will allow that innovation advantage to actually continue in this country.

Mr. MURPHY of Connecticut. Any other comments? Let me then ask more specifically, one of the queries and concerns in the last panel was whether we are going to harness that technology and those industries domestically or whether the market mechanisms in this bill is just going to provide incentive for the production of these technologies somewhere else. Are there other things we can do in this bill to try to incentivize domestic production or is that going to happen naturally?

Mr. HOLLIDAY. I think speaking from our perspective at DuPont, we do a lot of research, I would study how other countries are incentivizing to make sure the technology is not only developed in this country but commercialized first in this country. I think there are mechanisms you can put in place the way you allocate your R&D dollars that could help that greatly.

Mr. MURPHY of Connecticut. Thank you very much. Thank you, Mr. Chairman.

Mr. MARKEY. Thank you, and we thank this very distinguished panel. Your work is the basis for the product that Mr. Waxman and I have put before the members. We will be consulting with you frequently for your expertise as we fill in additional details in the legislation but you are providing an enormous service to your country and we thank you so much.

With that, the hearing will stand in recess until 4:00 at which point we will recognize the next panel for their opening statements.

[Recess.]

Mr. MARKEY. We welcome you all back to this historic hearing, and we apologize once again for the delay. We have no control over

the length of the roll calls as they are conducted on the floor of the House, but we now are in a situation since those were the last roll calls on the House Floor that we can now have an uninterrupted hearing with brilliant witnesses and continue to build out this record on how to handle these very important issues that are facing our country.

Let me begin by yielding for our first witness to the gentleman from Pennsylvania, Mr. Doyle.

Mr. DOYLE. Mr. Chairman, thank you, and it is my pleasure to introduce one of the witnesses we have on our panel this afternoon, Mayor John Fetterman from Braddock, Pennsylvania. Braddock is a community in Allegheny County, and it is Allegheny County's poorest community. This was once a thriving blue-collar town of 20,000 people and a place where my father spent 20 years of his life working at U.S. Steel. Today Braddock has a population of 2,800 people. John Fetterman has been someone who has been working tirelessly in his first term as mayor of Braddock and playing a critical role with youth employment in Braddock through green jobs. He had with the assistance of some foundations put together urban farming, community gardens. He has been assisting residents in Braddock to create vegetable gardens, and he is currently working on a program where youth will be assisting in the installation of the first green roof in the Mon Valley. He is someone who thinks outside the box and is trying to revitalize a community that is struggling and is hopeful that what we do today with this legislation will start a revolution in towns like Braddock and get people building things again. So it is my pleasure to have him here today and my pleasure to introduce him to the committee.

Mr. MARKEY. And whenever you are ready, Mr. Fetterman, please begin.

STATEMENTS OF JOHN FETTERMAN, MAYOR, BRADDOCK, PENNSYLVANIA; PAUL N. CICIO, PRESIDENT, INDUSTRIAL ENERGY CONSUMERS OF AMERICA; KEVIN KNOBLOCH, PRESIDENT, UNION OF CONCERNED SCIENTISTS; DR. STEVEN HAYWARD, F.K. WEYERHAEUSER FELLOW, AMERICAN ENTERPRISE INSTITUTE; DAVID KREUTZER, SENIOR POLICY ANALYST IN ENERGY ECONOMICS AND CLIMATE CHANGE, THE HERITAGE FOUNDATION; NATHANIEL KEOHANE, DIRECTOR OF ECONOMIC POLICY AND ANALYSIS, ENVIRONMENTAL DEFENSE FUND; AND MYRON EBELL, DIRECTOR, ENERGY AND GLOBAL WARMING POLICY, COMPETITIVE ENTERPRISE INSTITUTE

STATEMENT OF JOHN FETTERMAN

Mr. FETTERMAN. Mr. Chairman, Mr. Barton and members of the committee, thank you for inviting me here today. I am John Fetterman and I am proud to be the mayor of Braddock, Pennsylvania.

My testimony this afternoon will be short and straight to the point. I don't pretend to be an expert in economics or energy policy but I do know what I have seen with my own eyes. The path we are on has failed. In my part of Pennsylvania, we have lost a quarter of a million jobs in the steel industry in the past decades. Once-

thriving towns like Braddock are facing economic devastation. Communities and families face desperate times. We need change and we need it now.

For decades we have watched jobs leave America. For decades we have heard about the dangers of America's addiction to foreign oil. For decades we have seen real changes blocked by those who profit from the status quo. If there is a silver lining to this current economic crisis, and from where I sit, it is awfully difficult to find one, it is that America may now finally be ready to find a new path and to face the tough questions we have ignored for so long.

I believe that new path starts with a cap on carbon pollution. By driving massive new private investment into clean energy industries, a cap offers us the chance to create jobs, and not just high-tech positions making solar cells or exotic technology but the kind of blue-collar jobs that can revive a town like Braddock or Akron or Detroit. Jobs making 250 tons of steel or 8,000 parts it takes to make a wind turbine, jobs making new windows like they do in an old factory in Vandergrift, Pennsylvania, a factory that was shut down but revived to make those very windows, or LED lights like they make in North Carolina and export to China or one of the thousands of other products it will take to build this new energy economy.

The government investment in clean energy in the Recovery Act was a good start but we will not truly transform this economy until we spur the private sector into action. This nation is full of entrepreneurs, investors, inventors and steelworkers prepared to jumpstart a true energy revolution, and this will only happen once you pass a cap on carbon pollution. To win the most jobs and the most economic opportunity, we must be a market leader in these new products and technologies, and a cap on carbon in the United States will spur our companies to be the early movers in these new markets supplying solutions at home and selling these solutions across the globe.

So I respectfully ask this Congress to please be bold, to overhaul our economy and free us from our addiction to imported oil. I ask you to ignore the scare tactics of the well-funded interests and to answer the call of Braddock to build a new energy future and a new American century with the ready hands of America's workers.

Thank you for this opportunity.

[The prepared statement of Mr. Fetterman follows:]

Testimony of John Fetterman
Mayor of Braddock, Pennsylvania
Committee on Energy and Commerce
U.S. House of Representatives
April 22, 2009

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Thank you.

Mr. MARKEY. Thank you, Mr. Fetterman, very much.

Our second witness is Paul Cicio. He is the president of the Industrial Energy Consumers of America, a trade association of manufacturing-sector companies. Mr. Cicio, whenever you feel comfortable, please begin.

STATEMENT OF PAUL N. CICIO

Mr. CICIO. Thank you, Mr. Chairman and Ranking Member Upton. Members of the committee, the Industrial Energy Consumers of America is the only trade association in the United States whose members are exclusively from the manufacturing sector, energy intensive and cross sector. Our companies employ over 850,000 employees nationwide. Manufacturing is the only sector of the economy that has a long history of significant investment in energy efficiency. Our greenhouse gas emissions are only 2.6 percent above 1990 levels while other sector emissions are up about 30 percent. We provide the majority of cogenerated electricity for the country, which is over 100 percent more energy efficient than electric utility production. We are national leaders in the use of recycled steel, aluminum, glass and paper, which is also extraordinarily energy efficient. Our products provide the building blocks necessary to grow the economy and reduce greenhouse gas emissions when our customers use our products.

We are a model for doing the right thing for business and the environment. Unfortunately, we do not see provisions in the bill that either reward us for our past energy efficiency actions, use of combined heat and power or recycling or encourage us to do more. This is a shortcoming of the bill. We have several key points: Number one, legislative provisions that are designed to preserve domestic competitiveness of the industrial sector and prevent jobs from moving overseas will create in our concern about retaliatory trade actions. Neither Congress nor the EPA can effectively regulate our offshore competitors through their actions.

Number two, we should not impose unilaterally on U.S. manufacturing costs. A global agreement that addresses the industrial sector uniformly and in the context of fair trade and increasing productivity is the only way to avoid job losses.

Number three, U.S. demand for our products will continue. It is just a question of whether they will be supplied domestically or imported. We compete in a global marketplace where pennies on the dollar can determine whether we win or lose within a national competition. Unfortunately, as Mayor Fetterman said, from 2000 to 2008, imports are up 29 percent and manufacturing employment fell 22 percent, a loss of 3.8 million jobs. These numbers would indicate that we are losing that competitiveness battle.

Number four, the provisions entitled "Preserving Domestic Competitiveness" provides for 85 percent of average needed allowances. Without 100 percent allowances and without reimbursement for higher natural gas and electricity costs, we will lose competitiveness, relative competitiveness.

Number five, increasing our greenhouse gas costs before comparable costs are placed on our competitors, our global competitors, will put competitiveness at risk. Countries like China and India have said they will not jeopardize their competitiveness and nei-

ther should we. Congress must understand that when manufacturers from developing countries engage in international trade, they no longer have developing-country excuses for not meeting comparable greenhouse gas reduction requirements and costs. Many of them are world-class competitors using the latest technology and they are owned by their governments and often they are subsidized.

Number six, reducing our Nation's greenhouse gas emissions from about 7 billion tons to 5 billion tons in a relatively short time period without a readily available abundant supply of low-cost carbon that is affordable will drive up energy prices. Energy efficiency and renewable energy will help but it will not close the gap. Carbon capture sequestration and nuclear will not be contributors over the next 10 years, which means the power sector will be dependent upon natural gas for power generation. Expansion of renewable energy means electric utility companies will be required to build natural gas-fired backup plants. It is extremely important to note that natural gas-fired power generation sets the marginal price for electricity. The implications are significant. As demand for natural gas goes up, prices go up and electricity across the country, a double hit.

Thank you.

[The prepared statement of Mr. Cicio follows:]

Industrial Energy Consumers of America
The Voice of the Industrial Energy Consumers

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TESTIMONY

BEFORE THE

UNITED STATES HOUSE OF REPRESENTATIVES

COMMITTEE ON ENERGY AND COMMERCE

TESTIMONY OF

PAUL CICIO

INDUSTRIAL ENERGY CONSUMERS OF AMERICA

REGARDING

"LEGISLATIVE HEARING REGARDING THE AMERICAN CLEAN ENERGY AND SECURITY ACT"

WASHINGTON, DC

APRIL 22, 2009

Chairman Waxman, ranking member Barton, members of the committee, The Industrial Energy Consumers of America is the only trade association in the United States whose member companies are exclusively from the manufacturing sector and energy intensive. Our companies employ over 850,000 nationwide.

Manufacturing is the only sector of the economy that has a long history of significant investment in energy efficiency. Our GHG emissions are only 2.6 percent above 1990 levels while other sector emissions are up an average of about 30 percent.

We provide the majority of cogenerated electricity for the country which is over 100% more energy efficient than electric utility production. We are the nations' leaders on the use of recycled steel, aluminum, glass and paper which is also extraordinarily energy efficient.

Our products provide the building block materials necessary to grow the economy and reduce GHG emissions when used by our customers.

We are a model of doing the right thing for business and the environment. Unfortunately, we do not see provisions in the bill that either reward us for our past energy efficiency actions, use of CHP or recycling or encourage us to do more, a short coming of the bill.

1. Legislative provisions that are designed to preserve domestic competitiveness of the industrial sector and prevent movement of jobs to offshore locations will create retaliatory trade actions. Neither Congress nor the EPA can effectively regulate our offshore competitors through their actions.

2. We should not impose costs unilaterally on US manufacturing. A global agreement that addresses the industrial sector uniformly and in the context of fair trade and increasing productivity is the only potential way to avoid job losses.

3. US demand for our products will continue - it is just a question of whether they will be supplied domestically or imported.

We compete in a global market place where pennies on the dollar can determine whether we win or lose to international competition. From 2000

to 2008, imports are up 29 percent and manufacturing employment fell 22 percent, a loss of 3.8 million jobs. These numbers would indicate that we are losing.

4. The provision entitled "Preserving Domestic Competitiveness" provides for 85% of the cost of allowances. Without 100 % allowances and without reimbursement for the higher cost of natural gas and electricity, we will lose competitiveness.

5. Increasing our GHG costs before comparable costs on placed on our competitors will put competitiveness at risk. Countries like China and India have said they will not jeopardize their competitiveness and neither should we.

Congress must understand that when manufacturers from developing countries engage in international trade, they no longer have developing country excuses for not meeting comparable GHG reduction requirements and costs. Many of them are world class competitors using the latest technology and are owned by their governments or are subsidized.

6. Reducing our nations' GHGs from about 7 billion tons to 5 billion tons in a relatively short time without a readily abundant supply of reliable, low cost and low carbon energy will increase energy prices significantly. Energy efficiency and renewable energy will help but not close the gap.

CCS and nuclear will not be contributors over the next 10 years which means the power sector will be dependent upon natural gas for power generation. Expansion of renewable energy means electric utility companies will be required to build natural gas fired back up plants.

It is extremely important to note that natural gas fired power generation sets the marginal price for electricity. The implications are significant. As demand for natural gas goes up, prices will go up which will also increase the price of electricity across the country. A double hit to consumers.

Natural gas demand by the power sector has grown by 28% since 2000 while domestic natural gas production has increased only 7%.

Thank you.

Mr. MARKEY. Thank you, Mr. Cicio, very much. You will have opportunities in the question-and-answer period to expand upon your thoughts.

Our next witness is Mr. Kevin Knobloch. He is the president of the Union of Concerned Scientists. He has more than 30 years of legislative and advocacy experience and has served as the president of the Union of Concerned Scientists since 2003. We welcome you, Mr. Knobloch. Whenever you are ready, please begin.

STATEMENT KEVIN KNOBLOCH

Mr. KNOBLOCH. Thank you, Chairman Markey, Ranking Member Upton, distinguished members of the committee. Thank you for this opportunity to speak to you today on behalf of the Union of Concerned Scientists. UCS is a national science-based nonprofit organization that has been working for a healthy environment and a safer world for 40 years. I applaud the leadership of this committee for moving this issue forward at this critical time.

Today I am pleased to share the results of a major study we have conducted over the last 2 years to examine the energy and economic implications of a comprehensive suite of energy, transportation and climate policies that we call the Climate 2030 Blueprint. This comprehensive approach is similar to the one proposed by Chairman Waxman and subcommittee Chairman Markey in their draft legislation. We used a modified version of the U.S. Department of Energy's national energy modeling system for our analysis.

Our results show that we can build a comprehensive and competitive 21st century clean energy economy that saves consumers and businesses money and gives our children a future without huge, damaging costs of unchecked climate change and this future is well within our technological and financial abilities.

To highlight just a few of our major findings, our analysis found that by 2030, one, under the Blueprint, our Nation meets a carbon cap of 26 percent below 2005 levels by 2020 and 56 percent below 2005 levels by 2030. The electricity sector contributes more than half of the emission cuts in 2030. The transportation sector contributes the second largest area of emissions reductions. The Blueprint policies will also cut mercury, acid rain, smog and soot pollution, improving air and water quality and saving lives. Two, we can achieve these deep reductions in carbon emissions while saving American consumers and businesses $465 billion annually in 2030 while maintaining about the same rate of economic growth as the reference case. The Blueprint builds $1.6 trillion in cumulative net savings between 2010 and 2030. Families will see an average household savings of $900 a year in 2030 while businesses will altogether save nearly $130 billion a year in the year 2030. Households and businesses in every region of the Nation, even coal-dependent States and regions, will see lower energy bills. And third, we can cut the use of oil and petroleum products by 6 million barrels a day in 2030, as much oil as we currently import from the OPEC nations.

We did not find that all of these benefits will come for free but we found cost savings for reductions in energy use due to efficiency will more than offset the modest increase in energy prices and upfront investment costs. The key to the success is a comprehensive

policy approach remodel. The transportation policies get us cleaner cars, cleaner fuels and better transportation options. The energy policies get us more efficient appliances, buildings and industry, renewable energy and more-efficient natural gas generation. A transparent and smartly designed cap-and-trade policy assures the emissions reductions the United States needs to help avoid the worst effects of global warming. This comprehensive approach is so critical that when we stripped out the sector-specific energy and transportation policies in our analysis, the cumulative savings for households and businesses in 2030 were reduced dramatically from 1.6 trillion to 600 billion.

We have a historic opportunity to reinvent our economy, to make it more resilient and efficient and to produce a bow wave of new high-quality jobs, especially in regions that have strong manufacturing capacity, a seasoned, able labor force and needed resources and infrastructure. In this new home-grown economy, we need people to build wind turbines, build carbon capture and storage infrastructure, weatherize and retrofit homes, install solar panels and manufacture advanced cars and fuels as well as to design, transport, maintain, repair, market and sell all of the above. In my travels around the country, I hear a growing call for a new clean energy economy that is designed to also solve large, stubborn problems, by reducing our dependence on oil, making us less vulnerable to blackouts, creating jobs, tackling climate change and improving our families' health. We know that if we continue down a path of no action, our risks and vulnerabilities will increase, leading to significantly higher costs than if we act boldly today. The Waxman-Markey legislation is a strong start on to this path and on to this clean energy future.

Thank you.

[The prepared statement of Mr. Knobloch follows:]

Testimony of
KEVIN KNOBLOCH, PRESIDENT
UNION OF CONCERNED SCIENTISTS

Before the
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT, HOUSE COMMITTEE ON ENERGY AND COMMERCE

April 22, 2009

Union of Concerned Scientists

Citizens and Scientists for Environmental Solutions

Chairman Markey and distinguished Members of the Committee, thank you for this opportunity to speak with you today on behalf of the Union of Concerned Scientists. I am President of UCS, a national science-based nonprofit organization that's been working for a healthy environment and a safer world for 40 years. I applaud the leadership of this subcommittee and the full committee for moving this issue forward at this critical time. And I'd like to thank Mr. Dingell and Mr. Boucher for getting the ball rolling in a thoughtful, knowledgeable and comprehensive way in the last Congress.

Today I am pleased to share the results of a major study we've conducted to examine the energy and economic implications of a comprehensive suite of energy, transportation and climate policies that we call the Climate 2030 Blueprint. We used a modified[1] version of the U.S. Department of Energy's National Energy Modeling System for our analysis, with a baseline reference case that shows global warming emissions rising 13 percent above 2005 levels by 2030, and a clean energy blueprint case that leads to deep emissions reductions which put us on a path to stabilizing our climate and preventing catastrophic climate change.

The results of this analysis show that we can build a comprehensive and competitive 21st century clean energy economy that saves consumers money and gives our children a future without huge, damaging costs of unchecked climate change. A future of clean energy and cars, smart houses and clear skies is well within our technological and financial abilities.

To highlight just a few of our major findings, our analysis found that by 2030:

1) Under the Blueprint, our nation meets a carbon cap of 26% below 2005 levels by 2020 and 56% below 2005 levels by 2030. We can achieve these emissions cuts cost-effectively by implementing a comprehensive set of smart energy, transportation, and cap policies. This comprehensive approach is similar to the one proposed by Chairman Waxman and Subcommittee Chairman Markey in their draft legislation.
2) We can achieve these deep cuts in carbon emissions while saving American consumers and businesses $465 billion annually in 2030. The Blueprint also builds $1.6 trillion in cumulative net savings between 2010 and 2030.
3) We can both reduce emissions on that scale and expand our economy between now and 2030, while keeping jobs growing at the same rate as in the reference case.
4) We can cut the use of oil and petroleum products by 6 million barrels a day in 2030 – as much oil as we currently import from OPEC and 30 percent of our nation's current total daily oil consumption.
5) We can save consumers money on their energy bills because of increased energy efficiency, even though electricity rates and gasoline prices go up slightly. That means families will see average household savings of $900 a year in 2030, while businesses will, all together, save nearly $130 billion a

[1] Specifically, we updated the reference case in the model to include the tax provisions from the October stimulus bill, nuclear loan guarantees, and the updated projections from all the state renewable electricity standards. We also updated cost and performance assumptions for energy efficiency in buildings, electricity generating technologies, and vehicle and fuel technologies, based on data from actual and proposed projects, and studies by industry experts.

year. Households and businesses in every region in the nation - even coal-dependent regions - will see lower energy bills.

6) The electricity sector contributes more than half of the emissions cuts in 2030. We can reduce power plant carbon emissions 84% below 2005 levels by 2030. The Blueprint policies will also cut mercury, acid rain, smog and soot pollution, improving air and water quality and saving lives.

7) We can cut emissions from cars and trucks by 40% compared to their 2005 levels and freeze emissions from freight trucks at 2005 levels even as the economy undergoes significant growth. The transportation sector contributes the second largest area of emissions reductions and accounts for one-half of the net consumer and business energy cost savings in 2030.

The key to this success is the comprehensive policy approach we modeled. The transportation policies get us cleaner cars, cleaner fuels and better transportation options. The energy policies get us more efficient appliances and buildings, renewable energy and more efficient natural gas generation. A transparent and smartly-designed cap and trade policy assures the emissions reductions the U.S. needs to help avoid the worst effects of global warming.

This comprehensive approach is so critical that when we stripped out the sector-specific energy and transportation policies in our analysis, the cumulative savings for households and businesses by 2030 were reduced dramatically -- from $1.6 trillion to $600 billion.

We did not find that all of these benefits will come for free. Energy costs may be slightly higher in the very early years as we make investments in the clean energy economy, but those investments will reap much higher savings for Americans in every region later on. Under the Blueprint policies, households and businesses will actually start paying less on their energy bills by 2013, because reductions in usage from energy efficiency more than offset the modest increase in energy prices. In transportation, there will be more upfront investment, but consumers and businesses will get even more back later as they save money on gas. Overall, the investments made early on (from 2010 to 2015) for efficiency, renewables, cars, and so on will start saving us money by 2015.

We have an historic opportunity to reinvent our economy, to make it more resilient and efficient – and to produce a bow wave of new high quality, well paying jobs, especially in regions that have strong manufacturing capacity, a seasoned, able labor force, and needed resources and infrastructure. In this new homegrown economy, we need people to build wind turbines, weatherize and retrofit homes, install solar panels and manufacture advanced cars and fuels, as well as to design, transport, maintain, repair, market and sell all of the above.

In my travels around the country, I hear a growing call for a new clean energy economy that is designed to also solve large, stubborn problems by reducing our dependence on oil, making us less vulnerable to blackouts, creating jobs, tackling climate change, and improving our families' health. We know that if we continue down a path of no action

our risks and vulnerabilities will increase, leading to significantly higher costs than if we act boldly today.

The status quo is not an option. Our analysis makes a compelling case that a forward-looking, comprehensive set of policies will jump-start the transition to a clean energy economy. The Waxman-Markey draft legislation capably starts us down that path.

Climate 2030: A National Blueprint for a Clean Energy Economy

Based on Climate 2030 Executive Summary

Building a Revitalized Clean Energy Economy

Reducing oil dependence. Strengthening energy security. Creating jobs. Tackling global warming. Addressing air pollution. Improving our health. The United States has many reasons to make the transition to a clean energy economy. What we need is a comprehensive set of smart policies to jump-start this transition without delay and maximize the benefits to our environment and economy. *Climate 2030: A National Blueprint for a Clean Energy Economy* ("the Blueprint") answers that need.

Recent rapid growth of the wind industry (developers have installed more wind power in the United States in the last 2 years than in the previous 20) and strong sales growth of hybrid vehicles show that the U.S. transformation to a clean energy economy is already under way. However, these changes are still too gradual to address our urgent need to reduce emissions of carbon and other heat-trapping gases to levels that are necessary to protect the well-being of our citizens and the health of our environment.

Global warming stems from the release of carbon dioxide and other heat-trapping gases into the atmosphere, primarily when we burn fossil fuels and clear forests. The problems resulting from the ensuing carbon overload range from extreme heat, droughts, and storms to acidifying oceans and rising sea levels. To help avoid the worst of these effects, the United States must play a lead role and begin to cut its heat-trapping emissions today—and aim for at least an 80 percent drop from 2005 levels by 2050.

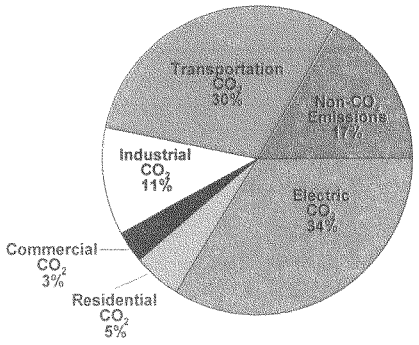

Figure ES 1. Where U.S. Heat-Trapping Emissions Come From (2005)

The U.S. emitted more than 7,180 million metric tons of carbon dioxide equivalent heat trapping emissions in 2005, the baseline year of our analysis. Burning coal in power plants and gasoline in vehicles releases most of these emissions, but every sector of the economy contributes. Note: The transportation, commercial, and industrial sector shares represent direct emissions from burning fuel plus "upstream" emissions from producing fuels at refineries.

The Climate 2030 Approach

This report analyzes the economic and technological feasibility of meeting stringent targets with an emissions cap set at: 26 percent below 2005 levels by 2020, and 56 percent below 2005 levels by 2030. Meeting this cap means we will limit total emissions—the crucial measure for the climate—to 180,000 million metric tons of carbon dioxide equivalent ($MMTCO_2eq$) from 2000 and 2030.[2] Our long-term carbon budget for 2000 to 2050, as defined in a previous UCS analysis (Luers et al. 2007) is 160,000 to 265,000 $MMTCO_2eq$. Assuming continued steep emissions reductions, the 2000-2030 carbon budget set in this analysis would put us on track to be in the mid-range of the long-term budget by 2050.

To reach those targets, the Blueprint proposes a comprehensive policy approach ("the Blueprint policies"), which combines an economy-wide cap-and-trade program with complementary, sector-based policies. This approach finds cost-effective ways to reduce fossil fuel emissions in all sectors of our economy—including industry, buildings, electricity, and transportation—and to store carbon through agricultural activities and forestry.

Our analysis relies primarily on a modified version of the U.S. Department of Energy's National Energy Modeling System (referred to as UCS-NEMS). We supplemented that model with analyses of the impact of greater energy efficiency in industry and buildings by the American Council for an Energy Efficient Economy, and of the potential for crops and residues to provide biomass energy by researchers at the University of Tennessee. We combined the model with these analyses to capture the dynamic interplay between energy use, energy prices, energy investments, and the economy while also considering competition for limited resources and land.

Our analysis explores two main scenarios. The first—which we call the Reference case—assumes no new climate, energy, or transportation policies beyond those already in place as of October 2008.[3] The second—the Blueprint case—examines an economy-wide cap-and-trade program, plus a suite of complementary policies to boost energy efficiency and the use of renewable energy in key economic sectors: industry, buildings, electricity, and transportation. Our analysis also includes a "sensitivity" scenario that strips out the policies targeted at these sectors—we refer to this as the "no complementary policies" case.

This analysis shows that the technologies and policies pursued under the Blueprint produce dramatic changes in energy use and cuts in carbon emissions. The analysis also

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[2] This amount is equivalent to the emissions from nearly 1 billion of today's U.S. cars and trucks over the same 30-year period. The nation now has some 230,000 cars and trucks, and more than 1 billion vehicles are on the road worldwide. Given today's trends, we can expect at least 2 billion vehicles by 2030 (Sperling 2008).

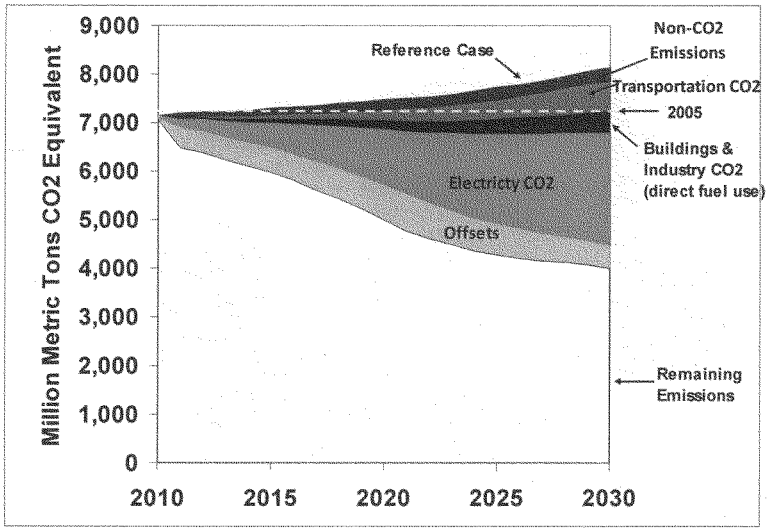
[3] Our analysis includes the tax credits and incentives for energy technologies included in the October 2008 Economic Stimulus Package (H.R. 6049), as well as the transportation and energy policies in the 2007 Energy Independence and Security Act. However, the timing of the February 2009 American Recovery and Reinvestment Act did not allow us to incorporate its significant additional incentives.

shows that consumers and businesses reap significant net savings on their energy bills each year under the comprehensive Blueprint approach, while the nation sees strong economic growth.

The Blueprint Cuts Carbon Emissions and Saves Money

Blueprint policies lower U.S. heat-trapping emissions to meet a cap set at 26 percent below 2005 levels in 2020, and 56 percent below 2005 levels in 2030 (see Figure ES.2).

Figure ES.2: Net Cuts in Global Warming Emissions under the Blueprint



The nation achieves these deep cuts in carbon emissions while saving consumers and businesses $465 billion annually by 2030. The Blueprint also builds $1.6 trillion in cumulative savings between 2010 and 2030.[4]

Blueprint policies stimulate significant consumer, business, and government investment in new technologies and measures by 2030. The resulting energy bill savings from reductions in electricity and fuel use more than offset the additional energy investment costs, producing net consumer savings on energy for households, vehicle owners, businesses, and industries.[5] These net savings also more than cover the costs of carbon allowances that utilities and fuel providers pass through to households and businesses in energy prices, leading to annual net savings on energy of $255 billion in 2030. On top of

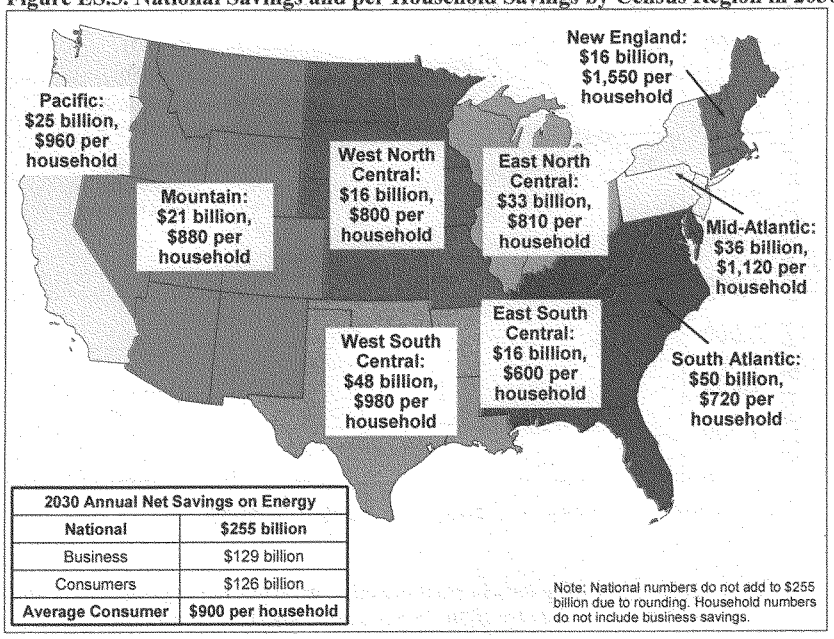
[4] Unless otherwise noted, all dollar amounts are in 2006 dollars, and cumulative figures are discounted using a 7 percent real discount rate.

[5] Energy savings include both energy bills (the direct cost of energy such as electricity, gasoline, and natural gas), and the costs of purchasing more efficient energy-consuming products such as appliances and vehicles.

this, $219 billion in allowance revenue generated under the cap is invested back into the economy, though government and business will see another $8 billion in added policy costs, bringing annual Blueprint savings up to $465 billion by 2030.[6]

Under the Blueprint, every region of the country stands to gain billions in energy savings (see Figure ES.3). Households and businesses in every region in the nation - even coal-dependent regions - will see lower energy bills.

Figure ES.3. National Savings and per Household Savings by Census Region in 2030



2030 Annual Net Savings on Energy	
National	**$255 billion**
Business	$129 billion
Consumers	$126 billion
Average Consumer	**$900 per household**

Note: National numbers do not add to $255 billion due to rounding. Household numbers do not include business savings.

Consumers and Businesses in every region of the country see billions of dollars of energy savings. The portion of these savings that accrues to consumers is apportioned to households in each region.

The Blueprint keeps carbon prices low

Under the Blueprint, the price of carbon allowances—permits for industry to emit carbon under the cap-and-trade program—start at about $18 per ton of CO_2 in 2011, and then rise to $34 in 2020, and $70 in 2030 (all in 2006 dollars). Those prices are well within the range that other analyses find despite our stricter cap. At these prices, the Blueprint achieves much larger cuts in carbon emissions within the capped sectors because of the tighter limits we assumed on offsets and because of our more realistic assumptions about the cost-effectiveness of investments in efficiency and renewable energy technologies.

[6] Blueprint savings are net consumer savings on energy plus allowance revenue invested in the economy minus policy costs not borne by consumer. Values may not add precisely due to rounding.

The economy grows by at least 81 percent by 2030 under the Blueprint. U.S. gross domestic product (GDP) expands by 81 percent between 2005 and 2030 under our approach—virtually the same as in the Reference case, which shows the U.S. economy growing by 84 percent. In fact, the model predicts that Blueprint would slow economic growth by less than 1.5 percent in 2030—equivalent to only 10 months of economic growth over the 30-year period.[7]

The Blueprint also shows practically the same employment trends as the Reference case. Non-farm employment is slightly higher under the Blueprint than in the Reference case (170 million v 169.4 million in 2030).

We should note that there are significant limitations in the way NEMS accounts for GDP and employment effects. NEMS does not properly consider the economic growth that would arise from clean technology investments and the re-spending of the consumer energy savings that arise from these investments. Also, the reference case does not include the costs of climate change itself.

The Blueprint cuts the cost of household energy and transportation in 2030 by $900 per year while saving businesses nearly $130 billion on energy expenses. By 2030, the average U.S. household would see net energy savings on electricity, natural gas, and oil expenses of $320 per year compared with the Reference case, after paying for investments in new energy efficiency and low-carbon technologies. In 2030, Transportation expenses for the average household would fall by about $580 per year. These savings take into account the higher costs of cleaner cars and trucks, new fees used to fund more public transit, and declining use of gasoline. Neither the energy nor the transportation savings account for the allowance revenue that will be invested back into the economy, lowering consumer and business costs (or increasing consumer and business savings) even further.

The Blueprint Changes the Energy We Use

Efficiency and reduced travel stemming from Blueprint policies cut overall U.S. energy use by one-third by 2030. Significant increases in energy efficiency across the economy and reductions in car and truck travel drive down energy demand and carbon emissions.

Carbon-free electricity and low-carbon fuels together make up more than one-third of the remaining U.S. energy use by 2030. A significant portion of U.S. reductions in carbon emissions in 2030 comes from a 25 percent increase in the use of renewable energy from wind, solar, geothermal, and bioenergy under the Blueprint. Carbon emissions are also kept low because the use of nuclear energy and hydropower, which don't directly produce carbon emissions, remain nearly the same as in the reference case.

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[7] This means that we achieve the growth we would have seen in January 2030 in the Reference case in October 2030 in the Blueprint case.

The Blueprint reduces U.S. dependence on oil and oil imports. By 2030, the Blueprint cuts the use of oil and other petroleum products by 6 million barrels per day, compared with 2005. That is as much oil as the nation now imports from the 12 members of OPEC (the Organization of Petroleum Exporting Countries). Those reductions will help drop imports to less than 45 percent of the nation's oil needs, and cut projected expenditures on those imports by more than $85 billion in 2030, or more than $160,000 per minute.

Smart Energy and Transportation Policies Are Essential for the Greatest Savings

Many of the Blueprint's complementary policies have a proven track record at state and federal levels. These policies include emission standards for vehicles and fuels, energy efficiency standards for appliances, buildings and industry, and renewable energy standards for electricity (see Box ES.1). The Blueprint also relies on innovative policies to reduce the number of miles people travel in their cars and trucks.

These policies are essential to delivering significant consumer and business savings under the Blueprint. Our "no-complementary policies" case shows that if these policies are removed from the Blueprint, consumers and businesses will save much less money.[8] Excluding the complementary policies we recommend for the energy and transportation sectors would reduce cumulative net consumer and business savings through 2030 from a total of $1.6 trillion to $0.6 trillion (see Figure ES.4).

[8] Some or all of the economic benefits of the complementary policies could also be achieved if policy makers effectively use the revenues from auctioning carbon allowances to fund the technologies and measures included in these policies, but this approach was not addressed in this study.

Box ES.1. Climate 2030 Blueprint Policies

Climate Policies

- Economy-wide cap-and-trade program with:
  - Auctioning of all carbon "allowances"
  - Recycling of auction revenues to consumers and businesses[9]
  - Limits on carbon "offsets," to encourage decarbonization of the capped sectors
  - Flexibility to over-comply and bank excess allowances for future use

Industry and Buildings Policies

- An energy efficiency resource standard requiring retail electricity and natural gas providers to meet efficiency targets
- Minimum federal energy efficiency standards for specific appliances and equipment
- Advanced energy codes and technologies for buildings
- Programs that encourage more efficient industrial processes
- Wider reliance on efficient systems that provide both heat and power

Electricity Policies

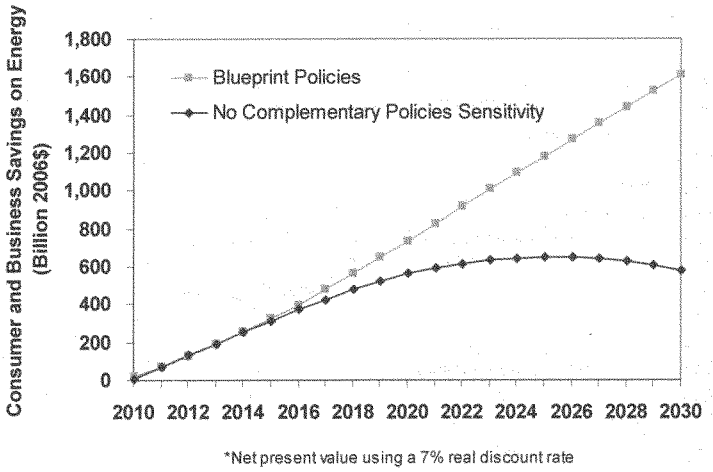
- A renewable electricity standard for retail electricity providers
- R&D on energy efficiency and renewable energy
- Use of advanced coal technology, with a carbon-capture-and-storage demonstration program

Transportation Policies

- Standards that limit carbon emissions from vehicles
- Standards that require the use of low-carbon fuels
- Requirements for advanced vehicle technology
- Smart-growth policies that encourage mixed use development with more public transit
- Smart-growth policies that tie federal highway funding to increasing transportation system efficiency
- Pay-as-you-drive insurance and other per-mile user fees

[9] The preferred approach would be to target revenues from auction of carbon allowances toward investments in energy efficiency, renewable energy, and protection for tropical forests, as well as transition assistance to consumers, workers, and businesses in moving to a clean energy economy. However, limitations in the NEMS model prevented us from directing auction revenues to specific uses. Instead, we could only recycle revenues in a general way to consumers and businesses.

Figure ES.4: Cumulative Savings: Blueprint and without Complementary Policies



Our "no-complementary policies" case also shows that excluding the policies we recommend for the energy and transportation sectors will double allowance prices[10].

Where the Blueprint Cuts Emissions and Saves Money

Five sectors of the U.S. economy account for the majority of the nation's heat-trapping emissions: electricity, transportation, buildings (commercial and residential), industry, and land use. Blueprint policies ensure that each of these sectors contributes to the drop in the nation's net carbon emissions.

The electricity sector—with help from efficiency improvements in industry and buildings—leads the way by providing more than half (57 percent) of the needed cuts in heat-trapping emissions by 2030. Transportation delivers the next-largest cut (15 percent). Carbon offsets provide 11 percent of the overall cuts in carbon emissions by 2030.[11] Reduced emissions of heat-trapping gases other than carbon dioxide (Non-CO_2 emissions) deliver another 7 percent of the cuts. Savings in direct fuel use in the residential, commercial and industrial sectors are the final pieces, contributing 3 percent, 2 percent and 5 percent of the emission reductions. (See Figure ES.5)

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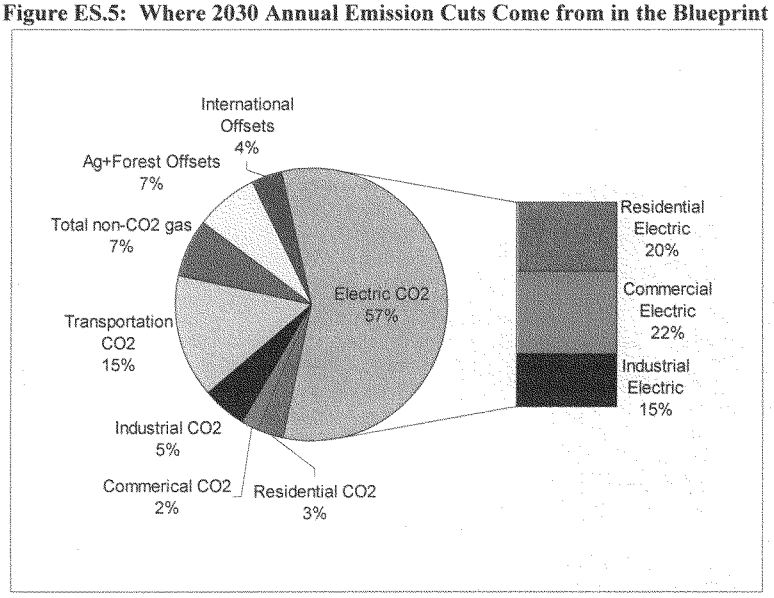
[10] See footnote 7.

[11] Under a cap-and-trade program, capped entities can meet their compliance obligations by directly cutting emissions, by purchasing allowances, or by purchasing "offsets" from third (non-capped) parties that cut their carbon emissions. The Carbon offsets we included are: carbon storage in the domestic agriculture and forest sectors —capped at 10 percent of U.S. emissions, to encourage decarbonization of the capped sectors—and offsets from international sources, capped at 5 percent of U.S. emissions and focused mainly on preventing tropical deforestation.

Figure ES.5: Where 2030 Annual Emission Cuts Come from in the Blueprint



Emission cuts in the electricity sector include reductions in demand from residential, commercial, and industrial consumers. The transportation, commercial, and industrial sector shares represent direct emissions from burning fuel plus "upstream" emissions from producing fuels at refineries.

National savings on annual energy bills the money consumers save on their monthly electricity bills or gasoline costs, for example) total $414 billion in 2030. These energy bill savings more than cover the costs of carbon allowances that utilities and fuel providers pass through to households and businesses in energy prices. Incremental energy investment costs (consumer expenditures on energy-consuming products like homes, appliances and vehicles) reach $160 billion. The result is net annual energy-related savings of $255 billion for households and businesses in 2030.

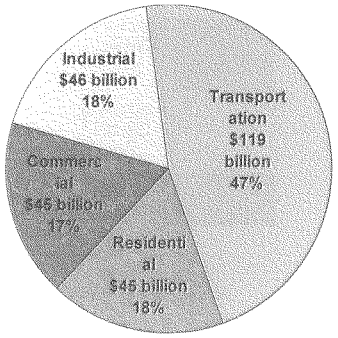
Table ES.1 Adding Up Annual Consumer and Business Energy Savings under the Blueprint (Billions of 2006$)

ENERGY SAVINGS	2015	2020	2025	2030
Energy Bill Savings	39	152	271	414
Energy Investment Costs	38	78	123	160
Net Consumer and Business Savings on Energy	1	74	147	255

Note: values may not sum properly due to rounding.

Consumers in the transportation sector see nearly half of the annual energy savings ($119 billion), though the Blueprint policies ensure that consumers and businesses throughout the economy save money on energy expenses (see Figure ES.6).

Figure ES.6. Which Sectors Reap Savings in 2030 from Lower Energy Expenses under the Blueprint



The U.S economy sees $255 billion in net energy savings in 2030 under the Blueprint (in 2006 dollars). The transportation sector—including all users—reaps the largest share. Residential, commercial, and industrial consumers each gain just under 20 percent of the net savings, with nearly 90 percent of that amount—or $118 billion—stemming from lower electricity costs.

Where the Blueprint Cuts Emissions Within Sectors

Blueprint policies dramatically reduce carbon emissions from power plants. Under the Blueprint, carbon emissions from power plants are 84 percent below 2005 levels by 2030. Power plant sulfur dioxide (SO2), nitrogen oxide (NOx), and mercury pollution are also significantly lower, which would improve air and water quality and provide important public health benefits.

Most of the emission reductions occur from replacing coal generation with energy efficiency, more efficient natural gas generation, and renewable energy. By 2030, energy efficiency measures, such as advanced buildings and industrial processes, and high efficiency appliances, lighting, and motors reduce electricity generation by 35 percent below the reference case. Efficient natural gas combined-heat-and-power generation in the commercial and industrial sectors increases to 16 percent of U.S. electricity generation by 2030. Largely because of the national renewable electricity standard, wind, solar, geothermal and bioenergy provide 40 percent of the remaining power.

Hydropower and nuclear power continue to play important roles, generating slightly more carbon-free electricity in 2030 than they do today. Efforts to capture and store carbon from advanced coal plants, and new advanced nuclear plants, play a minor role, as our analysis shows they will not be economically competitive with investments in energy

efficiency and many renewable technologies. However, carbon capture and storage and advanced nuclear power could play a more significant role both before and after 2030 if their costs decline faster than expected, or if the nation does not pursue the vigorous energy efficiency and renewable energy policies and investments we recommend.

Industry and buildings cut fuel use through greater energy efficiency. By 2030, a drop in direct fuel used in industry and buildings accounts for 10 percent of the cuts in carbon emissions from non-electricity sources under the Blueprint.

Transportation gets cleaner, smarter, and more efficient. Under the Blueprint, carbon emissions from cars and light trucks are 40 percent below 2005 levels by 2030. Global warming emissions from freight trucks are held steady despite a more than 80 percent growth in the nation's economy. Carbon emissions from airplanes continue to grow nearly unchecked, pointing to the need for specific policies targeting that sector. Overall carbon emissions from the transportation sector fall to 19 percent below 2005 levels by 2030—and more than 30 percent below the Reference case.

Many of the improvement in this sector comes from greater vehicle efficiency and the use of the lowest-carbon fuels, such as ethanol made from plant cellulose, and renewable electricity (through investments in advanced vehicles such as plug-in hybrids). Measures to reduce travel—such as per-mile insurance and congestion fees, and more emphasis on compact development linked to transit—provide the remaining reductions.

These advances represent the second half of an investment in a cleaner transportation system that began with the 2007 Energy Independence and Security Act.[12] These investments provide immediate benefits and will be essential to dramatically cutting carbon emissions from the transportation sector by 2050.

[12] Because our reference case includes the policies contained in 2007 bill, the Blueprint's 30 percent reduction from the reference case in 2030 represents incremental benefits above and beyond those delivered from the fuel economy standards and renewable fuel standard contained in the bill. If the 2007 bill were not included in our reference case, the Blueprint's transportation policies would deliver nearly a 40 percent reduction relative to the new reference case.

Box ES.2. 2020 Implications of the Blueprint

A central insight from the Blueprint analysis is that there are many opportunities for cost-effective reductions, even in the next ten years (through 2020). The results show that capped firms find it cost-effective to cut emissions more than required by the cap and bank allowances for future years. Efficiency, renewable energy, reduced vehicle travel and offsets all contribute to these significant near term reductions.

By 2020, we find that the U.S. can:

- Achieve a 30 percent reduction in emissions from 2005 levels at a net annual savings of $346 billion to consumers and business. The added reductions are banked and used to comply with the cap and lower costs in later years.
- Reduce annual energy use by 17 percent compared to reference case levels.
- Cut the use of oil and other petroleum products by 3.4 million barrels per day compared to 2005, reducing imports to 50 percent of our needs.
- Reduce annual electricity generation by almost 20 percent compared to the reference case while producing 10 percent of electricity with combined heat and power and 20 percent with renewable energy sources, such as wind, solar, geothermal, and bioenergy.
- Rely on complementary policies to deliver cost effective efficiency, conservation and renewable energy solutions. Excluding energy and transportation sector policies from the Blueprint would reduce net cumulative consumer savings through 2020 from $735 billion to $560 billion.

Blueprint Cuts Are Conservative and Practical

The Blueprint includes only technologies that are commercially available today, or that will very likely be available within the next two decades. Our analysis excludes many promising technologies, or assumes they will play only a modest role by 2030 (see box ES.3). We also did not analyze the full potential for storing more carbon in U.S. agricultural soils and forests, although studies show that such storage could be significant.

Our estimates of cuts in carbon emissions are therefore conservative. More aggressive policies and larger investments in clean technologies could produce even deeper U.S. reductions.

Box ES.3. Beyond Climate 2030 Blueprint - Technologies for Our Future

Our analysis did not include several renewable energy and transportation sector technologies that are at an early stage of development, but offer promise. These include:

- **Thin film solar**
- **Biopower with carbon capture and storage**
- **Advanced geothermal energy**
- **Hydrokinetic power**
- **Renewable energy heating and cooling**
- **Advanced storage and smart grid technologies**
- **Dramatic expansion of all-electric cars and trucks**
- **High-speed electric rail**
- **Expanded public transit-oriented development**
- **Breakthroughs in third-generation biofuels**

Recommendations: Building Blocks for a Clean Energy Future

Given the significant savings under the Blueprint, building a clean energy economy not only makes sense for our health and well-being and the future of our planet but is clearly also good for our economy. However, we cannot realize the benefits of the Climate 2030 Blueprint if we do not put in place the critical policies to get us there—some as soon as 2010. All these policies are achievable, but near-term action is essential.

An important first step is science-based legislation that would enable the nation to cut heat-trapping emissions by at least 35 percent below today's levels by 2020[13], and at least 80 percent by 2050. Such legislation would include a well-designed cap-and-trade program that guarantees the needed emission cuts and does not include loopholes, such as "safety valves" that prevent the free functioning of the carbon market.

Equally important, policy makers should require greater energy efficiency and the use of renewable energy in industry, buildings, and electricity. Policy makers should also require cleaner cars, trucks, and fuels and reduced car and truck travel through pricing and by providing better alternatives.

U.S. climate policy must also have an international dimension. That dimension should include funding the preservation of tropical forests, sharing energy efficiency and renewable energy technology with developing nations, and funding adaptation to the unavoidable effects of climate change.

[13] Note that this recommendation encompasses more possibilities for emissions reductions than we were able to model in UCS-NEMS (such as reduced tropical deforestation). The reductions from the Blueprint can and should be supplemented by emissions reductions from these other sources.

Conclusion

We are at a crossroads. The Reference case shows that we are on a path of rising energy use and heat-trapping emissions. We are already seeing significant impacts from this carbon overload, such as rising temperatures and sea levels and extreme weather events. If heat-trapping emissions continue to climb at their current rate, we could reach climate "tipping points" and be faced with irreversible changes to our planet.

In 2007 the Intergovernmental Panel on Climate Change (IPCC) found it "unequivocal" that the Earth's climate is warming and that this is primarily caused by human activities (IPCC 2007). The IPCC report concludes that unchecked global warming will only create more adverse impacts on food production, public health, and species survival. .

The climate will not wait for us. More recent studies have shown that the measured impacts—such as rising sea levels and shrinking summer sea ice in the Arctic—are occurring more quickly, and often more intensely, than IPCC projections (Rosenzweig et al 2008; Rahmstorf et al. 2007; Stroeve et al. 2007). One study also shows that if climate trends continue, the total cost of global warming in the United States could be as high as 3.6 percent of GDP by 2100 (Ackerman and Stanton 2008).

The most expensive thing we can do is nothing. The Climate 2030 Blueprint shows that pursuing a clean energy economy is a sensible, responsible, and affordable path. By choosing this path we cut our carbon emissions, maintain robust economic growth, achieve significant energy savings and help preserve the future health and well-being of our children. The Blueprint policies—although an essential step forward—are only a beginning. The nation can and must expand these and other policies beyond 2030 to ensure that we meet the mid-century emissions reductions called for by science.

Mr. MARKEY. Thank you, Mr. Knobloch, very much.

Our next witness is Dr. Steven Hayward, who is the F.K. Weyerhaeuser fellow in economics at the American Enterprise Institute and a senior fellow at the Pacific Research Institute. We welcome you, Dr. Hayward.

STATEMENT OF STEVEN HAYWARD

Mr. HAYWARD. Thank you, Chairman Markey and Ranking Member Upton. You know, I don't relish being in the role of a naysayer, partly because it goes against my own optimistic nature, and I tend to be something of a techno-optimist. I have a lot of excitement about things I see going on in the areas of energy research and development, and I am an optimist about a great many things.

However, I do find myself troubled by an awful lot of what I think is sort of wishful thinking, and too much, I will just put it casually, happy talk about the matter.

I mean, the last panel, I kept hearing that there is nothing but win-win situations out there in the world, and it seems to me that we seem to feel that we can repeal the laws of economics and the laws of physics at the same time. It may be quite true that for certain industries and certain companies, you do quite well if you give them allowances to emit carbon for free, but it does seem to remind me of that remark of Charlie Wilson, from the Eisenhower Era that, to paraphrase his remark, it is not clear that what is good for GE is good for America.

Well, I prepared my analysis today in this sort of confusing schedule, more tailored for the next panel about green jobs, but a couple of general comments. It seems to me the difficulty here is that on the one hand, we want to make carbon more expensive, but on the other hand, we don't want anyone to pay higher costs for it. To the extent that we have lots of rebates and give away free allowances, it will mitigate the reductions you are likely to get from it. It would be, to use a simple analogy, as if we decided to try and reduce cigarette smoking by raising the tax on cigarettes, but then rebated the tax back to smokers at the end of the month. I don't think that would be very effective, or it would certainly reduce its effectiveness.

A couple of observations here. It seems to me there are three questions to answer, or to ponder more deeply. One is, would a green jobs policy, or narrow RPS mandates, I say narrow because, for example, the U.S. Conference of Mayors report on green jobs includes jobs in the nuclear industry as green jobs, yet the nuclear industry is conspicuously excluded from non-carbon sources contemplated in the draft discussion. But would a green jobs policy and renewable mandates result in net employment gains and net economic growth in the absence of such policy?

Of course, it is true, in the ordinary sense that when the Federal Government spends more resources, either directly, through appropriations, or indirectly, through tax breaks and subsidies and mandates, you will generate employment where little or none existed before, just as our very large spending over the decades for defense spending generated a lot of employment where it didn't exist before. But I would think the example of defense spending is one we would want to ponder a little bit. It is precisely the reason we don't

see defense spending as a route to permanent prosperity, because it does not necessarily add productive and self-sustaining capacity to the private economy.

There is a lot of academic literature—I have made some reference to it in the statement I have submitted to the committee, and I won't repeat it all here—a lot of academic literature calling into question a lot of the analysis and assumptions of the green jobs ideas. I think I will just skip over that in the interest of time and getting to your questions, and say that I think, as a summary statement, in the fullness of time, we are going to look back on this period, say 20 or 30 years from now, as the climate policy equivalent of wage and price controls to fight inflation back in the 1970s. Or maybe to pick an example that is a little closer to home, the Gramm-Rudman approach to cutting the deficit in the late 1980s. And we are going to decide on some fundamentally different approaches to tackling this problem.

Thank you.

[The prepared statement of Mr. Hayward follows:]

Statement to House Committee on Energy and Commerce, Subcommittee on Energy and Environment

Hearing on "Green Jobs" and Energy Investment
April 22, 2009

Steven F. Hayward, Ph.D
F.K. Weyerhaeuser Fellow in Law and Economics
American Enterprise Institute

Chairman Waxman, ranking member Barton and members of the Committee:

No one relishes the role of naysayer, but many of the extravagant claims on behalf of "green jobs" and vastly increased federal investment in existing renewable energy technologies should be subjected to more rigorous scrutiny.

At the outset, it is obviously the case that any substantial new resources the federal government spends directly, or indirectly through tax breaks, subsidies, and mandates, will generate employment where little or none existed previously, just as our historically large spending for defense procurement over the years has generated substantial employment. In fact, it is precisely the example of defense spending that should give us pause—the reason we do not suppose defense spending to be the sure route to prosperity and full employment is that it does not add productive, self-sustaining capacity to the private economy.

Three chief questions should be considered. First, will a green jobs policy result in net employment gains or net economic growth in the absence of such a policy? Second, will green jobs be filled chiefly by currently unemployed workers or by workers displaced from fossil fuel-related industries? Third, will a green jobs program contribute to substantial reductions in greenhouse gas emissions in a cost-effective way? The answer to all three questions is likely to be No.

None of the major studies making the boldest case for green jobs include any consideration of several basic economic principles that are ordinarily brought to bear in analyzing such proposals.[1] There is no thought given to opportunity cost,

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[1] The most frequently cited current studies are: *Green Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy*, by the Center for American Progress and the Political Economy Research Institute; *Current and Potential Green Jobs in the U.S. Economy*, prepared by Global Insight for the U.S. Conference of Mayors; and *Renewable Energy and*

that is, the lost economic productivity or employment that would result if an equal amount of capital is spent in another sector or for another purpose. To the extent that green jobs are in energy systems that are vastly more expensive than conventional energy sources it will mean less capital and purchasing power for other consumer wants and needs.

If green jobs and green energy projects are as intrinsically appealing, innovative, and productive as its advocates suggest, it should not need large subsidies or taxpayer support to gain traction. It is telling that wind power installations fall by three-quarters every time its special subsidies are allowed to expire.

It is likely that many green jobs would merely shift employment from one activity to another, rather than employing the currently jobless or workers displaced from coal-mining and auto manufacturing. A recent study by four economists at Spain's University Rey Juan Carlos concluded that Spain's aggressive ten-year-old policy to promote renewable energy and green jobs achieved negative results, and in fact the socialist government of Spain is now cutting back on the program. The authors estimated that each green job cost Spanish taxpayers about $600,000—more than $1 million for each job in wind energy—and costing more jobs in other sectors than it generated in the renewable sector.[2] Using European Commission data and two different economic models, the authors concluded that the U.S. would lose a net of two jobs for every job created by a green jobs program.

Another study by four American economists for the University of Illinois law and economics research program observes that there is little support in the academic literature for the thesis that spending for green jobs will generate a net increase in employment or economic activity: "In general, targeting subsidies to a particular area or industry, as the green jobs literature advocates, has not been supported by peer reviewed analysis. A survey of the evidence concluded 'targeting is based on poor data, unsound social science methods, and faulty economic reasoning and is largely a political activity.'"[3]

More:

> As political literature, the green jobs reports are masterpieces. They provide what on the surface appears to be scientific statistical backing for their recommendations, add an impressive array of tables and

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Energy Efficiency: Economic Drivers for the 21st Century, by the American Solar Energy Society; and *Green Jobs: Toward Decent Work in a Sustainable, Low-Carbon World*, by the United Nations Environment Programme.

[2] Gabriel Calzada Alvarez, et al, *Study of the Effects on Employment of Public Aid to Renewable Energy Sources*, Universidad Rey Juan Carlos, March 2009, http://www.juandemariana.org/pdf/090327-employment-public-aid-renewable.pdf.

[3] Andrew Morriss, et al., *Green Jobs Myths*, University of Illinois Law and Economics Research Paper Series No. LE09-001, http://ssrn.com/abstract=1358423.

> charts, and throw out remarkably precise numbers in their forecasts. The most egregious in this regard is the Conference of Mayors report, which provides detailed breakdowns of potential green employment for every town in the United States. The problems with the numbers underlying this seeming precision are immense. Taken as a whole, they make the forecasts in the green jobs literature an unreliable basis for policy making. . . .
>
> The preferred technologies in the green jobs literature face significant problems in scaling up to the levels proposed. These problems are documented in readily available technical literatures, but resolutely ignored in the green jobs reports. At the same time, existing technologies that fail to meet the green jobs proponents political criteria are simply rejected out of hand.

The sentimental enthusiasm for "green jobs" is merely one aspect of the contradictory theory behind the American Clean Energy and Security Act of 2009. On the one hand, we want to make carbon energy substantially more expensive—but not to have anyone pay higher costs because of it. The greater the rebates to industries and individual consumers, the less effective the program will be in reducing emissions. It is not clear what the point of the program is if it does not raise carbon prices across the entire economy. The idea of keeping consumers whole makes a much sense as raising the cigarette tax to reduce smoking, but rebating the tax to smokers.

We want to spend money on renewable sources of energy that are more expensive than conventional energy by orders of magnitude, but wish to deny that the higher cost will exact any drag on economic efficiency. To the contrary, we talk as though we have discovered how to stand in a bucket and pull ourselves up by the handle. The American people deserve more serious policy debate than this.

In one sentence, the only way in which a transition to a low-carbon energy system can be accomplished without significant economic cost and dislocation is to find breakthroughs that make low-carbon energy cheaper (which is a massive research and development challenge), not by making carbon energy artificially more expensive. In the fullness of time (that is 20 or 30 years from now), we are going to look back upon the Kyoto-style approach of costly carbon constraint as the climate policy equivalent of wage and price controls to fight inflation in the 1970s, or the Gramm-Rudman approach to deficit reduction in the late 1980s.

Mr. MARKEY. Thank you, Dr. Haywood, very much. Our next witness is Dr. David Kreutzer, who is the Senior Policy Analyst in Energy Economics and Climate Change at the Heritage Foundation Center for Data Analysis. He previously taught economics at James Madison University, where he served as the Director of the International Business Program.

We welcome you, sir.

STATEMENT OF DAVID KREUTZER

Mr. KREUTZER. Thank you. I will read the disclaimer first, at the risk of being redundant. My name is David Kreutzer. I am the Senior Policy Analyst in Energy Economics and Climate Change at the Heritage Foundation. The views I express in this testimony are my own, and should not be construed as representing any official position of the Heritage Foundation.

Mr. Chairman, I want to thank you and the members of the Energy and Commerce Committee for this opportunity to address you concerning the economic impacts of cap and trade policies. Cap and trade is a tax. It artificially restricts access to fossil fuels that provide 85 percent of our Nation's energy. This restriction drives up energy costs, drives down income, and drives jobs away.

Today, I will discuss several of the most critical economic impacts. Last year, the Center for Data Analysis at the Heritage Foundation projected the costs of the Lieberman-Warner Climate Change Bill. The emissions target for the Lieberman-Warner Bill was a 70 percent cut by the year 2050. It should be clearly noted that our analysis could only project for the first 20 years, at which point, the carbon reduction scheme is only halfway to this 70 percent reduction goal.

The first impact is on national income. Between 2012 and 2030, gross domestic product, the broadest measure of national income, drops by nearly $5 trillion, after adjusting for inflation. The second impact is the tax transfer. Coincidentally, it is also $5 trillion. So, you have a $5 trillion reduction in the size of the pie, and from that pie, you cut another $5 trillion piece to spread around. This money is transferred from energy consumers to the government, or those lucky enough to be given the pollution permits, which are also known as allowances.

The third, and arguably, most painful impact is on employment. Employment drops overall, but the energy intensive manufacturing sector is especially hard-hit. By 2030, manufacturing employment loses nearly three million jobs because of cap and trade's energy restrictions. A map included in the written testimony shows that this impact will be uneven, as manufacturing is relatively more important to the economies of some states than it is to others. Though some of those who lose or never get manufacturing jobs will find employment in the service sector, overall unemployment rises by over 800,000 in some years, due to the effects of cap and trade.

Another point to note is that these job losses are net of any green jobs created by CO_2 restrictions. In the written testimony is a copy of a page from the May 1945 issue of Mechanics Illustrated. It shows what we would call a green job in postwar Paris, a cyclist powering an electric generator. This was an imaginative solution to a lack of coal-generated current, done by an ingenious beauty shop

operator, perhaps. Today, a human-powered generator could produce about $0.10 of electricity in an eight hour shift.

Now, I don't think anybody is proposing that, but with sufficient subsidies, we could induce people to ride and pedal generators. The problem, of course, is that it moves human labor from producing output worth over $50 per day, and that would be at minimum wage, to producing something worth only $0.10 per day. Yes, we could point to the people riding these bicycle generators and count them as green jobs created, but the overall impact is to reduce economic output by at least $50 per day per person.

Energy sources that require subsidies are energy sources that use inputs whose value is greater than the value of the output. Just as subsidizing a cyclist to generate $0.10 of electricity per day will not expand the economy, forcing energy to flow through uneconomic bottlenecks is not a stimulus. Rather, it will reduce income.

In summary, we find the first two decades of a 40 year program to cut CO_2 by 70 percent will lead to $5 trillion of lost gross domestic product, will increase energy taxes by another $5 trillion, will lead to three million lost manufacturing jobs, and 400,000 to 800,000 fewer jobs overall, even after accounting for green job creation.

Thank you very much.

[The prepared statement of Mr. Kreutzer follows:]

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CONGRESSIONAL TESTIMONY

The Economic Impact of Cap and Trade

Testimony before
The Energy and Commerce Committee
April 22, 2009

David W. Kreutzer, Ph.D.
Senior Policy Analyst in Energy Economics and Climate Change
Center for Data Analysis
The Heritage Foundation

My name is David Kreutzer. I am the Senior Policy Analyst in Energy Economics and Climate Change at The Heritage Foundation. The views I express in this testimony are my own, and should not be construed as representing any official position of The Heritage Foundation.

I want to thank the members of the Energy and Commerce Committee for this opportunity address you concerning the economic impacts of cap and trade policies.

What is the problem with carbon dioxide (CO2)?
Carbon dioxide is not a toxin, is not directly harmful to human health, and is not projected to become so—even without legislative or regulatory action. CO2 is fundamental to all known forms of life. Indeed, studies show that increased CO2 levels are beneficial for crop production.

Nevertheless, driven by concern that increasing levels of CO2 (and other greenhouse gasses) will lead to a warmer world and cause environmental damage, there have been calls to significantly restrict emissions of all greenhouse gasses but especially CO2. Among the proposals to reduce CO2 levels are carbon taxes and cap-and-trade.

The Costs
The typical cap-and-trade proposal seeks to reduce CO2 emissions by 60 percent to 80 percent by 2050 where the comparison year is usually 2005. The Center for Data Analysis at The Heritage Foundation did an analysis of the costs of meeting the goals of the Lieberman-Warner bill, S.2191, last spring. The report on this analysis is attached.[1]

Our analytical models are not suited to making projections beyond 2030. Nevertheless, the economic impacts of this cap-and-trade program in just the first two decades were extraordinary. The estimated aggregate losses to Gross Domestic Product (GDP), adjusted for inflation, are $4.8 trillion. By 2029 the job losses in the manufacturing sector will be nearly 3 million. This is over and above the nearly one million manufacturing job losses that most economists predict will occur even in the absence of global-warming legislation.

The manufacturing job losses are shown in an attached chart taken from a study of an EPA mandated 70 percent cut in CO2.[2] Also attached is a map showing the relative importance of manufacturing to a state's economy.

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[1] William W. Beach, et al., "The Economic Cost of the Lieberman-Warner Climate Change Legislation," Center for Data Analysis Report #08-02.
http://www.heritage.org/Research/EnergyandEnvironment/upload/cda_0802.pdf
[2] David W. Kreutzer and Karen A. Campbell, "CO2-Emissions Cuts: The Economic Costs of the EPA's ANPR Regulations," Center for Data Analysis Report #08-02, October 29, 2008, The Heritage Foundation.
http://www.heritage.org/Research/EnergyandEnvironment/upload/CDA_08_10.pdf

Some of the workers forced out of manufacturing will find employment in the service sector but overall the economy loses jobs. In some years this overall job loss exceeds 800,000.

Note: Current law already has many provisions for curtailing CO2 emissions. They range from local renewable-portfolio mandates to increased nationwide Corporate Average Fuel Economy (CAFE) standards to subsidies for ethanol production. While the reductions in CO2 emissions are included for the purposes of meeting the emissions targets, the considerable cost of these programs is not included in our analysis. This is because the costs are attributable to existing legislation and will occur even without additional laws or regulations. Of course, if they were included, job and GDP loss totals would be even higher.

Why Is It So Costly?

Eighty-five percent of our energy use today is based on CO2 emitting fossil fuels. The ability to switch to non-CO2-emitting energy sources over the next 20 years is limited and expensive. Therefore, significant cuts in CO2 emissions require significant cuts in energy use. The energy cuts, in turn, reduce economic activity, shrink GDP and destroy jobs.

The cap-and-trade schemes, as well as more straight-forward carbon taxes, limit emissions by making energy sufficiently more expensive that they cut their energy use. In addition to having a direct impact on consumers' budgets for electricity, gasoline, heating oil and natural gas, these higher energy costs force cutbacks on the production side of the economy and lead to lower output, employment and income.

It is important to note, these losses occur after consumers, workers and businesses have adjusted as well as they can to the higher energy costs. After adjusting for inflation, household energy prices rise 29 percent above the business as usual prices, even though consumers will have switched to smaller cars, live in more energy efficient houses and make greater use of public transit. The lost comfort, convenience and satisfaction of making these changes are not included in our calculation of economic impacts, though the costs would be very real.

Green Stimulus?

Production drops even though firms will have adopted more energy efficient technologies and processes. To reiterate, the trillions of dollars of lost GDP and the hundreds of thousands of lost jobs occur even after homes and businesses have made the switch to greener ways of doing things. The hoped-for green-job gain is a mirage.

Attached is a copy of a page from a 1945 issue of *Mechanix Illustrated.* It shows a cyclist pedaling a jerry-rigged generator to power hair dryers in a Parisian beauty salon. Though not the sort of green job that is currently talked about, this human-powered generator illustrates why costly energy policies are not a stimulus.

A person on a bicycle generator would do very well to average 150 watts of output during a day. At this level, a modern-day cyclist/generator could produce electricity worth 10-15 cents per day at retail prices. With sufficient subsidies, people could be induced to power such generators and the proponents could then point to the "green" jobs that have been "created." What is not seen is the value of the cyclists' forgone output elsewhere. Even at minimum wage, the value of the labor is $52.40 per day. So each human powered generator would shrink the economy by over $50 per day. This is not an economic stimulus.

Alternative energy schemes that require subsidies or that require protection from competing with conventional sources of power cannot be economic stimuli—their output is worth less than their inputs. An industry whose inputs cost more than its output is making the economy smaller and will necessarily reduce overall income.

The Tax

Implementing a cap-and-trade program to cut emissions by 70 percent creates a transfer within the United States that is equivalent to taxes on the order of $250 billion to $300 billion per year, just for the years 2012 to 2030. The combined transfer is about $5 trillion in just the first 20 years. This takes the purchasing power from the households and turns it over to the federal government or to whomever the government assigns the rights to the permits for emissions (allowances). This would be one of the largest taxes in the economy—almost twice as large as the highway use taxes.

Because of the transfer, in this case, is similar in magnitude to the lost GDP, we need to be clear on the distinction. A cap and trade program with an emissions reduction profile similar to that of last year's Lieberman-Warner bill, will lead cause an aggregate $5 trillion of transfers after it destroys $4.8 trillion of national income (GDP).

In colloquial terms, the pie gets smaller by nearly $5 trillion and then a $5 trillion piece is cut out and redistributed.

Back-Door Protectionism

Cap-and-trade programs frequently include provisions to protect domestic industries from competition with firms in countries that haven't adopted similarly costly mechanisms for reducing CO2. While the intent is certainly understandable, the provisions create the possibility of a protectionist wolf in global warming clothes.

Putting these protectionist policies into operation is a bureaucratic nightmare. Every product from every country will need to be judged for how much of an advantage it may have due to different carbon-cutting regimes. Since different countries can have different approaches and since different manufacturers can use different technologies and processes, assigning an offsetting CO2 tariff will necessarily involve arbitrary decisions. The potential for a trade war is very real.

The Gain

Analysis by the Environmental Protection Agency (EPA) shows that a 60 percent reduction in CO2 emissions by 2050 will reduce CO2 concentrations by only 25 ppm in 2095. This reduction would affect world temperatures by 0.1 to 0.2 degrees C. In other words it makes virtually no difference.[3]

Conclusion

The Center for Data Analysis at The Heritage Foundation analyzed a proposal to cut CO2 emissions by 70 percent. Such a cut would have little impact on global temperatures. At best, the trade-off is trillions of dollars in lost income and hundreds of thousands of lost jobs vs. a fraction of a degree change in average world temperature 85 years from now.

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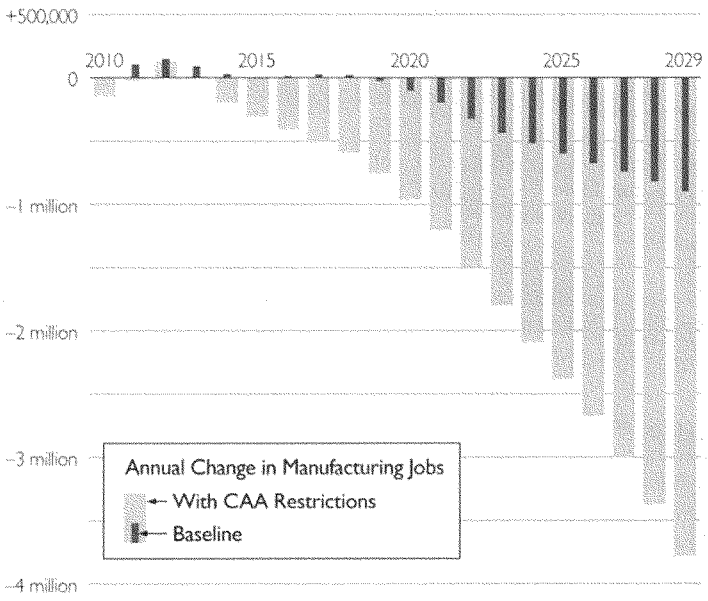
[3] According to the EPA, Lieberman-Warner would lower CO2 emissions from 719 ppm to 694 ppm. See: http://www.epa.gov/climatechange/downloads/s2191_EPA_Analysis.pdf, p. 192. Further, the IPCC says the most likely temperature response for each doubling of CO2 is 3 degrees C. The likely range is 2-4.5 degrees C for each doubling of CO2. These numbers are from the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, "Climate Change 2007: The Scientific Basis: Summary for Policy Makers," p. 21. Accessed at: http://ipcc-wg1.ucar.edu/wg1/docs/WG1AR4_SPM_PlenaryApproved.pdf, March 26, 2009

Therefore, the EPA and IPCC numbers predict Lieberman-Warner's impact on world temperature likely would be between .1 and .23 degrees with the most likely difference being .15 degrees C.

Manufacturing Jobs Will Take Significant Hit

Primarily due to increasing productivity, manufacturing can expect to see employment losses approaching 1 million jobs even without restrictions on CO_2 emissions. This is the baseline case. Higher energy costs from CO_2 restrictions under the Clean Air Act will lead to nearly 3 million more lost jobs in addition to the baseline losses.

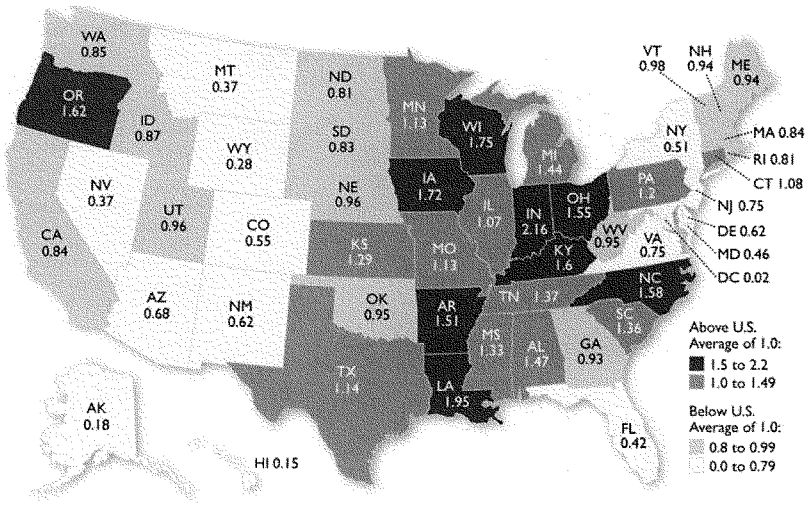


Source: Center for Data Analysis, Heritage Foundation calculations from the Global Insight macroeconomic model.

Chart 3 • CDA 08-10 heritage.org

State-by-State Manufacturing Intensity

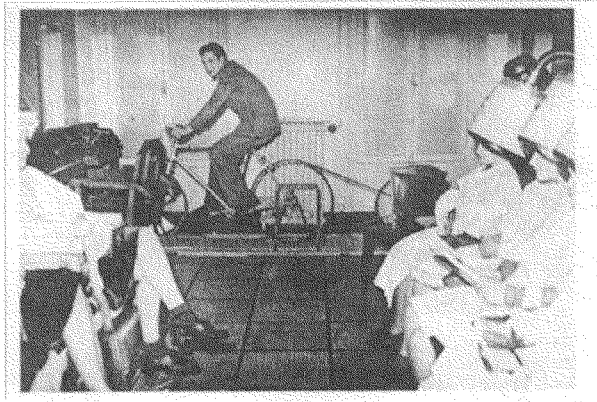
This map shows how much of each state's gross state product comes from manufacturing compared to the U.S. average. States with figures less than 1.0 have less manufacturing than the U.S. average, and states with figures greater than 1.0 have more manufacturing.



Source: Heritage Foundation calculations based on data from Bureau of Economic Analysis, Gross Domestic Product by State, 2007, at *http://www.bea.gov/regional/gsp/*.

Map 1 • ArticleName heritage.org

Green Stimulus



Leg Power replaces electricity in this Parisian beauty salon, where Madame has her hair dried despite the lack of coal-generated current. An ingenious beautician hires unemployed 6-day bicycle racers to peddle away on a bike, the back wheel of which is attached to a small generator! The current runs 6 driers.

Mechanix Illustrated, May 1945

Mr. MARKEY. Thank you, Dr. Kreutzer, very much. Our next witness is Dr. Nathaniel Keohane, who is—Dr. Keohane. Keohane. Keohane, Director of Environmental Economic Policy and Analysis for the Environmental Defense Fund.

Dr. Keohane oversees EDF's analytical work on the economics of climate change, and helps develop its policy positions on global warming. Formerly, he was an associate professor of economics at the Yale School of Management.

We welcome you, Doctor, and whenever you are ready, please begin.

STATEMENT OF NATHANIEL KEOHANE

Mr. KEOHANE. Well, thank you, Mr. Chairman, and the distinguished members of the committee, for holding this hearing. I am very honored to be here today.

The climate crisis is our responsibility, and it is within our power to address. We can easily afford strong action. What we cannot afford is more delay. The catastrophic consequences of unchecked climate change may seem remote, but they will happen within the lifetimes of my children and grandchildren. If we fail to address this problem, we must be willing to tell our children we could have addressed this crisis for a little over a dime a day per person, but we chose not to.

My message today is simple. The most expensive climate change policy is not having one at all. The economic costs of unchecked climate change are real, and they will be severe. Fortunately, the best available economic analysis shows that the U.S. can easily afford the pollution cuts necessary to solve this problem. In my written testimony, I present results from a range of economic forecasts published last year by government and academia, analyzing earlier proposed legislation. Just yesterday, though, the Environmental Protection Agency released new results that specifically analyze the draft legislation released by this committee, and I would like to highlight some of those results for you now.

First, EPA's new analysis shows that our economy will grow strongly under the proposed bill before you today. Their study estimates that if Congress passes climate legislation this year, U.S. economic output will be 71 percent larger in the year 2030 than it is today. The difference between that amount and what the analysis estimates will happen if we do nothing about climate change amounts to half a percent to a little over 1 percent of GDP in the year 2030.

To put that in perspective, if the economy, if the American economy will reach $23 trillion in January of 2030 if we do nothing to address climate change, it will get there by April or June at the latest with a carbon cap. Now, so far, I have been telling you about the costs of climate policy, the estimated costs compared to business as usual. But in reality, the business as usual scenario in these models doesn't exist. It is a fantasyland in which there are no economic costs of unchecked climate change, and we all know that there is no such future. So, these models that I am talking about just look at one side of the ledger, the costs of action, but not the benefits of avoiding climate change and its consequences.

So, still looking at that one side of the ledger, what are the costs for the average American family? EPA gives us a clear sense of what those are likely to be and they are small. The average estimated cost to households in the year 2015 is just $14 to $75 per year, sorry, in that year in present value, that is $0.04 to $0.21 a day. Over the entire life of the bill, the annual cost is just $98 to $140 per household. That is $0.27 to $0.38 a day for the average American family, or $0.11 to $0.15 a day per person. That includes all of the estimated costs of this bill, now, of the cap and trade program on carbon.

Now, you might say it is just one study, but in truth, this study is completely consistent with everything else we know. As my written testimony describes in detail, the consensus among credible economic analysis is that the American economy will grow robustly while cutting carbon pollution and investing in a clean energy economy.

Now, I am sure we are going to hear lots of numbers in the next few weeks that have been cherry-picked from reports issued by whatever modelers for hire can be found to support the latest or the desired point.

Forecasts aren't crystal balls. They are only as good as the assumptions that go into them, and some of the assumptions used to get some of the numbers you may have heard are just simply not credible. The EPA, in its analysis, has set the gold standard in this report by using two of the most credible, transparent, and peer-reviewed models available, and the bottom line from that analysis is that for around $0.13 a day, and I brought $0.13 with me, around $0.13 a day, we can solve climate change, help get our economy off foreign oil, and invest in the clean energy economy.

As I said in the beginning, the climate crisis is our responsibility, and it is within our power to address it. We can easily afford strong action. What we cannot afford is more delay.

Thank you for inviting me to testify. I look forward to your questions.

[The prepared statement of Mr. Keohane follows:]

Summary of Testimony

Nathaniel O. Keohane, Ph.D.
Director of Economic Policy and Analysis
Environmental Defense Fund
Before the
Committee on Energy & Commerce
United States House of Representatives

April 22, 2008

Introduction

I am honored to be here today as this Committee begins consideration of a comprehensive energy and climate bill that will put a cap on greenhouse gas pollution. This is an urgent issue for our children and grandchildren, for if we fail to act we will leave them a much different planet and a much diminished future. But it is also an urgent issue for our own communities today and in the next few years. What those of us in this room do in these short weeks will help determine the course of the American economy. You have the chance to help continue America's tradition of technological leadership and economic growth – to revitalize and reinvigorate the American economy – and to provide a strong, clear, and true signal to drive investment in clean energy generation and energy efficiency and reward entrepreneurial vision and innovation in a low-carbon future. Thank you, Chairman Waxman, Ranking Member Barton, and distinguished members of the Committee for holding this hearing.

My testimony makes five points.

1. Inaction on climate change is the most expensive policy

The consequences of unchecked global warming will be severe. The Intergovernmental Panel on Climate Change projects temperature increases of roughly 2 to 4 degrees Celsius (4 to 7 degrees Fahrenheit) above current levels by the end of century unless we take action. The consequences of such temperature changes will be catastrophic. They include putting billions of people at risk of severe drought, decreased crop productivity throughout the world, increased damages from coastal flooding and more severe hurricanes, severe heat waves and the spread of insect-borne tropical diseases such as malaria.[1] Within the United States alone, climate change could cause large declines in the value of agricultural output and in fish and waterfowl populations, put strains on public sector budgets and infrastructure, and require hundreds of billions of dollars annually from increased water and energy costs, coastal flooding, and more severe hurricanes. As former Federal Reserve Chairman Paul Volcker has remarked, "If you don't take action on

[1] Yohe, G.W., R.D. Lasco, Q.K. Ahmad, N.W. Arnell, S.J. Cohen, C. Hope, A.C. Janetos and R.T. Perez, 2007: Perspectives on climate change and sustainability. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 811-841, page 828. http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter20.pdf

climate change, you can be sure that our economies will go down the drain in the next 30 years." The most expensive policy we could pursue would be the one we have been following for the last eight years and more — which is doing nothing.

2. We have the technologies we need to get started right away

Studies by the consultancy McKinsey & Company estimate that the abatement potential in the United States — using technologies that either exist or are already in the development pipeline — will amount to between 1,245 and 2,000 million tons of greenhouse gas reductions (MMTCO2e) by the year 2020, and between 3,000 and 4,700 million tons by the year 2030. Those figures alone would be sufficient to meet the abatement targets for covered sectors that are contemplated in draft legislation. In addition, EDF analysis shows that another 570 to 930 MMTCO2e of emissions reductions from reduced deforestation in tropical rainforests could be available to entities in the United States by the year 2020, as a cost-effective means of offsetting their emissions. These estimates demonstrate that the abatement potential exists right now to meet ambitious goals for emissions reductions.

3. The U.S. can afford deep cuts in greenhouse gas emissions

Credible economic forecasting models show that the U.S. economy will grow robustly with ambitious cuts in greenhouse gas emissions. At the level of the economy as a whole, the estimated impact of climate policy amounts to just a few months of growth over twenty years. Under business as usual, according to a range of models, the total output of the U.S. economy will reach roughly $26 trillion in January of 2030. With a cap on greenhouse gases, the economy will reach that level by April of 2030. Moreover, these projected impacts turn out to be far smaller than the variation in business-as-usual projections over the same period — suggesting that any aggregate impact of climate policy is essentially "in the noise" of macroeconomic models. At the household level, the estimated impact of climate policy amounts to *less than half a penny per dollar of household income* for the average American family — much less than what we already spend on household protection and security.

The past record of economic forecasting shows that *ex ante* estimates of the cost of environmental regulation — made before the regulation takes effect — have typically greatly exceeded the actual costs. This is particularly true for market-based regulations, as in the case of the cap-and-trade program for sulfur dioxide established by the 1990 Clean Air Act Amendments. A prime reason for such overestimation is that economic models are unable to account for the full scope and pace of technological innovation that is unleashed in response to well-designed environmental regulation.

Finally, in evaluating the results of macroeconomic models, it is important to stress that these models consider only one side of the ledger: the costs of taking action, but not the benefits. I have already discussed the most important benefit from taking action — that is, preventing the catastrophic damages that will result if we fail to change course. The failure of the

macroeconomic models discussed here to incorporate the damages from climate change means that the business-as-usual path these models use as a baseline simply does not exist.

4. Cap-and-trade is a proven approach

Under Title IV of the 1990 Clean Air Act Amendments, emissions of sulfur dioxide from fossil-fired electric power plants have been capped since 1995. That program has shown how well a cap-and-trade system works. Total emissions have fallen to just half of their 1980 levels — achieving the goal three years ahead of schedule and at a fraction of the predicted cost. The estimated benefits of the program, meanwhile, have been roughly 40 times greater. The secret to the program's success has been the technological change made possible by a market-based approach — in ways that were entirely unexpected before the program began.

5. Leadership on climate change can help to secure American prosperity

The next major economic revolution will be the clean energy revolution. A cap-and-trade system that drives American investment and inspires American innovation will position the United States competitively for growth in the global transition to a low-carbon economy. The choice facing us is a stark one: Will we develop and export the coming wave of low carbon technologies — like carbon capture and sequestration, next-generation solar panels, and powerful lightweight batteries — so that jobs and businesses stay in America? Or, will we do nothing and find ourselves importing these technologies from overseas? Failure to act on a cap-and-trade policy would withhold the signals and incentives that can empower the American economy to modernize jobs, services and technologies, and allow the country to emerge from this next phase of global change and competition in the leadership position it holds today.

Now — when our economy is in a deep recession — is *precisely* the time when bold action is needed most. If climate legislation is passed during this Congress and takes effect in 2012, the impact on energy prices will be zero this year; zero in 2010; zero in 2011. On the other hand, passage of legislation will help to unleash a flood of investment, by sending a clear signal of what the price of carbon will be. Electric utilities and manufacturing companies are waiting for legislation before they invest in new power plants or factories that will last forty years or more. A cap on carbon will drive investment right away.

And investment is what our economy needs most right now. Once the investment begins to flow, orders will come in to steel mills and cement factories, to manufacturers of wind turbines and energy-efficient windows and retrofit equipment to improve fuel economy of long-haul trucks. Right now our factories are idle, labor and capital are underemployed. The economy needs a source of demand beyond the stimulus package. Where is that demand going to come from? A cap on carbon will not create money out of thin air. But it will unleash capital that is sitting on the sidelines, and channel it towards clean-energy investments that will revitalize our economy while ensuring a prosperous future.

Testimony of Nathaniel O. Keohane, Ph.D.
Director of Economic Policy and Analysis
Environmental Defense Fund
Before the
Committee on Energy & Commerce
United States House of Representatives

April 22, 2008

INTRODUCTION

I am honored to be here today as this Committee begins consideration of a comprehensive energy and climate bill that will put a cap on greenhouse gas pollution. This is an urgent issue for our children and grandchildren, for if we fail to act we will leave them a much different planet and a much diminished future. But it is also an urgent issue for our own communities today and in the next few years. What those of us in this room do in these short weeks will help determine the course of the American economy. You have the chance to help continue America's tradition of technological leadership and economic growth – to revitalize and reinvigorate the American economy – and to provide a strong, clear, and true signal to drive investment in clean energy generation and energy efficiency and reward entrepreneurial vision and innovation in a low-carbon future. Thank you, Chairman Waxman, Ranking Member Barton, and distinguished members of the Committee, for holding this hearing.

Environmental Defense Fund is a leading national nonprofit organization representing more than 500,000 members. Since 1967, we have linked science, economics and law to create innovative, equitable and cost-effective solutions to society's most urgent environmental problems. We have long championed market-based approaches to environmental issues, and helped design the highly successful acid-rain program created in the Clean Air Act Amendments of 1990. As Director of Economic Policy and Analysis, I oversee EDF's economic analysis of climate change policy and help to shape our advocacy. Before coming to EDF nearly two years ago, I was an Associate Professor of Economics at the Yale School of Management, where I taught for six years. I have published a number of peer-reviewed academic articles on a range of subjects on the economics of environmental policy, and have authored or edited two books on market-based environmental policy and the economics of environmental law.

My message is a simple one: Strong action to reduce U.S. greenhouse gas emissions is an economic imperative. The most expensive policy would be doing nothing: unchecked climate change will result in enormous damages to our economy and to our planet. The good news is that we have an historic opportunity to act — and by acting, to help transform the American economy and ensure our prosperity in the twenty-first century. Not only can the American economy begin reducing greenhouse gas emissions right away; we can do it while growing at a very low cost to the overall economy and to American families, according to the best available economic modeling studies to date. Moreover, for a variety of reasons those studies are likely to overestimate the costs to the economy while underestimating the benefits. Finally, both in the

next few years and over the coming decades, strong climate legislation is the key to a strong American economy.

1 INACTION IS THE MOST EXPENSIVE POLICY

The fact that I — an economist — am here at all is significant because it is a concrete sign that the scientific debate about global warming is over. Although there will always be naysayers, there is no longer any question within the scientific community that human-caused climate change is real and is already happening — in fact, is happening much faster than anyone had predicted or anticipated.

The consequences of unchecked global warming will be severe. The Intergovernmental Panel on Climate Change projects temperature increases of roughly 2 to 4 degrees Celsius (4 to 7 degrees Fahrenheit) above current levels by the end of century unless we take action.[2] Some recent projections, incorporating the latest available data, are even more dramatic: for example, scientists at the Massachusetts Institute of Technology forecast a temperature increase of 3.5 to 7.4 degrees Celsius (6 to 13 degrees Fahrenheit) under business as usual by the year 2100.[3] The upper end of that range is comparable in magnitude to the change in temperature from the last Ice Age — 10,000 years ago — to the present day.

The consequences of such temperature changes will be catastrophic. They include putting billions of people at risk of severe drought, decreased crop productivity throughout the world, increased damages from coastal flooding and more severe hurricanes, severe heat waves and the spread of insect-borne tropical diseases such as malaria.[4] Recent events like Hurricane Katrina, the 2003 heat waves in Europe blamed for 52,000 deaths, and the 6-year drought in Australia are symptomatic of what lies in store, even if those individual events cannot be conclusively linked to global warming. If these global impacts seem abstract, consider the concrete consequences that lie ahead for the United States according to a range of recent studies:

- declines as high as 70% in the value of U.S. agricultural output[5];

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[2] IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 7-22, page 17

[3] Sokolov, A.P., P.H. Stone, C.E. Forest, R.G. Prinn, M.C. Sarofim, M. Webster, S. Paltsev, C.A. Schlosser, D. Kicklighter, S. Dutkiewicz, J. Reilly, C. Wang, B. Felzer, H.D. Jacoby. "Probabilistic Forecast for 21st Century Climate Based on Uncertainties in Emissions (without Policy) and Climate Parameters." MIT Joint Program on the Science and Policy of of Global Change, Report 169, 44 pages, January 2009. http://globalchange.mit.edu/pubs/abstract.php?publication_id=990

[4] Yohe, G.W., R.D. Lasco, Q.K. Ahmad, N.W. Arnell, S.J. Cohen, C. Hope, A.C. Janetos and R.T. Perez, 2007: Perspectives on climate change and sustainability. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 811-841, page 828. http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter20.pdf

[5] Schlenker, W., Hanemann, W.M., Fischer, A. "The Impact of Global Warming on U.S. Agriculture: An Econometric Analysis of Optimal Growing Conditions." *The Review of Economics and Statistics*, February 2006, Vol. 88, No. 1, Pages 113-125.

- a decline in trout and salmon populations in many areas of over 50 percent, including losses of more than 90 percent in some prime areas in the high-mountain West and in Appalachia[6];
- large declines in waterfowl populations, including 40 percent in the Upper Great Lakes, 70 percent in the prairie pothole region, and up to 99 percent in the Chenier Plain marshes of Louisiana[7];
- "immense strains on public sector budgets"[8];
- threats to "roads, rail lines, ports, airports and other important infrastructure"[9]; national security implications from widespread political instability[10];
- hundreds of billions of dollars annually from increased water and energy costs, coastal flooding, and more severe hurricanes.[11]

As former Federal Reserve Chairman Paul Volcker has remarked, "If you don't take action on climate change, you can be sure that our economies will go down the drain in the next 30 years."

Unchecked global warming in the next few decades will also set into motion fundamental and irreversible changes in our planetary systems, including the melting of ice sheets in Greenland and western Antarctica that will raise sea levels by several meters; large-scale weather shifts that will threaten the world's tropical forests; and the weakening of ocean circulation patterns that make Western Europe habitable. As for natural ecosystems, even a modest warming of 3 °C — which we are likely to see within a few decades — would put 20 to 30 percent of the world's species at increasingly high risk of extinction; while warming on the order of five degrees would likely cause major extinctions around the world. Meanwhile, warmer and more acidic waters (another consequence of carbon dioxide emissions) will likely conspire to kill coral reefs around the globe before the century is half gone.[12]

We simply lack the tools to put a price tag on the full damages from such changes. The IPCC cites estimates of global mean losses equal to 1 to 5 percent of world GDP for 4°C of warming — but as the IPCC points out, many of those estimates on which that figure is based exclude damages to nonmarket sectors, or the effect of large-scale discontinuous changes in earth systems. The *Stern Review of the Economics of Climate Change* estimated an impact on global per

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[6] Season's End, a program of the Bipartisan Policy Center. Global Warming Fact Sheet Series: Freshwater Fish Fact Sheet, http://www.seasonsend.org/

[7] Season's End, a program of the Bipartisan Policy Center. Global Warming Fact Sheet Series: Waterfowl Fact Sheet, http://www.seasonsend.org/

[8] *The US Economic Impacts of Climate Change and the Costs of Inaction.* Center for Integrative Environmental Research, University of Maryland, October 2007.

[9] National Research Council, National Academy of Sciences, Committee on Climate Change and U.S. Transportation. *Potential Impacts of Climate Change on U.S. Transportation: Special Report 290,* 2008. http://www.nap.edu/catalog/12179.html

[10] Center for Naval Analysis, *National Security and the Threat of Climate Change,* 2007.

[11] *The Cost of Climate Change: What We'll Pay if Global Warming Continues Unchecked,* by Frank Ackerman and Elizabeth Stanton, Tufts University (NRDC: May 2008). http://www.nrdc.org/globalwarming/cost/cost.pdf

[12] Yohe, G.W., R.D. Lasco, Q.K. Ahmad, N.W. Arnell, S.J. Cohen, C. Hope, A.C. Janetos and R.T. Perez, 2007: Perspectives on climate change and sustainability. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 811-841, page 828. http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter20.pdf

capita consumption of at least 5 percent, with a high-end estimate as high as 20 percent.[13] While the latter figure in particular has stirred debate among economists, Stern's numbers faithfully reflect a sense of the urgency that emerges from reading the scientific evidence on the pace and scope of climate change. As Professor Geoffrey Heal of Columbia University concludes in a recent review, "I am inclined to think that Stern is much nearer the mark: it is impossible to read the IPCC reports and believe that the consequences of climate change along the business as usual path are only 1 or 2 percent of national income."[14]

A similar assessment of the *Stern Review* is offered by Professor Martin Weitzman of Harvard, who criticizes the specific methodology and assumptions in the *Review* but nonetheless endorses the urgency of its recommendations.[15] Weitzman's main concern is the "fat tail" of climate damages — in other words, the small but still significant probability of a truly catastrophic worst-case scenario. An example is the MIT researchers' assessment of a 5% chance that temperatures will increase by as much in the next hundred years as they have in the 10,000 years since the last Ice Age. This possibility of catastrophic damages adds weight to the urgency of acting now to reduce greenhouse gas emissions, since such action preserves our option to act even more aggressively in the future if the worst-case scenarios turn out to be even more likely than we expect.[16]

In summary, an economic assessment of the literature on the damages from global warming strongly supports the case for action. The most expensive climate change policy is not having one at all.

2 WE HAVE THE TECHNOLOGIES TO GET STARTED RIGHT AWAY

The severity of the climate crisis demands urgent action. The good news is that we have the technologies and abatement opportunities we need to get started right away, and to meet or beat near-term emissions reduction targets for the next ten to twenty years.

Available abatement opportunities within the U.S.: Evidence from McKinsey & Company analyses

I start by reporting on an analysis by EDF staff that used two recent studies by McKinsey & Company to estimate the available abatement opportunities within the United States. In 2007, McKinsey published a survey of abatement opportunities in the U.S. that could be available at a

[13] Stern, Lord Nicholas. *The Economics of Climate Change: The Stern Review*. Cambridge University Press (Cambridge: 2007)
[14] Heal, Geoffrey, "Climate Economics: A Meta-Review and Some Suggestions for Future Research," *Review of Environmental Economics and Policy*, Winter 2009, 3(1): 4-21.
[15] Weitzman, Martin L. "A review of the '*Stern Review* of the economics of climate change.'" *Journal of Economic Literature*, 2007, 45: 703–24.
[16] Yohe, Gary, Natasha Andronova, and Michael Schlesinger. "To hedge or not against an uncertain climate future?" *Science*, October 2003, 306 (15): 416–17; Jon Anda, Alexander Golub, and Elena Strukova "Economics of climate change under uncertainty: Benefits of flexibility." Energy Policy, 2009, 37: 1345–1355.

cost under $50 per ton by the year 2030. McKinsey's survey catalogued 250 abatement options grouped in 75 categories in 5 sectors: buildings, industry, power, transport, as well as agriculture, waste and forestry. In its mid-range case – which does not assume aggressive deployment of technologies or envision the price on carbon that would arise from an economy-wide cap-and-trade program – McKinsey estimated that U.S. emissions could be reduced by 3,000 $MMTCO_2e$ in 2030.

Because McKinsey did not provide estimates for abatement opportunity that might be available in 2020, we derived those numbers from McKinsey's analysis for the mid-range case, for which we have access to the underlying data. We removed both carbon capture and storage and expansions in nuclear power from the list of abatement opportunities in the power and industrial sectors because we cannot assume these opportunities would necessarily be available by 2020.

We then estimated available abatement opportunities by 2020 in two ways—

a. First, we simply divided the remaining abatement opportunities for 2030[17] in half (taking 2020 as the midpoint of the period 2010-2030) and found that **1,245 $MMTCO_2e$** of available annual abatement opportunities would be available each year by 2020.

   We believe this is a conservative estimate because it assumes that the low or no-cost abatement opportunities identified by McKinsey — such as increased lighting efficiency in the residential and commercial sectors — would be deployed in a smooth, linear fashion (so that only half of the full range of opportunities were taken advantage of by 2020). It seems more likely, however, that much of this abatement would happen in the near term. Of the 2,490 $MMTCO_2e$ available by 2030, McKinsey estimates that 60%, or 1,500 $MMTCO_2e$, are available at costs below $10/$TCO_2e$; over 70% or 1,860 $MMTCO_2e$ would be available under $25/$TCO_2e$. Some fraction of those reductions would be accompanied by cost savings as the reduction in energy costs outweighed the upfront purchase cost. As a result, we would expect to see early deployment of many of these abatement opportunities as market participants seek to reduce their exposure to the possibility of higher energy costs.

b. In a second approach, we considered each of the 75 McKinsey abatement categories individually and excluded all that do *not* represent low-cost, readily available technologies. We were left with four categories of near-term abatement opportunities: offsets in the agricultural and forestry sectors; energy efficiency gains in residential and commercial buildings; fuel economy improvements in automobiles, and process changes in industrial and power sectors. These total **1,600 $MMTCO_2e$** of annual abatement opportunities. And because these opportunities appear to be low-cost, *early availability* technologies, we think their full annual abatement potential should be available by 2020. Excluded entirely from this total were *all* new alternative power sources, *all* industrial processes assumed to require major capital expenditures, and *all* ambiguous categories.

[17] 2,490 MMTCO2e available abatement opportunities in 2030 at a price below $50/TCO2e excluding CCS and nuclear.

Recently McKinsey and Company published a new survey of global abatement potential. In that study McKinsey updates its estimates for total abatement opportunity in the U.S.: According to McKinsey the U.S. is capable of providing **2,000 MMTCO$_2$e** of abatement potential per year by 2020 at a cost below €60/TCO$_2$e (or now about **$75**/ton) and **4,700 MMTCO$_2$e** by 2030 for the U.S.[18] These projections reinforce our confidence in our estimates above.

Based on these two McKinsey analyses, therefore, the United States is likely to have the necessary technologies available, at reasonable cost, to meet and even exceed the *total* abatement that would be required by the cap-and-trade program envisioned in the Waxman-Markey discussion draft. Moreover, that is true despite the fact that these studies assume little innovation in the application of low-carbon technologies and methods. Indeed, the McKinsey analysis includes only those abatement opportunities that are either already available, or are under active development and judged by McKinsey to have a high likelihood of being available. While it is also true that some low-carbon technologies may take longer to deploy than currently anticipated, a greenhouse gas emissions trading program will provide an economic incentive never before experienced in the U.S. economy.

It is also important to remember that the abatement opportunities McKinsey identified are *entirely* domestic. As we show below, opportunities for reducing emissions outside the U.S. are significant.

Abatement potential from reductions in tropical deforestation

Emissions reductions outside the cap have the potential to contribute to meeting short-term targets: one example is reductions from reduced tropical deforestation.

At the international level, there is growing support for awarding credits to tropical forest nations for emissions reductions achieved by slowing tropical deforestation and degradation. Such credits, known as REDD credits (for Reductions in Emissions from Deforestation and forest Degradation), have considerable potential in helping regulated entities in the United States meet ambitious short-term targets. To analyze the potential contribution of REDD credits, we have developed a simple model drawing on estimates of tropical deforestation and degradation developed by Brent Sohngen of Ohio State University, used by EPA in its own modeling.[19]

We estimate that emissions reductions from tropical deforestation, if allowed to be used for compliance in the United States, could contribute roughly **930 MMTCO$_2$e** of abatement by 2020 (at an allowance price of **$30**/ton) and **604 MMTCO$_2$e** by 2030 (at a price of **$49**/ton).

We should note three things about this estimate. First, these numbers represent only the share of REDD credits that would be used for compliance by entities in the United States, accounting

[18] Exhibit A.V.1 of McKinsey & Company, *Pathways to a Low-carbon Economy: Version 2 of the Global Greenhouse Gas Abatement Cost Curve*, 2009.

[19] We use Sohngen's curves from the Energy Modeling Forum 21 based on rising carbon price scenarios. This data is available at: http://www.stanford.edu/group/EMF/projects/group21/EMF21sinkspagenew.htm.

for the demand from the European Union and other industrialized nations.[20] Including credits purchased in those countries as well as in the United States, we estimate that avoided tropical deforestation would reduce emissions by 1,500 $MMTCO_2e$ in 2020.

Second, the actual volume of REDD credits will depend upon a number of factors – most importantly, the market price of credits. As with any source of abatement, there is expected to be an upward-sloping "supply curve." The higher the price, the more abatement will occur. At higher prices, we would expect greater emissions reductions through REDD, up to a maximum of 2,000 $MMTCO_2e$ available in that year.

Third, these estimates assume that tropical forest nations around the world can start reducing deforestation (and creating corresponding REDD credits) within the next decade. While Brazil is widely seen as ready to do so, other major sources (e.g. Congo and Indonesia) are somewhat further behind. So, using a conservative assumption that REDD credits are available *only* from Latin America, our analysis suggests that by 2020 the volume of REDD credits available to entities in the United States (again accounting for demand in the EU and elsewhere) would be **570 $MMTCO_2e$** annually by 2020.

While fairly rough, these estimates are based on the most comprehensive assessment available of emissions reduction opportunities from forestry. Moreover, the broad conclusions are supported by other analyses of REDD relying on completely different data. For example, a recent in-depth analysis of tropical deforestation in the Brazilian Amazon estimated potential emissions reductions of over 900 $MMTCO_2e$ annually once the program was in full swing, after about ten years.[21] This estimate – which is for the Brazilian Amazon alone – is in line with the figures from our analysis cited above. Another independent assessment of global abatement opportunities by McKinsey, estimated that avoided tropical deforestation in Africa and Latin America combined would account for roughly 3,000 $MMTCO_2e$ by 2030; this figure is also broadly consistent with the numbers presented here.[22]

Table 1 and Figure 1, on the next page, summarize these findings.

[20] For the purposes of this memo, we assume that the EU and other industrialized countries currently participating in the Kyoto Protocol reduce emissions to 20% below their 1990 levels by 2020. Although the EU ETS does not currently allow such credits to be used for compliance, this is widely expected to change by 2020 – possibly as soon as the next phase of the ETS, which will start in the year 2013.

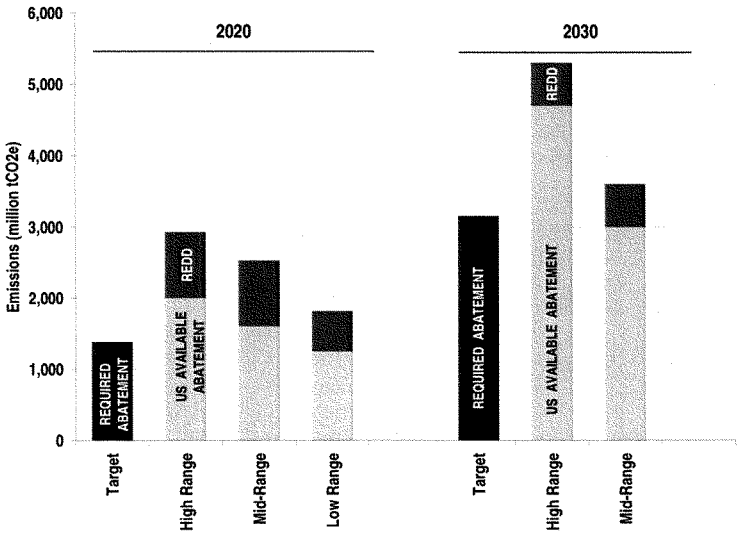
[21] Daniel Nepstad et al., "The Costs and Benefits of Reducing Carbon Emissions from Deforestation and Forest Degradation in the Brazilian Amazon," http://www.whrc.org/BaliReports/assets/WHRC_Amazon_REDD.pdf. EDF was involved in the preparation of that report. Note that in the original report, emissions reductions are expressed in tons of carbon, rather than tons of CO_2 as presented here.

[22] Per-Anders Enkvist, Tomas Naucler, and Jerker Rosander, "A cost curve for greenhouse gas reduction," *McKinsey Quarterly* (2007).

Table 1 — Estimated abatement opportunities within the U.S. and from reduced tropical deforestation.[23]

ABATEMENT (millions of metric tons CO2 equivalent)	2020	2030
Required abatement relative to BAU forecast (AEO2009)	1,379	3,154
Available domestic abatement opportunities		
McKinsey (2007)	n/a	3,000
EDF conservative interpretation of McKinsey (2007) mid-range estimate	1,245 - 1,600	n/a
McKinsey (2009)	2,000	4,700
Available credits from tropical deforestation		
EDF estimate of REDD credits available to U.S. entities	570 - 930	604

Figure 1 — Available abatement opportunities relative to required abatement.[24]



[23] Energy Information Administration, Annual Energy Outlook 2009; McKinsey & Company, *Pathways to a Low Carbon Economy: Version 2 of the Global Greenhouse Gas Abatement Cost Curve*, 2009; McKinsey & Company, *Reducing US Greenhouse Gas Emissions: How Much at What Cost?*, 2007.

[24] Internal EDF analysis; McKinsey & Company.

3 THE U.S. CAN AFFORD DEEP CUTS IN GREENHOUSE GAS EMISSIONS

Earlier in my testimony, I mentioned the strong consensus that has emerged among scientists that human-caused global warming is real, is already happening, and will have potentially catastrophic impacts on human populations and the natural environment if we do not take action to avert it.

There is a similar consensus emerging among economists who study climate policy that even if we focus only on the costs to the U.S. economy of reducing greenhouse gas emissions, that cost will be a very small fraction of economic output or household income.[25] Indeed, all models show that the U.S. economy will grow robustly with ambitious cuts in greenhouse gas emissions. The projected impacts of climate policy over the next two decades turn out to be far smaller than the variation in business-as-usual projections over the same period — suggesting that any aggregate impact of climate policy is essentially "in the noise" of macroeconomic models. At the household level, the estimated impact of climate policy amounts to *less than half a penny per dollar of household income* for the average American family — much less than what we already spend on household protection and security.

Moreover, the past record of economic forecasting shows that *ex ante* estimates of the cost of environmental regulation — made before the regulation takes effect — have typically greatly exceeded the actual costs. This is particularly true for market-based regulations, as in the case of the cap-and-trade program for sulfur dioxide established by the 1990 Clean Air Act Amendments. A prime reason for such overestimation is that economic models are unable to account for the full scope and pace of technological innovation that is unleashed in response to well-designed environmental regulation.

Finally, in evaluating the results of macroeconomic models it is important to stress that those models consider only one side of the ledger: the costs of taking action, but not the benefits. I have already discussed the most important benefits from taking action — that is, the catastrophic damages that will result if we fail to change course. The failure of the macroeconomic models discussed here to incorporate the damages from climate change means that the business-as-usual path those models use as a baseline simply does not exist. There is simply no possible future in which we continue to emit greenhouse gases at current rates, and yet climate change does not take an enormous toll on the country's economy.

Apart from the averted damages of climate change, two other categories of benefits deserve particular mention as well. First, reducing greenhouse gas emissions from power plants, factories, and cars will also reduce conventional air pollutants that contribute to poor air quality and severe health problems in our cities. Second, reducing greenhouse gas emissions will reduce our dependence on foreign oil, enhancing national security.

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[25] Pooley, Eric. *How Much Would You Pay to Save the Planet? The American Press and the Economics of Climate Change.* Joan Shorenstein Center on the Press, Politics and Public Policy, Kennedy School of Government, Discussion Paper Series #D-49 (Harvard University: January 2009).

What do the models project?

Last year, I published a report with Peter Goldmark called "What Will It Cost to Protect Ourselves from Global Warming?"[26] We examined a range of policy scenarios modeled by five highly respected, nonpartisan economic modeling groups in government and academia, to find out what the state-of-the-art economic modeling had to say about the potential economic impacts of climate policy on the U.S. economy. In my testimony I will summarize the modeling results for the legislation considered in the Senate last year (S.2191, "America's Climate Security Act"). While that legislation is no longer current, the general conclusions remain instructive going forward as the current Congress writes its own climate legislation.[27]

All the models show that we can enjoy robust economic growth while achieving deep reductions in greenhouse gas emissions (see Figure 2, on the next page). In the analyses we looked at, the U.S. economy was projected to grow by 83 to 120 percent from 2005 to 2030 under climate policy, versus growth of 84 to 121 percent over the same period under business as usual.

In other words, the U.S. economy will roughly double in size over the next twenty years with or without climate policy.

At the aggregate level, the projected impact of climate policy on the U.S. economy amounts to a tiny fraction of economic output. For example, the median impact of climate policy on projected GDP in the year 2030 is just 0.75 percent. Considering that these models expect the U.S. economy to grow at just under 3 percent per year, the estimated impact of climate policy amounts to three months of growth — over twenty years.

The estimates can be thought of this way: Under business as usual, according to these models, the total output of the U.S. economy will reach roughly $26 trillion in January of 2030 (measured in 2005 dollars). With a cap on greenhouse gases, the economy will reach that level by April of 2030. The projected difference in GDP is so small, it is like two cars driving from Washington to Los Angeles, with the second car arriving eighteen minutes after the first.

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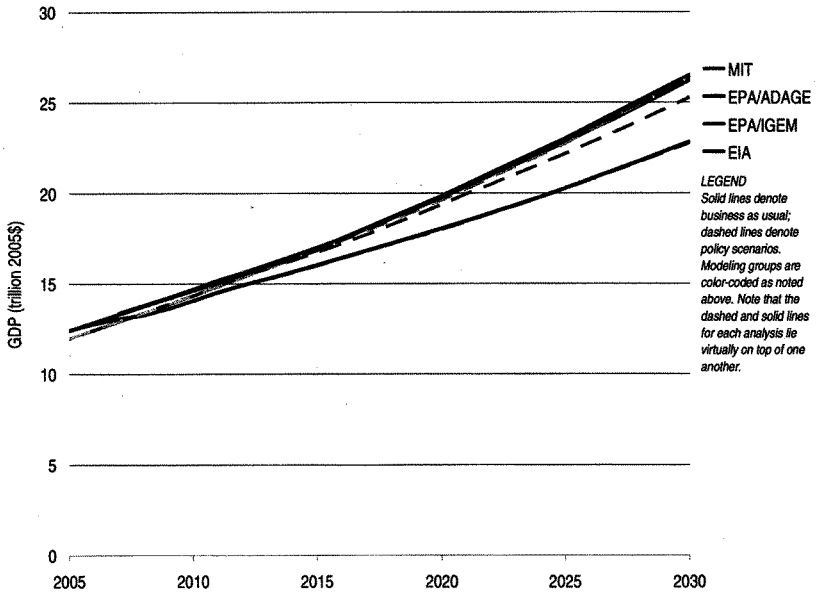
[26] Goldmark, Peter and Nathaniel Keohane. *What Will it Cost to Protect Ourselves From Global Warming?* Environmental Defense Fund, 2008. www.edf.org/climatecosts

[27] The numbers cited in this testimony are updated to include the EIA's analysis of the Lieberman-Warner bill (S.2191) rather than the Lieberman-McCain bill (S.280); the analysis of S.2191 was not available when our report was released.

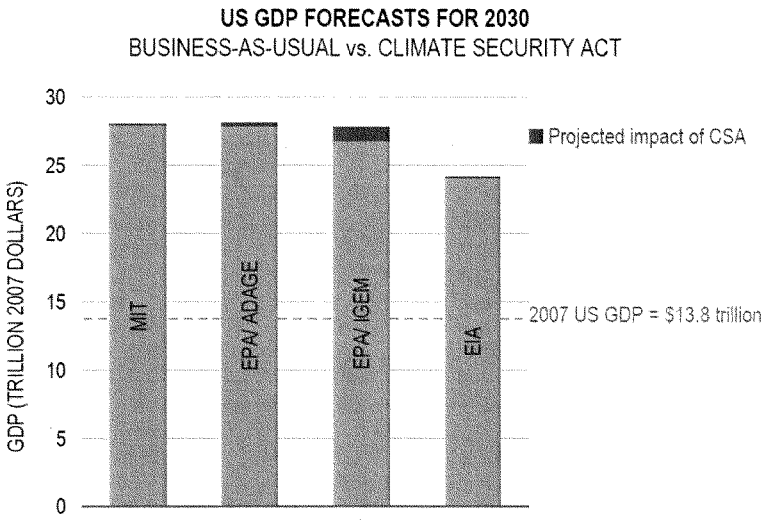
Figure 2 — GDP growth forecasts with and without climate policy over the period 2005-2030.[28]



It is also worth comparing this projected impact to the variation in the models' projections of economic output under business as usual (see Figure 3 on the next page). Those projections vary because every model must make assumptions about labor productivity, population growth, economic policy, energy prices, and a whole host of other parameters — all of which are unknown. In fact, the business as usual projections for U.S. GDP in the year 2030, for the models we analyzed, vary by as much as 16% ($3.6 trillion) — more than twenty times the 0.75 percent impact of climate policy. Indeed, these economic models don't agree on much. The one thing they *do* agree on is that the effect of climate policy on the growth of the American economy will be tiny.

[28] EDF compilation of analyses of S.2191 by MIT, EPA, and EIA: *EPA Analysis of The Climate Stewardship and Innovation Act of 2007 S. 280 in 110th Congress*, July 16, 2007; Sergey Paltsev, John M. Reilly, Henry D. Jacoby, Angelo C. Gurgel, Gilbert E. Metcalf, Andrei P. Sokolov and Jennifer F. Holak. *Assessment of U.S. Cap-and-Trade Proposals*. MIT Joint Program on the Science and Policy of Global Change, Report No. 146, April 2007; Energy Information Administration, *Energy Market and Economic Impacts of S. 2191, the Lieberman-Warner Climate Security Act of 2007*, April 2008.

Figure 3 — Forecasted GDP in the year 2030, with and without climate policy.[29]



A similar observation holds even for the same models at different points in time. The Energy Information Administration of the Department of Energy, for example, issues economic growth projections every year as part of its *Annual Energy Outlook*. In its 2006 report, the EIA projected that the US GDP would be $25.2 trillion; in its 2008 report, that forecast had fallen to $22.9 trillion (all measured in constant 2005 dollars) — a difference of more than 9 percent. By comparison, the EIA's projected impact of the Senate bill in 2030 was only 0.30 percent — just one-thirtieth of the difference in BAU projections from one report to another.[30]

Household costs

While aggregate impacts are important to consider, household-level impacts are much more relevant to the average family. Here too, the projected impacts are modest. For example, according to the EIA's analysis, the Senate bill would have increased household utility bills for electricity, natural gas, and fuel oil by about a dime a day. Other studies typically do not estimate household-level consumption; however, using the best available estimates on the elasticity of

[29] EDF compilation of analyses of S.2191 by MIT, EPA, and EIA.

[30] Energy Information Administration. *Energy Market and Economic Impacts of S. 2191, the Lieberman-Warner Climate Security Act of 2007*. April 2008, SR/OIAF/2008-01.

demand for household energy use, their projections also work out to just a few dollars a month for the average household.

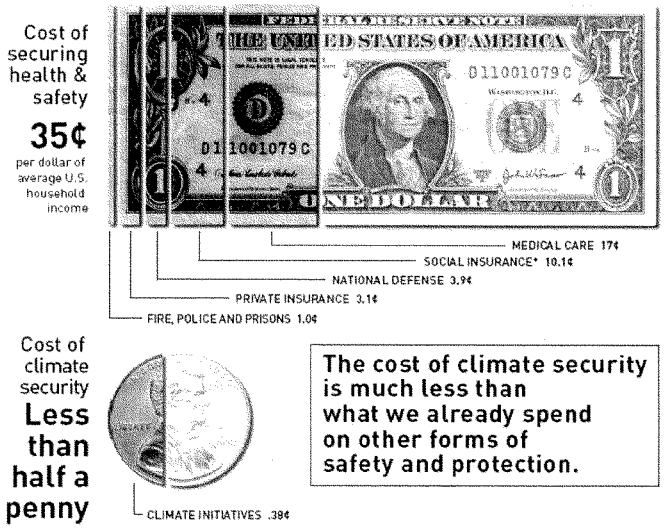
It is worth noting, moreover, that legislation can be designed to help cushion the impact of higher prices on consumers, especially during a transition to cleaner energy and greater energy efficiency. Allocating allowances to local distribution companies, who could pass the value onto energy consumers in the form of lower rates or investments in energy efficiency, would make the small impacts cited above even smaller.

Impacts on transportation costs are also likely to be modest, especially in the context of the sorts of week-to-week price variation we are already familiar with. For example, the analyses of the Senate legislation by the EIA and the EPA projected increases in retail gasoline prices of around 15% (about 40 cents in 2005 dollars) in the year 2030 relative to business as usual. To put that number in context, the average retail gasoline price has risen by more than 40 cents per gallon just since the end of last year — while it is more than two dollars lower than the high reached last summer. The point is that gasoline prices are extremely volatile. Rather than worrying about the small increases over twenty years that might result from a cap on carbon, we should be worried about how we may be held hostage to much more significant increases in oil prices for other reasons – and we focus on how to make the American economy less dependent on foreign oil. Capping carbon can be an important step towards reducing that dependence — a point I will return to below.

The most complete measure of household impacts to come out of these models is the estimated effect on real consumption, which incorporates the direct effects on transportation and household utilities already discussed as well as other changes that may result from climate policy. The median consumption impact in the economic analyses of the Senate bill was just 0.42 percent. Expressed per dollar of household income, this amounts to 0.38 cents — less than half a penny. A useful way to put these forecasts in context is to compare them to what Americans already spend to protect themselves and their families. This may take the form of health care, or fire and property insurance, or tax payments that go to hospitals or police and fire services. Spending on climate security—protecting ourselves against potentially catastrophic climate changes—falls in the same category.

Figure 4, on the next page, shows how much of every dollar of household income an American family spends on protection and security. On average, American households spend seventeen cents out of every dollar of income on medical care; ten cents on social insurance; four cents on national defense; three cents on private insurance; and a penny on fire and police. The effect of a cap on greenhouse gases will be just 0.38 cents out of that same dollar of income — less than half a penny.

Figure 4 — Estimated impact of climate policy on household consumption relative to current household expenditures on securing health and safety.[31]



How good are the models?

Macroeconomic modeling analyses like the ones summarized above can be useful tools – but they are not crystal balls. Economic modelers are not endowed with an ability to predict the future: their models are simply collections of equations representing supply and demand in different sectors of the economy, and their results depend fundamentally on the assumptions used in the analysis. Since those assumptions are necessarily based on historical data and experience, models are inherently limited in their ability to forecast future conditions.

A good example comes from a study of long-term energy forecasts by two researchers at the Lawrence Berkeley National Laboratories and a co-author.[32] Figure 5, taken from their report, shows a range of U.S. energy demand forecasts from the 1970s included in a survey by the Department of Energy. As the graph makes clear, despite very wide variation in the predictions, virtually all of the models predicted much higher energy demand than actually occurred.

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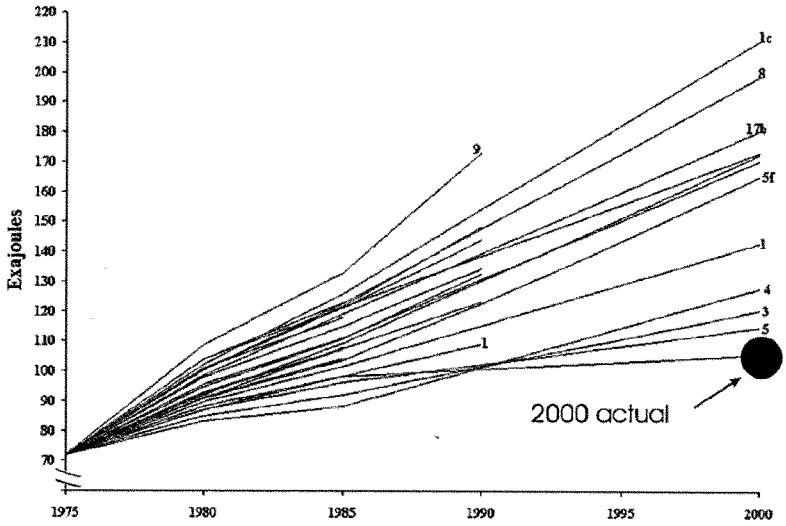
[31] Goldmark, Peter and Nathaniel Keohane, PhD, *What Will it Cost to Protect Ourselves From Global Warming?* Environmental Defense Fund, 2008. www.edf.org/climatecosts

[32] Craig, Paul, Ashok Gadgil, and Jonathan Koomey. 2002. "What Can History Teach Us?: A Retrospective Analysis of Long-term Energy Forecasts for the U.S." In *Annual Review of Energy and the Environment 2002*,. Edited by R. H. Socolow, D. Anderson and J. Harte. Palo Alto, CA: Annual Reviews, Inc. (also LBNL-50498).

Figure 5 — Long-term energy demand forecasts for the United States. Actual demand in the year 2000 is superimposed at bottom right.[33]

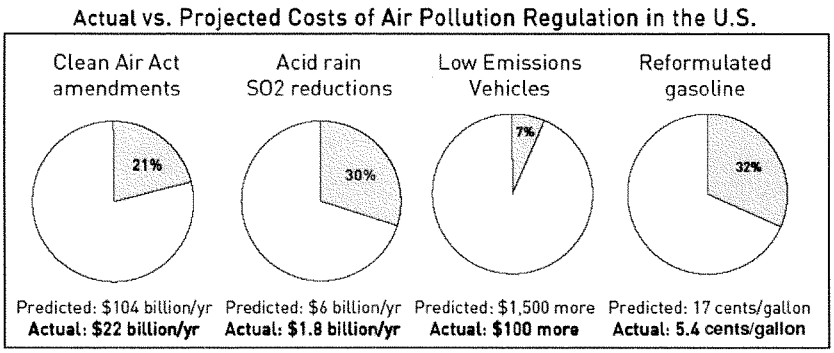


One may argue that the 1970-2000 period was a particularly hard one to forecast, given the two Arab oil shocks in the first part of the period, which helped usher in a new focus on conservation. And yet with hindsight we can *always* identify why a particular set of forecasts went wrong. The more general lesson is that long-term modeling exercises are always severely limited in their prediction ability. As the authors point out, while they list seven uses for which energy modeling is appropriate, accurately forecasting the future is not among them.

Similar caution in interpreting modeling results comes from a comparison of *ex ante* and *ex post* estimates of the cost of environmental regulations. Figure 6 shows such a before-vs.-after comparison for four major environmental regulations: the 1990 Clean Air Act amendments as a whole; Title IV of the 1990 CAAA, which established a cap-and-trade program for sulfur dioxide (SO_2) from electric utilities; and regulations on low emissions vehicles and reformulated gasoline. As the figure shows, in each case the actual costs were much less than had been predicted – from 70 percent less, in the case of the Acid Rain program, to over 90 percent less in the case of low emission vehicles.

[33] Craig, Paul, Ashok Gadgil, and Jonathan Koomey. 2002. "What Can History Teach Us?: A Retrospective Analysis of Long-term Energy Forecasts for the U.S." In *Annual Review of Energy and the Environment 2002*, Edited by R. H. Socolow, D. Anderson and J. Harte. Palo Alto, CA: Annual Reviews, Inc. (also LBNL-50498).

Figure 6 — Comparison of actual vs. projected costs of air pollution regulation in the United States.[34]



The pattern illustrated in Figure 6 turns out to hold more generally for a wider range of regulations. A team of researchers at the nonpartisan think tank Resources for the Future (RFF) found that *ex ante* estimates of cost by government agencies exceeded actual costs in 12 out of 25 rules they examined, while the reverse was true in only 6 cases.[35] More strikingly, of the eight market-based regulations included in the survey, costs were overestimated in at least seven cases (and possibly in the eighth as well). While these findings do not guarantee that current estimates of the cost of capping carbon will be too high, they do show that if the estimates turn out to be accurate, it will be a first.

Why do economic models systematically overstate the true costs of environmental regulation? The RFF researchers focus on technological innovation as the primary explanation. Assessments made prior to regulation necessarily include only the abatement methods and technologies that are foreseen at the time. But the regulation itself is typically a powerful spur to innovation – especially in the case of market-based policies that create a strong economic incentive to find or develop the most cost-effective means of reducing pollution. As I shall discuss in more detail

[34] EDF fact sheet with sources from: Business Roundtable. "Clean Air Act Legislation Cost Evaluation." January 18, 1990; E.H. Pechan & Associates, Inc., contracted by EPA. "Clean Air Act Section 812 Prospective Assessment-Cost Analysis Draft Report." September, 1995; National Acid Precipitation Assessment Program. "Report to Congress: An Integrated Assessment," 2005. Available at: http://www.al.noaa.gov/AQRS/reports/napapreport05.pdf; Materials sent to editors and writers by the Edison Electric Institute describing the impact of the Clean Air Act Amendments on the electric utility industry. December 17, 1990; Sierra Research, Inc., "The Cost Effectiveness of Further Regulating Mobile Source Emissions," February 28, 1994.; *The New York Times*, "Honda Meets a Strict Emission Rule," August 30, 1995; W. Harrington, R. Morgenstern, P. Nelson (Resources for the Future), "On the Accuracy of Regulatory Cost Estimates," January 1999. Citing Cackett, "The Cost of Emission Controls on Motor Vehicles and Fuels: Two Case Studies," presented at the 1998 Summer Symposium of the EPA Center on Airborne Organics, MIT Endicott House, Dedham, Mass. July, 1998.

[35] Morgenstern, R., Harrington, W. and Nelson, P. 2000. "On the accuracy of regulatory cost estimates." *Journal of Policy Analysis and Management* 19 (2): 297 – 322.

below, unexpected technological innovation played a central role in driving down the costs of the SO_2 trading program.

While we have already seen that we have the technologies to get started on reducing emissions, over the long term technological innovation will be critical to solving global warming. As a result, the failure to adequately incorporate technological change represents the Achilles' heel of economic modeling. To be more precise, these models ignore technological change that is driven by the policy itself. A cap-and-trade program for greenhouse gases will put a price on carbon, creating a powerful driver for investment and innovation in areas such as energy efficiency and renewable energy generation. Exactly how this process of "induced technological change" works, however, is complex and poorly understood. As a result, most models assume that technological change is "exogenous"---that is, unresponsive to prices and policies. A typical approach is to assume that technological improvement will unfold smoothly at a predetermined rate---often chosen to match historical improvements in productivity. While this crude approach is an improvement on a static model, it cannot capture the dynamic process of investment and exploration that will be spurred by a cap on carbon.

Moreover, such a smooth process is ill-equipped to model the "jump processes" that often characterize technological change. Over short time periods, a smooth approach may be a reasonable approximation. But over the course of two decades or more, its shortcomings become acute. For example, imagine trying to predict the current state of technology in 1970 or even 1990 – before the advent of the Internet, the ubiquity of personal computers, the widespread use of mobile communications, and so on. While predicting such individual innovations may not be crucial in forecasting aggregate economic growth, it was crucial to forecasting the costs of electronic communications and the explosion of the information technology as a crucial economic sector. In the same way, our fundamental inability to see ahead to the next generation of low-carbon and energy-efficient technologies is likely to bias upward our projections of the costs of curbing greenhouse gas emissions.

As an illustration of the limitations inherent in modeling technological change, consider how different models treat energy generation. Because carbon constraints will have a direct impact on the price and consumption of fossil fuels, the share of electricity that can be generated from renewable sources will be a crucial factor in determining the cost of reducing greenhouse gas emissions. Hence, the assumptions a model makes about the availability and cost of renewable energy sources are critical, even though they often are buried in a morass of technical detail.

As it turns out, different models answer these questions in dramatically different fashion. In the MIT EPPA model, the share of electricity from renewable energy under business as usual is constant over the next several decades, hovering around 8 percent. Even more striking is the lack of response to climate policy: for the year 2030, for example, the model projects that renewable sources will account for 7 percent of electricity generation under business as usual, but just 10 percent under ambitious climate policy.

This lack of a response to policy stems from the basic structure of the MIT model. Like most models, MIT's model is calibrated to a single base year – in this case, 1997. This means that key parameters in the model must be chosen to replicate the energy sector (and the rest of the economy) in that year. One such parameter concerns the substitutability between renewable generation and electricity produced from conventional sources---that is, how readily electricity generated from wind and solar sources can replace electricity from fossil fuel and nuclear energy. The MIT model assumes a low value for this parameter, as a crude way of reflecting the intermittency of wind power, the dependence of solar power on sunlight, and so on. While the parameter value may fit the facts in 1997, however, it ends up being severely limiting for the purposes of forecasting the future. In fact, MIT's future projections are even below *current* renewable electricity generation.

The point is not to pick on the MIT researchers, who in many respects have built an excellent model. Rather, the point is to underscore the inherent drawbacks of economic forecasts – and to serve as a reminder of why those forecasts should not be taken as reliable predictions of the future.

Only one side of the ledger

In assessing the results from economic models of climate policy, it is also crucial to account for what is missing from those models. I have already mentioned that all the modeling results discussed so far – like nearly all the results in the literature – completely ignore the damages from climate change. As a result, they look only at one side of the ledger when it comes to reducing greenhouse gases.

Two other categories of omitted benefits are also worth mentioning. The first is the ancillary benefits from reductions in conventional air pollutants. Emissions of SO_2, nitrous oxides (NO_x), and particulates (PM10) from power plants, factories, and cars contribute to ground-level ozone (smog) and suspended particulate matter in downwind areas. The consequences of poor air quality, especially in the densely populated cities of the Northeast, include substantial morbidity and mortality, resulting in enormous economic damages valued in the trillions of dollars.[36]

One important side effect of reducing greenhouse gases would be to reduce ambient concentrations of these conventional air pollutants. For example, reductions in gasoline consumption as a result of greater fuel economy and changes in driver behavior would translate into lower NO_x emissions, hence less ground-level ozone and fine particulate matter. Estimates of such ancillary benefits from climate change mitigation vary, but they could be of the same order of magnitude as the cost of reducing greenhouse gas emissions.[37] Although there has been

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[36] Muller, N and Mendelsohn, R. July 2007. "Measuring the damages of air pollution in the United States." *Journal of Environmental Economics and Management*, 54 (1): Pages 1-14.

[37] Michelle L Bell, Devra L Davis, Luis A Cifuentes, Alan J Krupnick, Richard D Morgenstern and George D Thurston. "Ancillary human health benefits of improved air quality resulting from climate change mitigation," July 2008, *Environmental Health*, 7:41; Devra Lee Davis, Alan Krupnick and Gene McGlynn, "Ancillary Benefits and Costs of Greenhouse Gas Mitigation: An Overview," In *Workshop on Assessing the Ancillary Benefits and Costs of Greenhouse Gas Mitigation Strategies,*

little work focusing on the ancillary benefits from U.S. climate change policy, two preliminary analyses by EDF staff in conjunction with researchers at the Harvard School of Public Health and at Middlebury College suggest that the economic value of such "ancillary benefits" from cleaner air will be of the same order of magnitude as the estimated costs of reducing greenhouse gases.[38] For example, preliminary analysis by Professor Nicholas Muller of Middlebury College of the emissions reductions that would have been required by last year's Senate legislation (S.2191) has found that the associated ancillary benefits are as high of $9 per ton of CO_2 abated when all sources are included – of which just over $2 per ton is due to mobile sources alone. By comparison, the average cost of abatement in the EPA's analysis of S.2191 is about $9.30 per ton. In other words, even before we take into account the benefits from addressing global warming, the reductions in CO_2 from a cap on greenhouse gases will almost pay for themselves simply through better air quality. While this work is still in progress, it suggests that overlooking the cobenefits from cleaner air will lead to a serious underestimation of the benefits of climate change legislation.

A second benefit of climate policy that is overlooked in the macroeconomic models is national security. From a wide-angle perspective, national security would be enhanced by reducing the link between climate-induced environmental stress and geopolitical instability[39]. At a more immediate level, a cap on carbon would encourage conservation and more efficient use of petroleum products, leading to a reduction in imports of foreign oil. Consider how vulnerable the current U.S. economy is to swings in oil prices: every $30-per-barrel increase in oil prices reduces real income by roughly 1 percent of GDP[40]. A cap on carbon would increase energy efficiency and clean energy here at home — reducing our dependence on foreign oil and thus our vulnerability to such price swings. For example, MIT researchers estimate that a cap-and-trade program would reduce oil imports by $20 billion per year in 2015 and $45 billion in 2025.[41]

4 CAP-AND-TRADE IS A PROVEN APPROACH

A cap-and-trade program for greenhouse gas emissions is sometimes portrayed as if it is novel idea. In fact, it is a proven approach for environmental regulation that has been in operation in the United States for nearly fifteen years. Under Title IV of the 1990 Clean Air Act Amendments, emissions of sulfur dioxide from fossil-fired electric power plants have been

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Washington, DC: Organization for Economic Cooperation and Development (OECD), Intergovernmental Panel on Climate Change (IPCC); 2000.

[38] John M. Balbus, MD, MPH (Environmental Defense Fund), Ramya Chari, MPH, (Johns Hopkins Bloomberg School of Public Health), Kristie L. Ebi, PhD, MPH, (ESS LLC, Inc.) "Health Co-benefits of specific US Climate Activities," forthcoming

[39] Center for Naval Analysis. *National Security and the Threat of Climate Change*, 2007.

[40] Council on Foreign Relations. *National Security Consequences of U.S. Oil Dependency, 200.6* Independent Task Force Report No. 58, John Deutsch and James Schlesinger, Chairs, 2006.
Note: adjusted for current GDP of $14 trillion

[41] Sergey Paltsev, John M. Reilly, Henry D. Jacoby, Angelo C. Gurgel, Gilbert E. Metcalf, Andrei P. Sokolov and Jennifer F. Holak. *Assessment of U.S. Cap-and-Trade Proposals*. MIT Joint Program on the Science and Policy of Global Change, Report No. 146, April 2007.

capped since 1995, with the level of the cap declining to a long-term level equal to half of emissions in 1980.

That program has shown how well a cap-and-trade system works. Under the program, fossil-fired electric generating units with capacity of at least 25 MW — over two thousand in total — must submit allowances for their SO_2 emissions in each calendar year, with one allowance corresponding to one ton of emissions. (Units in the eastern half of the country must also submit allowances for their NO_x emissions, under a parallel trading system instituted by rule.) Emissions are measured in real time by continuous emissions monitors (CEMs) installed for that purpose. The combination of real-time monitoring, regular reporting, a central electronic allowance registry, a simple requirement ("submit as many allowances as emitted tons"), and a stiff fine for noncompliance have produced a stellar compliance rate of over 99%.

The program's performance has greatly exceeded expectations. Total SO_2 emissions reached their long-run target in 2007, three years ahead of schedule – thanks in part to a provision that allows regulated entities who can reduce their emissions by more than required to bank the resulting allowances for future use. As a result, acid rain in the eastern United States has been reduced dramatically, as have ambient concentrations of sulfur dioxide and particulate matter.

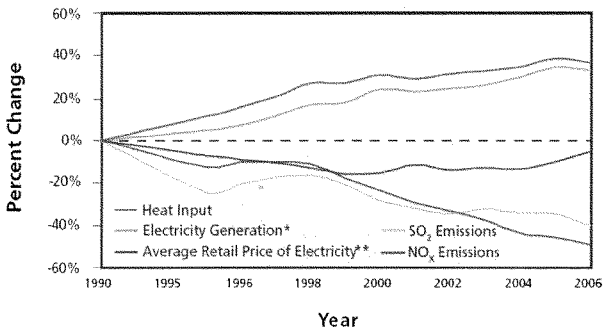
The simplest testament to the program's performance is given by Figure 7 (on the next page). Even as emissions of SO_2 and NO_x have fallen sharply, electricity generation from fossil-fired electric plants has risen.

Perhaps most strikingly, the average retail price of electricity (in real terms) is *less* than it was in 1990 when the law was passed.

Indeed, the cost of the program has come in far below expectations. The total cost of the sulfur dioxide program is estimated to be $1 to $2 billion annually – a fraction of the $6 billion that EPA projected in 1990.[42] (Controls on nitrous oxides (NO_x) are estimated to add another $1 billion in annual costs.)

[42] United States Environmental Protection Agency. National Acid Precipitation Assessment Program. *Report to Congress: An Integrated Assessment*. 1990.

Figure 7 — Changes in pollution emissions, heat input, electricity generation, and retail electricity prices since the passage of the 1990 Clean Air Act Amendments. The emission trading system for sulfur dioxide took effect in 1995.[43]



* Generation from fossil fuel-fired plants.

** Constant year 2000 dollars adjusted for inflation.

Source: Energy Information Administration (electricity generation, retail price); EPA (heat input and emissions, representing all affected ARP units), 2007

The use of a market-based policy, rather than conventional command-and-control regulation, has led to billions of dollars in cost savings. In the first phase of the program alone (from 1995-1999), emissions trading reduced aggregate annual compliance costs by an estimated $150 million, or 17 percent, relative to an emissions performance standard — and saved a staggering *$1.8 billion* each year relative to a technology standard requiring the use of scrubbers.[44]

A major reason for the Acid Rain Program's lower-than-expected costs was technological change. Some of the relevant changes involved more efficient scrubbers that can remove as much as 95 percent of SO_2 from flue gases (rather than 80 to 85 percent as had been more common) – and can do so without the expensive and redundant design features (such as entire extra "trains" or spare modules) that were included to ensure continuous operation of a scrubber in the era of command-and-control regulation, when a scrubber breakdown could mean shutting down the unit. Other changes were "Eureka moments," as when a team at General Electric working to improve methods of scrubbing sulfur dioxide out of smokestack emissions figured out how to oxidize the gas all the way to gypsum that could be sold for fertilizer or sheetrock.

But the most important and unexpected innovation was also the most mundane. Before the emissions trading program began, conventional wisdom among power plant engineers was that

[43] Environmental Protection Agency, 2007.

[44] Keohane, Nathaniel, "Cost Savings from Allowance Trading in the 1990 Clean Air Act: Estimates from a Choice-Based Model" in Charles E. Kolstad and Jody Freeman, eds., *Moving to Markets in Environmental Regulation: Lessons from Twenty Years of Experience* (New York: Oxford University Press, 2006).
Note that the total compliance cost in Phase I, which covered fewer units, was estimated to be $750 million annually.

boilers built for high-sulfur bituminous coal from the Illinois Basin and Appalachia could never burn more than a small percentage of the less energy-rich but low-sulfur coal from western mines in places like Wyoming's Powder River Basin. That conventional wisdom was turned on its head. Soon anonymous power plant operators were figuring out how to adapt boilers designed for high-sulfur Eastern coal to burn low-sulfur Wyoming coal – sometimes switching completely over. Wyoming coal, it turned out, was plentiful enough – and cheap enough – that it became cost-competitive throughout much of the Midwest once the price of sulfur dioxide was factored in. The market-based approach played a key role here: not only did it create an economic incentive to reduce emissions, but it gave electric power plants a great deal of flexibility in figuring out how to achieve those reductions in the most cost-effective way possible.

In the end, the most impressive single measure of performance for the Acid Rain Program is its estimated net benefits. While total costs (of SO_2 and NO_x combined) have been roughly $3 billion annually, estimated benefits are more than forty times larger — $122 billion each year.[45]

5 LEADERSHIP ON CLIMATE CHANGE CAN SECURE AMERICAN PROSPERITY

While the evidence presented so far provides assurance that ambitious reductions in greenhouse gases are compatible with robust economic growth, a broader perspective suggests that passing well-designed climate legislation will be a crucial step in putting the American economy on a sound long-term footing, and ensuring our future prosperity.

A leadership role in the next economic transformation

The engine of progress in the U.S. economy is technological innovation. We have led the way in the major economic transitions of the past century: the emergence of wide-scale mass production; the development of semiconductors; the space age; the Internet age. The story of the semiconductor era captures the vital importance of technology to U.S. economic growth. From the invention of the transistor at Bell Laboratories in 1948, to the introduction of silicon and the development of integrated circuits in the 1950s and 1960s, to the emergence of logic chips in the 1990s---at each stage, the United States has led the world, and our technological leadership in this area has been the foundation for postwar growth.

The next major economic revolution will be the clean energy revolution. A cap-and-trade system that drives American investment and inspires American innovation will position the United States competitively for growth in the global transition to a low-carbon economy. It is an advantage for the United States that it will be starting before China, India and other emerging economies. Europe and Japan have already started down this road. But eventually all countries will join the international system to limit carbon emissions. The nations that take the lead in the hunt for low-carbon technologies will find that an enormous market awaits them. The choice

[45] Chestnut, L.G., and Mills, D.M. "A fresh look at the benefits and costs of the US acid rain program." November 2005. *Journal of Environmental Management* 77(3): Pages 252-266.

facing us is a stark one: Will we develop and export the coming wave of low carbon technologies — like carbon capture and sequestration, next-generation solar panels, and powerful lightweight batteries — so that jobs and businesses stay in America? Or, will we do nothing and find ourselves importing those technologies from overseas? Failure to act on cap-and-trade policy would withhold the signals and incentives that can empower the American economy to modernize jobs, services and technologies, and allow the country to emerge from this next phase of global change and competition in the leadership position it holds today.

Why now?

Some observers are understandably concerned about whether the time is right for a cap on carbon, given the deep economic recession we find ourselves in. The answer is that this is *precisely* the time when bold action is needed. If climate legislation is passed during this Congress and takes effect in 2012, the impact on energy prices will be zero this year; zero in 2010; zero in 2011. On the other hand, passage of legislation will help to unleash a flood of investment, by sending a clear signal what the price of carbon will be. Electric utilities and manufacturing companies are waiting for legislation before they invest in new power plants or factories that will last forty years or more. A cap on carbon will drive investment right away.

And investment is what our economy needs most right now. Once the investment begins to flow, orders will come in to steel mills and cement factories, to manufacturers of wind turbines and energy-efficient windows and retrofit equipment to improve fuel economy of long-haul trucks. Right now our factories are idle, labor and capital are underemployed. The economy needs a source of demand beyond the stimulus package. Where is that demand going to come from? A cap on carbon will not create money out of thin air. But it will unleash capital that is sitting on the sidelines, and channel it towards clean-energy investments that will revitalize our economy while ensuring a prosperous future.

Now is precisely the time to pass climate legislation. This committee, and Congress as a whole, stands at the cusp of an historic achievement. Thank you for inviting me to testify.

Mr. MARKEY. Thank you, Dr. Keohane. And our final witness, Myron Ebell, is the Director of Energy and Global Warming Policy at the Competitive Enterprise Institute. He also chairs the Cooler Heads Coalition.

We welcome you to a place that needs that, Dr. Ebell. Thank you for your leadership in that area.

Mr. EBELL. Mister.

Mr. MARKEY. Whenever you are ready, please begin.

Mr. EBELL. Yes. Thank you, Chairman Markey, for inviting me to testify here today.

Before I begin, let me say that I refer to several studies and articles in my very short testimony, and I would like to ask that they be submitted for the record.

Mr. MARKEY. Without objection.

Mr. EBELL. Great. Thank you.

Mr. MARKEY. So ordered.

STATEMENT OF MYRON EBELL

Mr. EBELL. My name is Myron Ebell, and I am Director of Energy and Global Warming Policy at the Competitive Enterprise Institute. I am speaking here today on behalf of CEI. We oppose this bill. We hope that it will be defeated, and we will do whatever we can within our limited resources to defeat it.

Rather than summarize my very brief testimony, I would like to just respond to several things I have heard today. This morning, with the Administration witnesses, we heard some astonishing claims in very matter of fact, conversational answers, that this bill will create jobs, that it will reduce our dependence on foreign oil, and that it will help the economy. I believe Dr. Chu and Administrator Jackson said that several times, and I think Secretary LaHood said it at least once.

I think that each one of these is wrong, and certainly, each one of these claims is arguable. I am not much for modeling. I think it depends, as Dr. Keohane said, it depends on what the assumptions are, and you can get almost any answer you want out of a climate model or an economic model.

I would rather look at historical experience. We have many of the policies in your draft bill, Chairman Markey, being tried today, and have been tried for several years in the European Union and in California. California is falling off an economic cliff. Now, it is not the only reason that they have run up the price of energy so that they have the highest gasoline taxes in the Nation. They have a shortage, a continuing shortage of refined gasoline. That they have among the highest electric rates in the Nation, comparable with yours in Massachusetts. But it is one of the reasons that their economy is falling off a cliff.

They used to have a very substantial, energy intensive manufacturing sector. They used to produce aircraft. They used to produce armaments. They used to produce a lot of automobiles. They used to have a steel mill and an iron mine. All of that is gone. Now, that has made them less carbon intensive. They don't produce as many emissions, but they still consume all those things. They just buy them from out of state. Somebody has to still produce stuff.

So, I am very skeptical of these claims. Now, the second panel from the U.S. Climate Action Partnership, and I have some very harsh things to say about the members of the Climate Action Partnership in my testimony. It seems to me that these are guys on the make. They want to get rich off the backs of American consumers, and they want you to enable them to do it. And I would urge you to take a step back from the astonishing statement in your executive summary, which the Committee put out on this bill, that says that this, Title III, the Cap and Trade Program, was designed with, to conform to the recommendations of the Climate Action Partnership. And I would also ask to submit for the record, and I am sorry he is not here, a letter from Chairman Waxman in 2004, to the Administrator of the EPA, complaining about this very thing, when it was revealed that an EPA rule had been written with the cooperation of outside businesses and their lobbyists from a well-known D.C. law firm. And I think Chairman Waxman was exactly right then, and I would hope that you would think this over again.

Now, Mr. Rogers said that this will all work if we have a well-designed program. I would like to ask you in your experience how many government programs that have been enacted in your time in Congress have been well designed. I would just like you to keep that in mind as you consider this enormous, huge hit on the American economy, and how easy it will be to design it so that it is well designed. I just can't see it.

Now, Mr. Barton asked, and since he isn't here, I will answer his question, do you favor 100 percent auctioning? Would you still favor this bill? Well, I will still oppose this bill, but I do favor 100 percent auctioning. I think 100 percent auctioning of the rationing coupons removes a tremendous amount of the opportunity for gaming the system, con games, and corruption. And so, I would encourage you all to vote for an amendment that would have 100 percent auctioning.

Thank you very much.

[The prepared statement of Mr. Ebell follows:]

Testimony before the
United States House of Representatives
Committee on Energy and Commerce
Honorable Mr. Henry Waxman, Chairman

on the draft "American Clean Energy and Security Act"

by Myron Ebell
Director, Energy and Global Warming Policy
Competitive Enterprise Institute

Washington, D. C.
22nd April 2009

Chairman Waxman, Chairman Markey, and Members of the Committee, thank you for inviting me to testify today on the draft bill, "the American Clean Energy and Security Act of 2009." My name is Myron Ebell, and I am director of energy and global warming policy at the Competitive Enterprise Institute (CEI), a non-profit, non-partisan public policy institute that focuses on regulatory issues from a free-market and limited-government perspective. CEI has been actively involved in energy and global warming issues for two decades. President and founder Fred Smith attended the 1992 Earth Summit in Rio de Janeiro, where the United Nations Framework Convention on Climate Change was negotiated, and the Third Conference of the Parties in 1997 in Kyoto, Japan, where the Kyoto Protocol was negotiated. As an accredited NGO, I and several of my colleagues have attended a number of the succeeding Conferences of the Parties to the UNFCCC. Over the years, CEI has issued policy papers and been actively involved in the public policy debate on most of the major issues related to energy and global warming.

Just to be clear about where we stand, CEI opposed ratification of the Framework Convention and the Kyoto Protocol. We also oppose all domestic measures to ration energy through mandates or taxes. This includes the draft bill, which is the subject of today's hearing. Each and every title is fundamentally misguided. In our judgment, the American Clean Energy and Security Act cannot be improved enough to warrant enactment. It should not be introduced. If it is introduced, it should be defeated.

Let me begin with the largest single item in the bill, the cap-and-trade regime that is roughly sketched out in Title III of the draft. Cap-and-trade has been widely sold as a "market-based approach" to reducing emissions. This is terribly misleading. Cap-and-trade subordinates markets to central planning. It takes the most important economic decisions out of the hands of private individuals acting in the market and puts them in the hands of government. The record of central planning in the twentieth century has not been judged a success, and most centrally-planned economies collapsed towards the end of the last century. Perhaps the advocates of cap-and-trade can find some glimmer of hope in the persistence of Cuba and North Korea, which are both models of economies that have commendably low, indeed negligible, greenhouse gas emissions.

If enacted, Title III's cap-and-trade regime would be the single largest government intervention in the economy and in people's lives since the Second World War. That was the last time—and we hope it remains the last time—when people had to present ration coupons in order to buy gasoline (and many other products including cars, tires, sugar, coffee, meat, cheese, butter, and shoes). While the debate has focused on costs, far too little attention has been paid to the extent that political and economic freedoms would be lost or impinged upon under a cap-and-trade regime. I urge the Committee and the House to consider seriously and deeply the threat to our liberties posed by putting government in charge of how much and what type of energy we can consume.

Economists have generally agreed that cap-and-trade cannot force reductions in greenhouse gas emissions as efficiently as would a carbon tax, but a great deal of ingenuity has been expended in trying to fashion a cap-and-trade regime which would closely approximate the effects of a tax. The fact is that cap-and-trade is an indirect, hidden, sneaky tax. If Title III or something like it were enacted, it would probably be the biggest tax increase in the history of the world. Or as Senator Benjamin Cardin recently remarked, cap-and-trade is "the most significant revenue-generating proposal of our time." This can be disputed merely because there is no way of knowing how expensive it will be to cut emissions.

The initial evidence from the countries that ratified the Kyoto Protocol and thereby undertook solemn, binding (but unenforceable) commitments to reduce their emissions suggests that the costs are going to be extremely high. For example, gasoline taxes in major European Union member nations are now three to four dollars a gallon. This translates roughly into three to four hundred dollars per ton of carbon dioxide. Yet according to the European Environment Agency, greenhouse gas emissions in the transportation sector increased 26% in the EU-15 between the Kyoto baseline year of 1990 and 2006.

Many promoters of cap-and-trade have claimed that the costs will turn out to be much lower than mainstream economic models have predicted. A few have even claimed that cap-and-trade will be a net benefit to the economy. In reality, the costs of cap-and-trade to consumers will be much higher than the net loss of GDP predicted by the models. As Fred Smith, President of CEI, discussed in his February 13, 2007 testimony before the Senate Committee on Environment and Public Works, the deadweight loss to the economy (expressed in lower GDP) does not include cap-and-trade's much larger wealth transfer effects.

The fact is that for many advocates, the primary attraction of cap-and-trade appears not to be reducing emissions, but rather the promise of colossal transfers of wealth from consumers to big business special

interests and to government. The European Union's Emissions Trading Scheme is highly instructive on this point, as a major study by Open Europe, Europe's Dirty Secret: Why the EU Emissions Trading Scheme Isn't Working, shows in exhaustive detail. Emissions covered under the ETS have not declined, but electricity rates have increased significantly in most EU member countries and windfall profits have been realized by a number of companies. The price of rationing coupons has fluctuated wildly, and fortunes have been made on speculation and possibly by manipulation. My colleague, Chris Horner, has tracked the flagrant con games and corruption that are occurring under the ETS.

And that I think is why many member companies of the U. S. Climate Action Partnership support cap-and-trade legislation. They hope in one way or another to get rich at the expense of American consumers. The leading boosters for the Kyoto Protocol and for cap-and-trade in the U. S. business community were initially the late Kenneth Lay, Chairman of the Enron Corporation, and Henry Paulson, when he was Chairman of Goldman Sachs. In recent years, the principal booster in the big business community has been Mr. James Rogers, who is now Chairman of Duke Energy. Not co-incidentally, I think, Mr. Rogers worked for Enron earlier in his career. There is simply a lot of money that could be made if the Congress would enact just the right sort of cap-and-trade.

That brings me to what I consider the most disturbing thing about the Waxman-Markey draft. The official summary released by the Committee states that, "The global warming provisions in the discussion draft are modeled closely on the recommendations of the U. S. Climate Action Partnership (USCAP), a coalition of electric utilities, oil companies, chemical companies, automobile manufacturers, other manufacturers and energy companies, and environmental organizations." It should be noted that most of the environmental organizations that belong to USCAP largely serve as front groups for big business interests. Thus, the authors of the draft bill have invited the beneficiaries of what could turn out to be the biggest transfer of wealth from consumers to special interests in American history to write the rules for this legalized plunder. This is outrageous. It is like asking the foxes to design the chicken coop.

For those who persist in claiming that cap-and-trade will not raise energy prices for consumers very much, let me quote two more realistic observers. Peter Orszag, who is now head of the White House Office of Management and Budget, testified on 24th April 2008 when he was director of the Congressional Budget Office. He said: "Under a cap-and-trade program, firms would not ultimately bear most of the costs of the allowances, but instead would pass them along to their customers in the form of higher prices.... Indeed, the price increases would be essential to the success of a cap-and-trade program...." I would add only that the price increases would not be a one-time event under cap-and-trade, but would happen every year as the number of ration coupons available was reduced. And this is what then-Senator, now-President Barack Obama said in a 17th January 2008 interview: "Under my plan of a cap-and-trade system, electricity rates would necessarily skyrocket."

As for Titles I and II, I will make only two observations. While it is not at all clear that the primary purpose of the bill is to reduce greenhouse gas emissions, if that is indeed the purpose of the bill, then the specific mandates and standards in Titles I and II would be counter-productive to the working of the cap-and-trade regime created in Title III. As many economists have pointed out, a cap-and-trade regime works much more efficiently to reduce emissions if there aren't a lot of other mandates and standards that obstruct and complicate the efforts by covered entities to seek out the lowest-cost reductions. Thus

instead of coupling cap-and-trade with even more specific mandates and standards, it would be much more rational to repeal all the existing specific mandates and standards, such as the Corporate Average Fuel Economy standards or the bio-fuel mandates.

My second observation on Title I is that it is all well and good to mandate a renewable energy requirement for electric utilities or a low carbon fuel standard for transportation fuels. It is quite another thing to actually meet those mandates. As a February 23rd story by Jim Tankersley in the Los Angeles Times reported, the only thing standing between green energy and reality are a series of major technological breakthroughs. The entire bill is, as my colleague Marlo Lewis often puts it, an exercise in putting the regulatory cart before the technological horse

The American Clean Energy and Security Act would be, as another colleague, Iain Murray, has observed, a perpetual anti-stimulus program if enacted. Most of the policies in the bill are being tried in the European Union and are failing. Greenhouse gas emissions have been increasing at a faster percentage rate in most EU-15 member nations than in the United States. At the same time, a great deal of money is being spent on producing renewable energy and on energy efficiency measures. The EU undertook these expensive projects with the understanding that they would be expensive. But at the time, the EU was experiencing solid economic growth. Their calculation was that they could afford more expensive wind and solar energy and that efficiency measures would eventually pay for themselves. As a recent study by Dr. Gabriel Calzada, an economics professor at King Juan Carlos University in Madrid, has concluded, the costs of new green energy are enormous and are no longer affordable during the current severe economic downturn.

But what about California? Governor Arnold Schwarzenegger and some prominent Members of Congress from California, have touted California's energy and global warming policies as a successful model for the nation to follow. A paper published by CEI by Tom Tanton, a leading expert on California's energy policy, demonstrates the falsity of these claims in detail. California's economy is in freefall and high energy prices are one of the causes. It is true that per capita carbon dioxide emissions have remained flat in California for many years, but that result has been achieved by driving energy-intensive industries out of California. For example, only a small fraction of the vehicles sold in California every year are now produced in California. They are produced in States with lower energy prices and higher per capita carbon emissions.

The fact is that the only demonstrated method for cutting emissions significantly is economic collapse. As Czech President Vaclav Klaus has remarked, he knows how to cut emissions; they did it when communism was overthrown in Czechoslovakia. Although I doubt that Titles I, II, and III would deliver the kind of cost-effective emissions reductions that the bill's advocates claim is their goal, I do think that Title IV offers some hope for drastic emissions cuts. Provisions in Title IV would almost certainly provoke a trade war and cripple international trade. That is a recipe for the global economic collapse that could quite easily meet the fanciful targets for emissions reductions advocated, for example, by former Vice President Al Gore.

Mr. MARKEY. Thank you, Mr. Ebell, very much. You hit the number right on the minute. Let me turn now and recognize the gentleman from Texas, Mr. Gonzalez, for a round of questions.

Mr. GONZALEZ. Thank you very much, Mr. Chairman.

And I wasn't going to ask Mr. Ebell any question, but I, where did all those jobs go, that left California?

Mr. EBELL. You know, I think most of them went either abroad or to the heartland states that have lower energy prices, lower taxes, a less stringent regulatory atmosphere, and have. You know, I remember when Dr. John Christy from the University of Alabama at Huntsville testified, I think before this committee, and he said you know, California used to have a vibrant auto industry, but in 2008, more automobiles will be assembled in Alabama than any other state. We have workers who do harder work, and we have lower——

Mr. GONZALEZ. Mr. Ebell, the reason I ask is, look, this is the obvious, and we go around and around on these things, and I really don't get something as fundamental as why some jobs leave certain jobs. Sometimes, it is just that there are certain concerns that are addressed in certain areas, that may not be in others, and it increases the cost of labor, such as fair wages, a living wage, safe working conditions, small things like that.

I am sure this country could still be incredibly productive at incredibly low cost had we maintained something like slavery, or maybe just forgotten about child labor, or safe working conditions, or minimum wage. There is all sorts of ways to reduce cost. I would like to think that we have matured and developed as a country, where sometimes, we just do that which is fair, equitable, and right, even though it may increase the cost. And I think there is a fundamental philosophical difference, I think, that is going on here.

But let us just get to the matter at hand. Dr. Keohane and Dr. Kreutzer, the only thing that you all share is the first letter of your last names, because it seems, Dr. Kreutzer, you simply don't believe that there is a need to act on greenhouse gas emissions. Would that be a fair statement? I want to start off with that. I mean, I really want your honest answer, because I thought we debated that. I thought we were past it. But if that is your premise, then it goes to the very heart of maybe some of your opinions.

Do you believe we should be taking any action on reducing greenhouse gas emissions?

Mr. KREUTZER. I can only talk about the ones that are being proposed in this bill and elsewhere.

Mr. GONZALEZ. No, no.

Mr. KREUTZER. The cost——

Mr. GONZALEZ. Well, let us forget about this bill. Should we be addressing it in any form or fashion?

Mr. KREUTZER. If it is free, yes. OK. Why not? But it is not free. That is the problem, and——

Mr. GONZALEZ. So, what would be the alternative?

Mr. KREUTZER. And Dr. Keohane said that this bill would solve the climate change problem. It doesn't even come close to having——

Mr. GONZALEZ. All right. So, you are just——

Mr. KREUTZER [continuing]. Impact.

Mr. GONZALEZ. It is the approach that you object to, but you believe, as your colleague——

Mr. KREUTZER. I don't—I don't——

Mr. GONZALEZ [continuing]. Believes, that truly, gas emissions, or greenhouse gas emissions truly pose a problem, and one that needs to be addressed?

Mr. KREUTZER. They don't pose—I don't think there is enough evidence to say there is catastrophic problems coming down the road from greenhouse gas emissions.

Mr. GONZALEZ. All right.

Mr. KREUTZER. All right. You know, there will be some increase in sea level. There will be some without greenhouse, without man-made greenhouse gas emissions rising. There will be some when we cut it back by, you know, 70 percent or 80 percent. All right. And I would like to have an economy that is strong enough that when we have the climate variability that we are going to have with or without climate action, that we have an economy that is strong enough to get through it, as we have done for the past couple of hundred years. We are getting stronger and stronger. We are going to be able to handle a foot and a half of sea level rise. And we are not going to stop it with this bill, and that is the problem.

It is huge cost, very little benefits, and I wish this committee would look at what is the benefit? If you, this isn't denier math, that isn't flat Earth math. This isn't man never went to the Moon math. The IPCC says that a doubling of CO_2 emissions will lead to a 2 to 4.5 degree increase in world temperature. The EPA, looking at the Lieberman-Warner Bill, said that bill would lower greenhouse gas emissions from about 719 parts per million to about 695.

Mr. GONZALEZ. Let me ask, Dr. Kreutzer——

Mr. KREUTZER. That is a 0.1 to 0.2——

Mr. GONZALEZ. Well, what you are saying is we have plenty of time, and whatever is inevitable is something we could handle along the way, as long as we have a strong, robust economy.

Now, if you were wrong, what might be the consequence of too little, too late, or would you be able to even address the adverse effects at a later date?

Mr. KREUTZER. We would be able to address that at a later date, if it——

Mr. GONZALEZ. All right. That is——

Mr. KREUTZER [continuing]. Becomes clear that——

Mr. GONZALEZ [continuing]. When I want to go to Dr. Keohane. Do you agree with any of those basic premises? One, that it really doesn't pose a danger, we don't need immediate action? If, as in when, we will be able to deal with it.

Mr. KEOHANE. It won't surprise you to know, Congressman, that I don't agree with those premises. I think the—I am not a scientist, but I read the science and I talk to scientists, and I think the science is clear that if we don't do anything about climate change, the consequences will be catastrophic, that unchecked climate change is going to lead to severe and real economic damages.

I mean, Dr. Kreutzer says that addressing it won't be free. The thing that won't be free, the thing that is really going to cost us is the damages from climate change if we don't do anything about

it. This is a problem where we are not taking account of those costs at all in what we are doing right now, and that is the most important problem that we have to solve.

Now, this is a global problem, and this is a problem that will require concerted international action to address, but the U.S. is part of that community, and we need to take the lead, and that is what this bill would do.

Mr. GONZALEZ. Thank you, Mr. Chairman.

Mr. MARKEY. Thank you. The gentleman's time has expired. The chair recognizes the gentlelady from Tennessee, Ms. Blackburn.

Ms. BLACKBURN. Thank you, Mr. Chairman, and thank you all for your patience today. This has been absolutely fascinating to listen to, and to hear the different opinions.

Mr. Cicio, I think I want to start with you, because I appreciated what you said. We should not jeopardize our competitiveness.

Mr. CICIO. Well, absolutely. We shouldn't. Our organization and our companies have done an incredibly great job of continuing to reduce their energy consumption, because it makes us more competitive, and higher costs are OK, but you have got to have higher costs on our competitors overseas, or we lose the jobs.

Ms. BLACKBURN. Well, and I would like to come, I would like for you just to touch on what you think the electric industry will do to achieve efficiencies and meet the renewable electricity standards that are in the proposed legislation, and how you balance that, and how we still remain globally competitive with goods.

Mr. CICIO. Well, the Renewable Portfolio Standard is only one part of the challenge of higher electricity costs. For one, paper companies, which are some of my companies, use that, use renewable energy to biomass as a raw material feedstock. And if electric utilities are utilizing that to meet the standard, it could put the paper business industry out of business.

Ms. BLACKBURN. OK.

Mr. CICIO. But states are endowed with different renewable resources, and that is why our view is that that is the decision that should be made at the state level, where they know how much renewable resources are available and at what cost.

Ms. BLACKBURN. And can make those appropriate adjustments.

Mr. CICIO. Yes, ma'am.

Ms. BLACKBURN. Mr. Kreutzer, when I was talking with Mr. Chu, and questioning him earlier today, I asked him about the 25 percent standard, and working toward that by 2025, and he said it was going to be easily achieved. So, do you agree or disagree with that?

Mr. KREUTZER. Well, it is going to be costly. We actually, in our analysis, we gave that away. We said let us assume that all of the renewable standards set up by the states can be met at reasonable cost. So, when we did our analysis of Lieberman-Warner, this very difficult to achieve standard, we said we are going to meet that. Still, $5 trillion worth of lost GDP in 20 years, $5 trillion worth of energy taxes, three million lost manufacturing jobs. All of that was even though we assumed we could meet the Renewable Portfolio Standard that was a little bit less, but close to 25 percent.

Ms. BLACKBURN. OK. Mr. Hayward, when I had talked with Secretary LaHood, I asked him about, and then, subsequently Mr.

Chu, about the Low Carbon Fuel Standard and the effect on prices at the pump. And, as we look at transportation fuels. And will it lead to greater or lessened dependence on foreign oil?

Those are two issues that we hear a lot about from our constituents. They are concerned about the dependence issues. They are concerned about the price at the pump, so as you look at the low carbon standards, what do you think?

Mr. HAYWARD. Oh, boy, I have a hard time making up my mind about that. Because there are so many moving parts. I mean, the big, one of the big problems to try and solve in transportation is how do we have a portable fuel? I mean, that is why we want gasoline or diesel or biofuels or something. You want something to put in a tank, or in an energy supply for a car, so we talk a lot over the years about hydrogen. We are talking about plug-in hybrids with much bigger battery capacity. We are talking now about, biofuels from algae is being talked about.

The difficulty here is once again, if the government tries to pick winners, you may actually clog up the market for innovation. I don't know that anybody is really happy about the way the whole ethanol business has gone, including most environmentalists, but yet, we are kind of path-dependent on that now, because you have a lot of powerful interests who don't want to change the program there. I think that is a good example and case study of how you can actually retard progress.

So, you know, I try to keep an open mind about that, but that is, I think, very hard to predict, how that is going to turn out.

Ms. BLACKBURN. Well, but my constituents say, is this going to cost us more, or is it going to save us money? So, where do you think that is going to come down?

Mr. HAYWARD. In the short run, it is going to cost you more, I would think.

Ms. BLACKBURN. Cost more.

Mr. HAYWARD. Long run, I don't think anyone can say.

Ms. BLACKBURN. Thank you. I am out of time, Mr. Chairman. I have got a couple of other questions. I will submit those.

Mr. MARKEY. And we will ask the witnesses to respond in writing to those questions. The gentlelady's time has expired. The chair recognizes the gentlelady from California, Ms. Matsui.

Ms. MATSUI. Thank you, Mr. Chairman. Mr. Chairman, I saw a recent analysis from Mr. Knobloch's group that stated some interesting facts.

In 2007 and 2008, more wind power was installed than in the previous 20 years combined, and more than 70 wind turbine component facilities opened, expanded, or were announced. The Renewable Electricity Standard that this legislation contains is an economic engine for the future. According to the Union of Concerned Scientists, an RES would create 297,000 new jobs in renewable energy development. A robust RES would drive investment to the tune of $263.4 billion in cities and towns across this country. We can achieve these economic benefits even while taking the equivalent of 45.3 million cars off our roads.

Mr. Knobloch, in my hometown of Sacramento, we are attempting to create a center of clean energy technology that would drive our local economy, and I visited a number of these new regional

companies when I was back home last week. With this background, I am interested in hearing your thoughts on the job creation components of this legislation.

Can you expand a bit on what types of jobs would be created with this legislation?

Mr. KNOBLOCH. Thank you, Congresswoman.

You know, the great thing about the Renewable Electricity Standard debate is that we are not dependent on modeling. We can look at the 28 states that have adopted a renewable electricity standard, and the success of that policy has been tremendous. At least half of those states have gone back before the time limit for the increase percentage of renewables and increased the percentage, because they were doing so well. A state like Texas, years ahead of the timeframe went in and doubled the amount of renewables that they would expect from that policy, and now, Texas is, of course, the national leader in wind power, and has three times the installed wind electricity of the State of California.

And you can also look to before there was any renewable electricity standard policies. The renewable sector was floundering. And so here, what happened was that government came in, set a standard, did not pick winners and losers, technological winners and losers. It did define what is renewables, and there are some very legitimate debates going on as to what belongs in there.

Ms. MATSUI. Now, some opponents of this legislation argue that new jobs would only be created because other jobs will be lost. In the case of RES, is this a zero-sum game when it comes to jobs, or are the hundreds of thousands of jobs it creates going to be on top of the existing job figures?

Mr. KNOBLOCH. Well, this analysis that you are referring to, which is not part of our blueprint, it was a separate analysis, showed that the renewables sector, that a national renewable electricity standard would create three times the number of jobs that would be created in the same time span in the fossil fuels sector. So, it nets out positive when it is well designed.

When you listen to any kind of jobs analysis, you want to be sure that there is a control for what is happening in the economy already, and get your arms around that, but we are quite confident that whether it is, you know, the steelworkers in Pennsylvania who got laid off, and are now building towers for wind turbines, truckers, people who pour concrete, people who design wind turbines and the associated machinery, there is dozens of different job disciplines that go into making this technology.

Ms. MATSUI. I would like to turn to something that is really something in my district, I represent the most at risk river city in the Nation in Sacramento, and studies are seeing that the Sierra Nevada snowpack would disappear under a business as usual scenario. So, that represents great challenges to my district.

This is to Dr. Keohane. With this in mind, will you please expand on the point you made in your testimony, that the threat from water-related impacts of climate change could be in the billions of dollars?

Mr. KEOHANE. Absolutely. That was a quote from a study that Frank Ackerman at Tufts University did, as part of just looking at four types of impacts on the United States, one of them being in-

creased water scarcity, and when they added up all those four analyses, all those four costs, the other were increased energy costs and coastal flooding, which is important in other areas of the country, and also, increased hurricane intensity, they got hundreds of billions of dollars in costs from unchecked climate change. That is what we would pay in business as usual. That is why I said it wasn't free not to do anything about this. And that is just from those four costs. That excludes a huge other number of damages. So, that kind of concern, that is going to be, the water scarcity is going to be relevant to the American West, and there are going to be other concerns that are relevant to other parts of the country.

Ms. MATSUI. I thank you. I see my time is up.

Mr. MARKEY. The gentlelady's time has expired. The chair recognizes the gentleman from Michigan, Mr. Upton.

Mr. UPTON. Well, thank you, Mr. Chairman, and I am delighted that this is the last panel. We have had eight hours panel, almost, today.

Mr. MARKEY. This is not the last panel.

Mr. UPTON. Today, it is, the last panel today, right?

Mr. MARKEY. No. One more to go.

Mr. UPTON. There isn't another panel. There is not another panel. There is?

Mr. MARKEY. This is an all you can eat. It is all you can eat. There is no——

Mr. UPTON. Who is on the fourth panel? Raise your hand? Oh, I am sorry. I will stay. I am sorry I asked that question. My time really shouldn't be—I was going to say that——

Mr. MARKEY. Let us start. We are going to start. The gentleman was a little bit disoriented, and we are going to start again.

Mr. UPTON. I didn't realize. I have this big list, I just didn't turn the page, but there it is. I was going to say that I am looking forward to co-hosting with you tonight, with Disney, the show Earth.

Mr. MARKEY. Perhaps you will be hosting.

Mr. UPTON. Is this another panel after this one?

Mr. MARKEY. No, no.

Mr. UPTON. I actually have a detail for us, in terms of our remarks tonight, so maybe I will get your time. Anyway, I just want to say a couple things.

For me, I do want to see emissions reduced. I want to see plenty of incentives to provide cleaner energy for all of our citizens, but I also want it to be fair, and I don't want to put the U.S. at a big disadvantage, and the headlines that I cited in my opening statement some eight hours ago, with India and China not willing to participate, and every opportunity that they have been given, and whether it is before this committee in the last year, or now, in public statements, I think puts our Nation at a severe disadvantage.

And it is not that we are going to do nothing. We are going to do a lot, whether it is with energy appliance standards, it is with building standards. It is with lighting standards. It is with auto standards. It is, there is a lengthy list that, in fact, we are going to do a lot to reduce our emissions. And when I look at, what I cited this morning, and that we have had, in essence, comparable growth, the United States and EU. They had a cap and trade

scheme. They desperately want us to participate with them, because their emissions went up while ours went down.

There was significant leakage, I think, of jobs. Their energy prices did go up, and when we hear from the Chairman of AEP, who testified at some point in the last couple weeks that they thought that their energy prices in Ohio would go up 40 to 50 percent, because Ohio uses more than 90 percent coal, we know that that is the same for Indiana. Michigan is about 60, 65 percent. Those costs get passed along, and yes, you can help with the subsidies, I guess run a little bit along the lines of LIHEAP for low income individuals, so that they don't bear the brunt of that higher cost, and Dr. Hayward, I loved your example on cigarettes.

But the jobs don't stay. Not when they can go someplace else at a lower cost, knowing that they are competing in a global economy. And so, what we want to do is, and there is no off-ramps, from my read of this legislation. Yes, there is some discussion with the idea of allowing us to have an important that somehow would be WTO amenable, but again, the jury is out. I don't know whether that is going to work or not.

I have a feeling, Mr. Chairman, that we are going to have a vote on whether or not the Administration ought to have 100 percent auction here. I know the Administration supported that in the testimony that they gave in the first panel today. We will find out where the votes are, whether that ought to be part of the package, and what happens if, in fact, it is an amendment that is adopted.

Mr. Ebell, your comments, I think, were right online, as we look at the costs associated, and what is going to happen to businesses. But how do you counter that with Dr. Keohane's—am I saying that right? Keohane? It is not right.

Mr. KEOHANE. Keohane, but it is close.

Mr. UPTON. Keohane, all right. Is it spelled right? All right. I mean, how do you comport that, your two testimonies together. Dr. Keohane says that it is going to be $0.07 to $0.10 a day, and yet, we hear some pretty different numbers when we actually go into the field, at least as we look at the Midwest.

Mr. EBELL. Thank you, Representative Upton. I appreciate your leadership on this issue. We know it can't be that inexpensive. If it were that inexpensive, we wouldn't be having these rancorous debates.

The fact is that energy prices have to go up significantly if emission cuts are going to be made. President Obama recognized this when he was running for President, and he said: "Under my plan of a cap and trade system, electricity rates would necessarily skyrocket." Peter Orszag, now the head of OMB, then head of CBO, when he testified here, said this won't work unless prices go up.

In the European Union, there has been tremendous consternation about the price of the rationing coupons, because they yo-yo up and down, and the people who want to, who are actually serious about making emissions cuts, keep pointing out that the price has to stay up in order to force emissions down. When it keeps yo-yoing up and down, nobody has an incentive to reduce their emissions, because they are going to hope that they are going to get some cheap rationing coupons, you know, if not this month, next month.

So, I just think it is beyond believability that this is going to be inexpensive. It is going to be incredibly expensive.

Mr. UPTON. So, the answer is yes. Go ahead.

Mr. KEOHANE. Thank you. Well, with all due respect, I don't—I am not quite sure how Mr. Ebell knows that it can't possibly be as inexpensive as the best analysis we have from the best economic models we have, which is what the EPA analysis represents. That is what those models estimate. Now, sure, there are, you know, the models aren't perfect, but if you look at the record, we have always overestimated the costs of environmental regulation. That was a finding by some researches at Resources for the Future, who looked at and found a consistent pattern of overestimation, and that's because frankly, we don't know how to model technological change, and these models, these analyses, can't capture the scope of technological change that we will see when we use a market-based system that unlocks American innovation.

Mr. UPTON. Well, just to close, because my time is expired, it seems like based on what you just said, maybe we ought to have an amendment that would offer a safety valve, that if it goes up more than $0.20, the whole thing will be struck after the enacting clause. Maybe we will see an amendment like that. Thank you.

Mr. MARKEY. OK. The gentleman's time has expired. The chair recognizes the, the chair is uncertain here. I am going to continue to recognize members of the minority. OK, the chair recognizes the gentleman from Texas, Mr. Hall. We can go to Mr. Shimkus if you like, Mr. Hall.

Mr. HALL. I am sorry that I haven't been here, because it seems like you all are having so much fun in here when I got here. I will stay a while. I want to ask some questions, and thank you, Mr. Chairman, for recognizing me, and thank you for accepting that Washington Post. I appreciate that.

You know, it is my opinion, and the opinion of most of us over here, and the opinion of maybe half of you out there, that we are going to be in a weakened competitive position in the United States under cap and trade. I believe it deeply, and have a lot of reasons to believe it, and you all are in responsible positions, and know more about your business than I know about your business, but I know you are a businessman, successful, or you wouldn't be here.

So, I just can't see why you can't understand, if you don't understand, why we wouldn't be in a weakened competitive position under cap and trade as it is written here. We—I have—the chairman is a good friend of mine, and I like the chairman. We elect one another, I think. I criticize him in his district, and he criticizes me in mine, but we have a mutual understanding, and I respect him. I really do. And he is funny.

But in the Washington Post, China hopes climate deal omits exports. Now, this ought to tell you how China thinks, and they are one of the big players, they are the big player in this, other than us, and if they don't play, and I mentioned this this morning, it is a little bit, maybe, simple, but when you go to Wal-Mart or Sears, or your wives go to Neiman's, or anywhere, you are going to see a machine on your way out, that you got to go by that machine. It is called a cash register, and you have to pay, and somebody has got to pay. And China has never indicated, in one instance, that

they want to pay their share, and they are polluting the air as we sit here today, and I think I read the other day where about every sixth day, they open a plant that is not conducive to clean air.

And I am very pro-coal. I am pro-nuclear. I live in Texas, and we have fossil fuels there, and I don't know how we are going to do away with fossil fuels. Of course, we have to have technology and keep continuing to pursue cleansing. Anybody in their right sense knows that, but anybody that thinks we can just overnight do away with fossil fuels is just dreaming. They are just thinking. And it would be wonderful, but that hasn't happened, and elements here in Washington and around the country have fought us drilling offshore, fought us drilling off the coast of Florida, fought us from drilling up in ANWR, and we could, we don't even have to have any help from anybody else. We have plenty right here at home if we could just mine it, and we should have. But we haven't.

So, we find ourselves in the position where it is China, one of the big players, not only won't agree to curtail their polluting the skies, but I think they are insolent enough to indicate, and I am going to read you a little bit from this Washington Post deal. It says: "Countries importing Chinese goods should be responsible for the heat trapping gases released during manufacturing, a top Chinese official said yesterday." That was Li Gao, I don't know if that is the right pronunciation, but that is the way it looks to me. Anyway, he is the climate change, he directs the Climate Change Department at the National Development and Reform Commission. So, he is the top guy, so far as I know, over there. He is their top climate negotiator, and he said that, and he said: "As one of the developing countries, we are at the low end of the production line for the global economy. We produce products, and these products are consumed by other countries. This share of emissions should be taken by the consumers, not the producers." They are not even willing to pay for their own emissions.

Now, please take that into consideration when you make your decisions. So, I would ask this question. What evidence, and I will begin over here, Mr. Ebell, I can't see that far, but Mr. what is his name? Mr. Ebell. That is what I thought it said, but I couldn't pronounce it.

What evidence does U.S. CAP have that China and other developing nations will not take strategic advantage of what will be a weakened competitive position of the United States under cap and trade?

Mr. EBELL. Representative Hall, I don't believe that they have any evidence, and in fact, I think they do plan to take competitive advantage, and they also want to be paid for their emissions reductions. And I think you can see how expensive it is going to be to reduce emissions, because everyone believes it will be cheaper to reduce emissions in developing countries than it will be in the United States, and yet, they are talking, in the European Union and in China and in India, about sending hundreds of billions of dollars a year to developing countries to reduce emissions. So, the idea that the EPA model is believable, no, it doesn't pass the laugh test.

Mr. HALL. Absolutely an indication, not an indication, it is just proof that they are not going to play fair with us. They are not going to take care of their emissions. Go ahead, sir.

Mr. KEOHANE. I just wanted to say, again, with respect to my fellow panelists, I think the best judges of the businesses and the competitive positions of the U.S. CAP companies are those U.S. CAP CEOs and not Mr. Ebell, and I will say there is, in this bill, I think these concerns you have laid out are real, but the bill has provisions to deal with them. And I think the way forward is for the United States to do what it has always done best, which is to lead. And if we lead on this crucial issue, then we will be producing the next generation of low carbon technologies here at home. We will be exporting them instead of importing them from others.

Mr. MARKEY. The gentleman's time has expired.

Mr. HALL. May I make one last statement to the gentleman?

Mr. MARKEY. Yes, you may.

Mr. HALL. The cash register that I spoke about is in all of these countries, China, Russia, they are going to walk, you are going to allow them to walk right by the cash register and leave it to the children that are unborn today, taxes to fall on their backs. I don't believe you really want to do that. I yield back my time.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentleman from Illinois, Mr. Shimkus.

Mr. SHIMKUS. Thank you, Mr. Chairman. Appreciate the hearing and being patient. I appreciate the panel for staying as long as you have.

A couple things. I asked this question to an earlier panel. Does everyone agree that India does not have a low carbon fuel standard? Everybody is nodding in agreement with that. Does everyone agree, I am just doing this quickly, so I can get to other questions. Does everyone agree that China does not have a low carbon fuel standard? OK. Everybody is shaking their head. Mayor, do you agree? Thank you.

What about, does everyone agree that India currently is not under a cap and trade regime? Does everyone agree with that? And Mayor, you too? OK. And does everyone agree that India is not under a cap and trade regime? OK. Well, with heads nodding in assent.

One of our problems is that, and I have used this terminology numerous times, all the pain and no gain, because there is really a debate about whether countries will comply, if our leadership will spur an international accord. So, briefly, do you agree that if we lead, China and India will comply to a low carbon fuel standard and a cap and trade regime. Real quickly, if you can get yes and no, Mr. Ebell, you had first. Microphone. Be quickly, though, yes or no would be helpful.

Mr. EBELL. Yes. I think we can guarantee it, if we put a provision in the bill saying it will not go into effect until there is an international agreement that has been ratified that is binding.

Mr. SHIMKUS. And we used to talk about that. We used to use the terminology of an off-ramp, but that has been jettisoned. Dr. Keohane.

Mr. KEOHANE. I will say if we do not do anything, then they won't take a cap on their own, but if we do lead, that is the only way we will get there.

Mr. SHIMKUS. No, will they? Yes or no. Will they, if we do lead, I guess is the question. You believe they will.

Mr. KEOHANE. I think if we do lead, China and India will follow.

Mr. SHIMKUS. China will do it, and India will both do low carbon fuels and a cap and trade.

Mr. KEOHANE. I think, I don't know what mechanism they will use, but I think if we lead, we will see China and India——

Mr. SHIMKUS. OK. OK. Great.

Mr. KEOHANE [continuing]. Follow on our——

Mr. SHIMKUS. Thank you. Mr. Kreutzer.

Mr. KREUTZER. I don't think they will. They certainly won't accept a cap that the EPA assumes, which will be about half of the one we are getting.

Mr. SHIMKUS. OK. Dr. Hayward.

Mr. HAYWARD. I think it is very unlikely. Here is the problem. Even in an optimistic scenario, a lot of low carbon technologies that we can afford as a rich country are still going to be more expensive than fossil fuels for developing countries who, by the way, control about 80 percent of the world's fossil fuels. It takes quite a flight of fancy, it seems to me, to think that they are not going to use those fossil fuels, especially if they get cheaper on the world market as we use less of them.

Mr. SHIMKUS. OK. Mr. Knobloch.

Mr. KNOBLOCH. I think we are leaving a vacuum. I think if we lead, they will. China today has a national renewable electricity standard. They have fuel economy standards that are competitive with——

Mr. SHIMKUS. They are also building a new power plant, coal-fired power plant every week.

Mr. KNOBLOCH. Yes, sir, that is so.

Mr. SHIMKUS. OK.

Mr. KNOBLOCH. But if we don't lead, it is assured that they won't adopt that policy.

Mr. SHIMKUS. Oh, you think they will comply, if we move, on both low carbon fuel——

Mr. KNOBLOCH. I think if——

Mr. SHIMKUS [continuing]. And cap and trade regime.

Mr. KNOBLOCH. I think if we lead, and they, and we lead broadly in negotiations, and they accept a cap, then some of these policies will flow from there.

Mr. SHIMKUS. OK. Mr. Cicio.

Mr. CICIO. I don't. I don't. I don't think so, and particularly for the industrial sector, which is their engine of jobs growth, so I don't think so.

Mr. SHIMKUS. Mayor.

Mr. FETTERMAN. I do believe they will eventually follow, because the practices that they are currently engaging will, are not sustainable environmentally, and it will lead to an environmental catastrophe.

Mr. SHIMKUS. Well, yes, and I would, and I don't want to debate you, but carbon dioxide is not a toxic pollutant.

Mr. FETTERMAN. I am sorry, what was that?

Mr. SHIMKUS. Carbon dioxide is not a toxic pollutant. Would you agree with that?

Mr. FETTERMAN. It is toxic in excessive amounts.

Mr. SHIMKUS. It is not. Does everyone—does anyone believe that carbon dioxide is a toxic pollutant? At 15—and we are at, in the atmosphere right now? 380. OK. Let me go, and so much to discuss.

Let me talk about real jobs for a second. I just toured a supercritical new coal-fired power plant in Lively Grove, Washington County. Washington County has 15,000 employees. This power plant is, right now has 1,200 construction jobs, an additional 400 building a coal mine across the street that will have 500 full-time power plant jobs, and 400 coalmine jobs once in operation. Those are real jobs that are at risk. Because what happens in carbon dioxide capture and sequestration, 40 percent, and I will end on this, Mr. Chairman, 40 percent, 100 percent of the electricity output will then be cut to only 60 percent that can go on the market, because it is going to take 40 percent of the energy created by this power plant to initiate the carbon capture and sequestration provision that is limiting its ability to really get a return on the investment.

Mr. MARKEY. OK. The gentleman's time has expired. The chair recognizes the gentleman from Texas, the Ranking Member of the full committee.

Mr. BARTON. Thank you, Mr. Chairman. I am not going to ask, I don't think I will take the full five minutes. Mr. Cicio, is it your view that there should be no cap and trade program at all? Is that a fair assessment?

Mr. CICIO. We, as an organization, have not taken a position either for or opposed. What we look at is cost effectiveness, cost number one, cost number two, cost number three. In my testimony, I said that our industry has done an incredibly good job of continuing to drive down energy consumption and the resulting greenhouse gas emissions. We do not support policies, any policy, a cap and trade policy or any other policy that is not cost effective.

Mr. BARTON. Well, then let me ask it a different way. Can you develop a cap and trade program that doesn't add cost to the economy?

Mr. CICIO. No, sir. I would say in my opinion, that is not possible.

Mr. BARTON. OK. Mr. Hayward, it says that you are a Weyerhaeuser Fellow. That is a forestry company. Do you think that we can reforest America with enough offsets to cover the allowances in, if we had a cap and trade bill that didn't give away allowances? That is a terribly complicated question.

Mr. HAYWARD. The Weyerhaeuser Chair at AEI is something the family set up over 30 years ago, at the same time they set up a chair at Yale University's School of Forestry and Environmental Studies. I don't do that much work on forestry, actually. I do the sludge part of the environment.

But I have looked at some numbers of this. We have actually been reforesting pretty rapidly in this country, a million acres a year net forest growth in the 1990s, according to a study the Clinton Administration set in motion. But it is hard to get some num-

bers on this, but I think the general answer is no, you actually can't take up all of our carbon emissions through carbon sinks. But some portion of them, and that I am hesitant to give you a figure on that, but it is not anywhere near enough to the targets that we are setting out for.

Mr. BARTON. I think, Mr. Keohane, do you want to answer that? Or are you just looking at him?

Mr. KEOHANE. Well, I was actually going to highlight the enormous potential for helping to protect the tropical rainforests, and in doing so, reduce greenhouse gas emissions there, and help reduce costs here at home.

Mr. BARTON. I am not opposed to tropical rainforest protection. My problem within the United States, if we set up an offset program, I am reasonably confident that we can enforce it and implement it. I am not as confident overseas. So, my problem with the tropical rainforest is not that I don't want to protect them, and I wouldn't, and I would even be willing to figure out a way to give some credits, if we could ensure that they would actually be enforced and implementable in those countries. And I don't have that confidence level overseas. That is my problem, what you just said.

Mr. KEOHANE. Well, I agree that enforcement and verification is crucial, but I think we have the satellite monitoring and the on the ground monitoring to do that reliably.

Mr. BARTON. My last question, I am going to ask this to my friend at the Heritage Foundation, if we have a renewable energy standard or a clean energy standard, should we include nuclear power?

Mr. KREUTZER. Yes, I don't understand why that gets left out. If the goal is CO_2, and CO_2 is the worry, nuclear produces essentially zero CO_2 per kilowatt-hour.

Mr. BARTON. What about clean coal technology?

Mr. KREUTZER. Clean coal technology, as Mr. Shimkus pointed out, is pretty expensive. Right now, we don't have, those of us at Heritage, and I don't speak for Heritage, but I know that some of the people I talk with are doubtful that it will be commercially available any time in the next couple of decades. That is our concern.

Mr. BARTON. But theoretically, it——

Mr. KREUTZER. The science is there, but you have to do something in addition to pulling it out of the effluent, you have to put essentially supertankers per day worth of compressed liquefied CO_2 someplace. And I think that is a problem.

Mr. BARTON. Thank you. Thank you, Mr. Chairman.

Mr. MARKEY. I thank the gentleman very much, and we thank the panel for your expert testimony, and if you would, please remain available, because over the next several weeks, we would like to rely upon your expertise. Thank you all so, so much for your expertise today.

And we are going to now ask the next panel to come up to testify, as well, before the panel.

Welcome, and we appreciate very much our final panel for being seated here. And we are going to begin by recognizing, excuse me, we are going to recognize first Mr. Frank Ackerman. He is a Senior

Economist from the Stockholm Environmental Institute at Tufts University. We welcome you, sir.

STATEMENTS OF FRANK ACKERMAN, SENIOR ECONOMIST, STOCKHOLM ENVIRONMENTAL INSTITUTE—US CENTER, TUFTS UNIVERSITY; KATE GORDON, CO–DIRECTOR, APOLLO ALLIANCE; DENISE BODE, CEO, AMERICAN WIND ENERGY ASSOCIATION; DAVID MANNING, VICE PRESIDENT, EXTERNAL AFFAIRS, NATIONAL GRID; AND YVETTE PENA, LEGISLATIVE DIRECTOR OF THE BLUE GREEN ALLIANCE

STATEMENT OF FRANK ACKERMAN

Mr. ACKERMAN. Thank you, and based on prior travel arrangements, I will have to leave the room no later than 6:45. I can answer questions.

Mr. MARKEY. I think we are going to be able to accommodate you.

Mr. ACKERMAN. OK. So, Mr. Chairman, members of the committee, thank you for the invitation to testify on my research on the costs of climate change.

This hearing comes at a crucial juncture, not only because a new Congress and a new Administration are beginning to make changes in climate policy. New initiatives are on the table, in part, because there has been a fundamental shift in the terms of the debate, with the controversy moving from science to economics.

In the realm of science, the influence of an isolated handful of climate skeptics is rapidly waning. The world's scientists have never been so unanimous and so ominous in their warnings of future hazards. But while the climate science debate is approaching closure, the climate economics debate is still wide opening.

Climate change is happening. It is threatening our future wellbeing, but how much can we afford to do about it? The most powerful argument for inaction today is the claim that the costs of reducing emissions would be intolerable. The damage to the economy, it is alleged, would be worse than the climate problem we are attempting to solve.

Other witnesses have addressed the costs of climate policy. My testimony addresses the other side of the coin, the costs of inaction. Dr. Keohane mentioned this briefly in his remarks in the last panel. When it comes to climate change today, there is no longer any choice of avoiding all costs. The status quo is no longer an option. That is, the costs of climate change are not a discretionary purchase, like choosing whether to buy a new car this year or wait another year. It is more like a homeowner deciding whether it is time to repair the ever-widening cracks in the foundation of a house. The longer you wait, the more expensive it will be. Wait long enough, and it may become impossible to save the house.

My research shows that for the United States as a whole, even a partial accounting of the costs of inaction is well above 1 percent of GDP, rising steadily in dollars and as a percentage over time. For some parts of the country, such as Florida, a similar partial accounting of the costs of inaction in another study we did reaches 5 percent of state income within this century.

For particularly vulnerable parts of the world, such as the islands of the Caribbean, the costs will be disastrously greater, with one likely consequence being a much increased flow of refugees out of that region.

Damages that will result from inaction include, but are not limited to the impacts of increasingly severe hurricanes, more coastal property at risk from rising sea level and storm surges, increased energy costs for air conditioning, as temperatures rise, growing scarcity and rising costs for water, losses in agriculture to hotter and drier conditions, and losses of tourism revenue as weather conditions worsen.

My written testimony details these, and has references to the detailed studies from which they are taken. Rather than try to walk you through any of those calculations, I would like to take a minute to talk about what some of my newer research implies about an issue that came up in the last panel, about competitiveness.

I have been looking at the question of China's trade and its carbon intensity, and the remarkable fact is that China does not have a comparative advantage in carbon-intensive goods. China's imports are as carbon-intensive as carbon-intensive as its exports, in a sense, more. China has a comparative advantage in low cost labor, and they export things that are based on low cost labor, which are not the carbon-intensive products in the world economy. It is completely a mistake to think that concerns about competitiveness lead to thinking that China is going to rush ahead based on lower cost carbon.

If we want to think about competitiveness on the environment, I think we would be more useful to think about the country that is really winning in world trade, in most recent years, which is Germany. Germany has high wages, it has high energy costs, and it has a renewable energy standard. It is part of a cap and trade system. It is the world-beater, in terms of exports, and they don't seem to be crippled by those European environmental regulations. They have a big trade surplus in manufacturing. So, not only is China not the winner in carbon-intensive things. Germany has a lot of very carbon-intensive exports, but it is not necessary to cut wages to the Chinese level, to cut environmental regulations back to the Chinese level.

Why is it that you can lead the world in exports with European wages, regulations, and energy costs? I think that is the question that we ought to be looking at before we jump to any conclusions about what small changes in climate policy are going to mean for competitiveness.

So, thank you. I will be happy to answer questions if I am still here, or in writing, if I have to leave.

[The prepared statement of Mr. Ackerman follows:]

SEI-US is an independent research affiliate of Tufts University

Climate Change: The Costs of Inaction

Testimony presented to:

United States Congress
House Committee on Energy and Commerce

Hearing on the discussion draft of

"The American Clean Energy and Security Act of 2009"

April 22, 2009

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Mr. Chairman and members of the committee,

Thank you for the invitation to testify on my research on the costs of climate change. This hearing comes at a crucial juncture – and not only because the new administration is beginning to make changes in US climate policies. New initiatives are on the table, in part, because there has been a fundamental shift in the terms of the debate, with the focus of controversy moving from science to economics. In the realm of science, the influence of the isolated handful of climate skeptics is rapidly waning; the world's scientists have never been so unanimous, and so ominous, in their warnings of future hazards.

While the climate *science* debate is approaching closure, the climate *economics* debate is still wide open. Climate change is happening, it is threatening our future well-being – but how much can we afford to do about it? The most powerful argument for inaction today is no longer skepticism about the science, but rather the claim that the costs of reducing emissions would be intolerable. The damage to the economy, it is alleged, would be worse than the climate problem we are attempting to solve.

Other witnesses have addressed the costs of climate policy, of taking action to reduce emissions. My testimony addresses the other side of the coin, the costs of inaction. When it comes to climate change today, there is no longer any chance of avoiding all costs; the status quo is no longer an option. That is, the costs of climate policy should not be viewed as a discretionary purchase, like choosing whether to buy a new car or to wait another year. Our situation is more like a homeowner deciding whether to repair the ever-widening cracks in the foundation of a house. The longer you wait, the more expensive it will be; wait long enough, and it may become impossible to save your home.

My research shows that for the United States as a whole, even a partial accounting of the costs of *inaction* is well above one percent of GDP, and rises steadily over time. For some parts of the country, such as Florida, a similar, partial accounting of the costs of inaction reaches 5 percent of state income within this century. For particularly vulnerable parts of the world, such as the islands of the Caribbean, the costs will be disastrously greater – with one likely consequence being a much-increased flow of refugees out of that region.

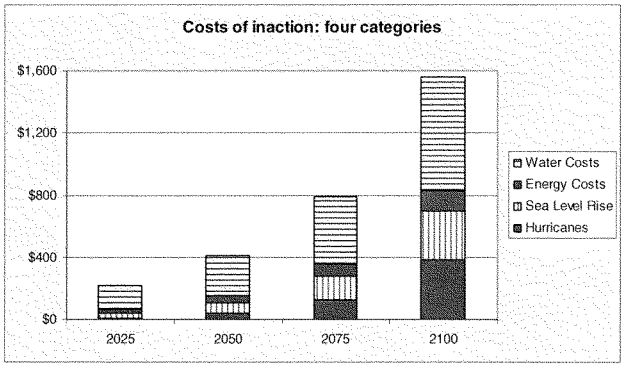
Damages that will result from inaction include (but are not limited to):

- the impacts of increasingly severe hurricanes
- more coastal property at risk from rising sea levels and storm surges
- increased energy costs for air conditioning as temperatures rise
- growing scarcity and rising costs for water
- losses in agriculture due to hotter and drier conditions
- losses of tourism revenue as weather conditions worsen

Some of the principal categories of costs of inaction that are estimated in my research are shown in Figure 1 below, and described in my detailed testimony.

The farther we look into the future, the worse that the costs of inaction will become. The longer we do nothing, the greater the risks of an irreversible climate catastrophe, such as a massive rise in sea levels, that could make the world unable to support anything like the current levels of population and economic activity. The costs and risks of inaction are overwhelmingly worse than the moderate and manageable costs of an immediate effort to reduce carbon emissions.

Figure 1



My detailed testimony draws on studies done at the Stockholm Environment Institute-US Center, a research center at Tufts University, in which I have collaborated with another economist, Dr. Elizabeth A. Stanton, as well as Ramón Bueno and Cornelia Herzfeld. For more information on our research on climate economics, please see http://www.sei-us.org/climate-and-energy/climate-economics.html . This website includes links to the studies of the costs of inaction for the US as a whole[1], for Florida[2], and for the Caribbean region[3], which together form the basis for my testimony today. My overall perspective on the economics of climate change is described in my recent book, *Can We Afford the Future? Economics for a Warming World* (London and New York: Zed Books, 2009).

[1] Frank Ackerman and Elizabeth A. Stanton, *The Cost of Climate Change: What We'll Pay if Global Warming Continues Unchecked*, May 2008, http://www.nrdc.org/globalwarming/cost/contents.asp. See also the more technical supporting document, Ackerman and Stanton, *Climate Change and the U.S. Economy: The Costs of Inaction*, May 2008, http://www.sei-us.org/climate-and-energy/US_Costs_of_Inaction.doc.
[2] Elizabeth A. Stanton and Frank Ackerman, *Florida and Climate Change: The Costs of Inaction*, November 2007, http://www.sei-us.org/climate-and-energy/Florida_Inaction_Cost.html.
[3] Ramón Bueno, Cornelia Herzfeld, Elizabeth A. Stanton, and Frank Ackerman, *The Caribbean and Climate Change: The Costs of Inaction*, May 2008, http://www.sei-us.org/climate-and-energy/Caribbean_Inaction_Cost.htm.

I will be happy to provide any additional information related to this testimony, and to answer any questions that you may have about it.

Sincerely,

Dr. Frank Ackerman

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Introduction: The Costs of Inaction

A scientific consensus has been reached: The earth's climate is changing for the worse, as a result of anthropogenic (human-caused) changes to the composition of the atmosphere. If everyone works together, all around the world, to reduce the concentration of greenhouse gases in our atmosphere, we can slow and even stop climate change. If we fail to do so, the consequences will be increasingly painful – and expensive.

My research group's analyses compare the economic consequences of two possible climate futures: The *business-as-usual* case, the worst likely result of emissions that continue to increase over time, unchecked by public policy, and the *rapid stabilization* case, the best likely result of a program of rapid, ambitious worldwide abatement initiatives.[4] It is too late to avoid all climate damages; even the rapid stabilization case involves significant losses due to climate change. However, the difference between the two scenarios – between the comparatively small losses under rapid stabilization and the huge losses under business-as-usual – is avoidable if we act soon.[5] Failure to act means that we will incur a much bigger and more painful climate loss rather than a smaller and more bearable one. The difference between the two is the cost of inaction.

My testimony begins with our analysis of the costs of inaction for the U.S., and then turns to our findings for Florida and for the Caribbean. A brief conclusion summarizes the message and the meaning of this testimony for climate policy decisions.

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[4] On many climate projections, the IPCC issues a range of possible forecasts, with estimates of probabilities attached. Here we differ from the simple approach of reporting the median of the IPCC range. Since the future will only happen once, and we want to know how bad the risks of future damages could be, the median is misleading: there is a 50-50 chance that the future will be worse than that, perhaps much worse. Instead, we use the upper (worst) limit of what IPCC calls the "likely" range of outcomes – which they define to mean the 17th to the 83rd percentiles. That is, we report the 83rd percentile of IPCC forecasts, generally using their rapidly growing A2 scenario to represent business as usual. Using similar logic, our best case or rapid stabilization scenario represents the 17th percentile outcome of the more slowly growing B1 scenario – or as good as it is likely to get, according to IPCC projections. Note that IPCC projects a one-in-six chance that the worst case is worse, and the same odds that the best case is better, than our estimates.

[5] Throughout our analyses we assume that the size of the economy and population will be the same in both scenarios. This (perhaps unrealistic) assumption is useful in clarifying the meaning of our two cases, and the contrast between them: all the economic differences between the business-as-usual and rapid stabilization cases reflect different climate impacts applied to the same economy, not changes in the underlying projections of output or population.

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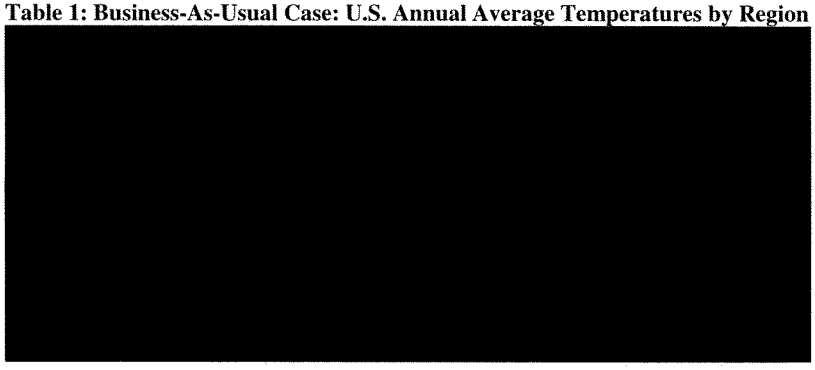
U.S. Costs of Inaction: Business-As-Usual Scenario

In the business-as-usual case, the average annual temperature in most of the mainland 48 states will increase 12 to 13°F by 2100 – a little more in the nation's interior, a little less on the coasts. For a few areas of the country, the average annual temperature increase will be near or below the global mean: for the Gulf Coast and Florida, 10°F; and for Hawaii and U.S. territories in the Pacific and the Caribbean, 7°F by 2100. Alaska, like all of the Arctic, will experience an even greater increase in average temperature than the U.S. mainland. On average, Alaska's annual temperature will increase by a remarkable 18°F by 2100, but temperature increases may be even higher in the northernmost reaches of Alaska. Table 1 shows the progression of these temperature changes over time.

Table 1: Business-As-Usual Case: U.S. Annual Average Temperatures by Region



These temperature increases represent a fundamental change to the climate of the United States. In the business-as-usual case, the predicted annual average temperature for Anchorage, Alaska in 2100 – 53°F – is the historical annual average temperature for New York City. Under this scenario, the northern tier of mainland states from Washington to Maine will come to have the current climate of the mid-latitude states, those stretching from Northern California to New Jersey. Those middle tier states will take on the climate of the southern states, while the southern states will become more like Mexico and Central America. Annual average temperatures in Honolulu and Phoenix will match some of the hottest cities in the world today – Acapulco, Mexico and Bangkok, Thailand. The United States' hottest big cities, Miami and San Juan, Puerto Rico, will reach annual averages of 85 and 87°F, respectively – hotter than any major city in the world today.

Changes in precipitation patterns are likely to differ for each region of the United States.

Alaska's precipitation will increase by 10 to 20 percent, mostly from increased snowfall. The Great Lakes and Northeast states will receive 5 percent more precipitation each year, mostly in winter. The U.S. Southwest, including California and Texas, will experience a decrease in precipitation, down 5 to 15 percent, mostly from less winter rain. The U.S. Gulf Coast and Florida will also receive 5 to 10 percent less rain each year. There will also be a higher risk of winter flooding, earlier peak river flows for snow and glacier-fed streams; lower summer soil moisture and river flows; and a shrinkage of sea ice, glaciers and permafrost. Climate change also affects storm intensity; specifically, Atlantic hurricanes and Pacific typhoons will become more destructive.

Our estimates for sea-level rise under the business-as-usual case diverge somewhat from the scenarios presented in the latest IPCC report. This area of climate science has been developing rapidly, but the most recent advances were released too late for inclusion in the IPCC process. Based on our reading of this recent work, we use an estimate of 45 inches by 2100.[6]

We consider four case studies of the economic consequences of climate change under the business-as-usual climate scenario for the United States:

1) increasing intensity of Atlantic and Gulf Coast hurricanes
2) inundation of coastal residential real estate with sea-level rise
3) changing patterns of energy supply and consumption
4) changing patterns of water supply and use, including effects on agriculture

These are far from the only consequences of climate change; the costs in these four areas are only a partial accounting of the economic damage that will result from business as usual. Nonetheless, costs in these four areas will, if present trends continue, amount to $1.8 trillion (in today's dollars), or 1.8 percent of U.S. output per year by 2100 in the business-as-usual case. Once the much smaller, unavoidable costs under the rapid stabilization case (discussed below) are subtracted, the "cost of inaction" or the difference between the business-as-usual and rapid stabilization cases could be more than $1.5 trillion or 1.5 percent of U.S. output *per year* by 2100.

Hurricane damages. In the business-as-usual scenario, hurricane intensity will increase, with more of the most intense types of hurricanes occurring as sea-surface temperatures rise. Greater damages from more intense storms would come on top of the more severe storm surges that will result from higher sea levels. We consider three factors that are expected to increase damages and deaths resulting from future hurricanes; each of these three factors is independent of the other two. The first is coastal development and population growth – the more property and people that are in the path of a hurricane, the higher the damages and deaths. Second, as sea levels rise, even with the intensity of

[6] For details, see Frank Ackerman and Elizabeth A. Stanton, *Climate Change and the U.S. Economy: The Costs of Inaction*, pp.7-8, http://www.sei-us.org/climate-and-energy/US_Costs_of_Inaction.doc.

storms remaining stable, the same hurricane results in greater damages and deaths from storm surges, flooding, and erosion. Third, hurricane intensity may increase as sea-surface temperatures rise. Combining these effects together, the predicted increase to U.S. hurricane damages for the year 2100 is $397 billion, or 0.39 percent of U.S. output in the business-as-usual case.[7]

Rising sea levels. The effects of climate change will have severe consequences for low-lying U.S. coastal real estate. If nothing were done to hold back rising waters, sea-level rise would simply inundate many properties in low-lying, coastal areas. Even those properties that remained above water would be more likely to sustain storm damage, as encroachment of the sea allows storm surges to reach inland areas that were not previously affected. In the business-as-usual case, the annual residential real estate losses in the 48 mainland states rise to $360 billion or 0.35 percent of U.S. output by 2100. No one expects coastal property owners to wait passively for these damages to occur; those who can afford to do so will undoubtedly seek to protect their properties. But all the available methods for protection against sea-level rise are problematical and expensive. It is difficult to imagine any of them being used on a large enough scale to shelter all low-lying U.S. coastal lands from the rising seas of the 21st century.

Energy demand. Climate change will affect both the demand for and the supply of energy: hotter temperatures will mean more air conditioning and less heating for consumers – and more difficult and expensive operating conditions for electric power plants. In the business-as-usual case, increasing average temperatures drive up the costs of electricity above population and per-capita increases. Not surprisingly, electricity demand rises most rapidly in the Southeast and Southwest, as those regions experience more uncomfortably hot days. By the same token, our model projects that while the Northeast and Midwest also have rising air conditioning costs, those costs are largely offset by reduced demand for natural gas and heating oil expenditures. That is, speaking very roughly, the colder half of the country nearly breaks even on energy costs, experiencing reduced heating and increased air conditioning costs of the same magnitude. The warmer half of the country, where heating costs are already small, suffers a substantial net increase in energy costs due to rising air conditioning use.

Overall costs in the energy sector in the business-as-usual case, combining increased costs for electricity and for new air conditioners, net of decreases in heating fuel costs, add up to $141 billion per year by 2100, or 0.14 percent of projected U.S. output.

Water supply. In the business-as-usual future, problems of water supply will become more serious, as much hotter and in many areas drier conditions will increase demand. The average temperature increase of 12-13°F across most of the country, and the decrease

[7] These numbers represent a 6 percent reduction from our previously reported hurricane damage estimates, to correct a technical error in the original numbers that led to a 6 percent overestimate, pointed out by Roger Pielke Jr. (personal correspondence).

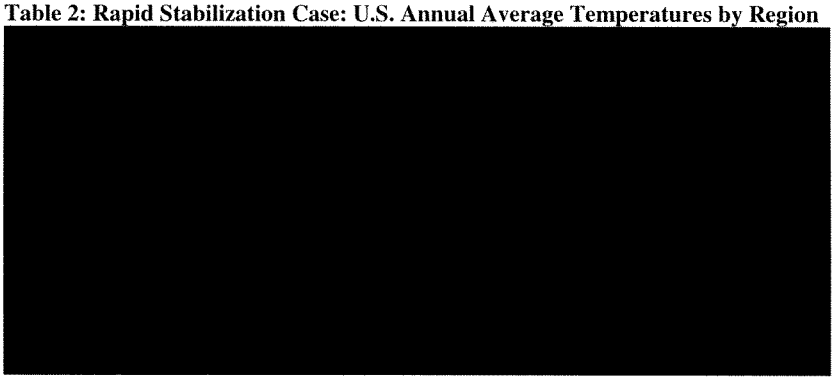
in precipitation across the South and Southwest, as described above, will lead to water scarcity and increased costs in much of the country. Responses are likely to include intensified water conservation measures, improved treatment and recycling of wastewater, construction and upgrading of cooling towers to reduce power plant water needs, and a reduction in the extent of irrigated agriculture. Extrapolating from the best available past research, we find that the costs of business-as-usual for water supply could reach $950 billion per year by 2100, while the anticipated gains in crop yields may be small, and would in any case vanish by mid-century.

The annual costs of these four effects alone adds up to $1.8 trillion in 2100 or 1.8 percent of U.S. output in the business-as-usual scenario, as summarized in Table 3 below. The total cost of these four types of damages, however, only represents a lower limit on the total cost of the business-as-usual scenario; many other kinds of damages, while also likely to have important effects on the U.S. economy, are more difficult to estimate. Damage to commercial real estate from inundation, damage to or obsolesce of public and private infrastructure from rapidly changing temperatures, and losses to regional tourism industries as the best summer and winter vacation climates migrate north – just to name a few – are all likely effects of climate change that may be costly in the United States. Effects on human health, natural environments, and endangered species add other important climate damages, which are difficult or impossible to price.

U.S. Costs of Inaction: Rapid Stabilization Scenario

With immediate, large-scale reductions in greenhouse gas emissions, it is still possible for changes in the world's climate to remain relatively small. The rapid stabilization case is an optimistic estimate of the impacts of the most rigorous policy prescription under discussion today: "80 by 2050", or an 80 percent reduction in U.S. emissions by 2050, accompanied by a 50 percent reduction in total world emissions and continuing reductions thereafter. By 2100 in the rapid stabilization case, U.S. temperatures rise by 2 to 4°F (see Table 2) and sea levels rise 7 inches, but precipitation levels and other climatic trends remain at their historical levels.

Table 2: Rapid Stabilization Case: U.S. Annual Average Temperatures by Region



A small change in annual average temperatures can mean a big difference to a local climate. For example, the historical average annual temperature is 50°F in Boston, 53°F in New York City, and 56°F in Washington D.C. The rapid stabilization scenario still represents a significant change to local climates throughout the United States in the next century. Three degrees Fahrenheit is a big change, but if it happens at a slow enough pace, each locality should be able to adapt to its new climate. Of course, this adaptation will not be costless.

The area of the United States that will suffer the most extreme impacts, even in the rapid stabilization case, is Alaska, where glaciers, sea ice, and permafrost are already retreating today, and an even greater upheaval to ecosystems, infrastructure, and industry can be expected in the decades to come. U.S. Gulf States, Florida, Hawaii, and U.S. territories in the Pacific and the Caribbean, in contrast, will experience smaller temperature changes – much closer to the global mean – than the majority of U.S. states. On the other hand, island and coastal regions are more exposed than the interior of the country to other aspects of climate change, such as increased storm damages and sea-level rise.

Hurricane damages. In the rapid stabilization case, hurricane damages will be only slightly worse than current conditions. U.S. hurricane damages for the rapid stabilization case are projected to be $12 billion per year by 2100, over and above current average damages.

Rising sea levels. In the rapid stabilization case, we assume that the value of U.S. coastal real estate has grown in proportion to GDP, and that annual damages will be proportional to sea level and to GDP. Using the projected 7 inches of sea-level rise by 2100, residential real estate losses from inundation rise to $46 billion annually by 2100.

Energy demand. The milder changes in climate under the rapid stabilization scenario lead to modest net increases in energy costs, amounting to $8 billion by 2100.

Water use. As temperatures rise, more water will be needed for irrigation, power plant cooling, household needs, and other uses. Moreover, a higher air temperature leads to faster evaporation; this could outweigh the gains from moderate increases in rainfall in some areas, leaving a smaller amount of water available in rivers and reservoirs. The water sector costs for the rapid stabilization case reach $220 billion in 2100; this is an important cost, but still far below the economic burden for water supply under business as usual.

In the rapid stabilization scenario the annual costs of these four effects alone adds up to $287 billion in 2100, or 0.28 percent of U.S. output, as summarized in Table 3 below.

U.S. Costs of Inaction: Summary

How much can we reduce these climate-induced losses by limiting our emissions of greenhouse gases? It is, unfortunately, no longer possible to avoid all adverse climate impacts. Some change from the pre-industrial climate has already taken place, and more is bound to occur as a result of greenhouse gases in the atmosphere, as well as the additional emissions that will be released in the very near future (too soon for policy changes to take effect).

The cost of inaction is the difference between the estimates for the business-as-usual and rapid stabilization cases, summarized in Table 3. The annual cost of inaction – the difference between the two cases – reaches $1.56 trillion, or 1.53 percent of U.S. output by 2100. And there are many other categories of costs that will be imposed by climate change, beyond the four areas we have examined; the total cost of inaction is inevitably much greater.

The costs we have estimated are not evenly distributed throughout the country. Hurricane damages are experienced almost entirely in the southeastern coastal states, on the Gulf Coast and the Atlantic (Pacific storms that affect Hawaii and the West Coast are not included in this calculation). Sea-level rise, of course, affects coastal areas. Energy costs are heavily concentrated in southern states; many northern states would enjoy reductions in winter heating costs that are roughly comparable to increased summer electricity expenses. Water supply costs are concentrated in areas that become drier than at present, particularly the Southeast and Southwest. Costs experienced in Alaska and Hawaii, and in Puerto Rico and other territories, are almost entirely omitted from these calculations.

Moreover, the problem of climate change will not end at 2100. Under business as usual, the costs of inaction will continue to mount, more and more rapidly, as time goes on. With rising temperatures there will also be an ever-increasing probability of catastrophic change, far worse than our estimates of non-catastrophic damages. Collapse of the Greenland ice sheet would lead to sea-level rise of more than 20 feet, destroying coastal communities, industries, and infrastructure everywhere; collapse of the West Antarctic ice sheet would be of a similar magnitude. No one knows exactly at what point this would happen – but everyone knows that ice melts faster as it gets warmer.

In short, the estimates in Table 3 are a very partial accounting for the costs of inaction on climate change. The total costs are uncertain in detail, but are sure to be larger than our estimates.

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Table 3: Costs of Inaction for Four Categories of Damages for the U.S.

	in billions of 2006 dollars				*as a percentage of GDP*			
	2025	**2050**	**2075**	**2100**	**2025**	**2050**	**2075**	**2100**
Hurricane Damages								
Business-as-Usual	$9	$40	$133	$397	0.05%	0.12%	0.22%	0.39%
Rapid Stabilization	$1	$2	$5	$12	0.00%	0.01%	0.01%	0.01%
Cost of Inaction	**$9**	**$38**	**$128**	**$385**	**0.04%**	**0.11%**	**0.22%**	**0.38%**
Real Estate Losses								
Business-as-Usual	$34	$80	$173	$360	0.17%	0.23%	0.29%	0.35%
Rapid Stabilization	$4	$10	$22	$46	0.02%	0.03%	0.04%	0.05%
Cost of Inaction	**$30**	**$69**	**$151**	**$314**	**0.15%**	**0.20%**	**0.25%**	**0.31%**
Energy Sector Costs								
Business-as-Usual	$28	$47	$82	$141	0.14%	0.14%	0.14%	0.14%
Rapid Stabilization	$2	$3	$5	$8	0.01%	0.01%	0.01%	0.01%
Cost of Inaction	**$26**	**$45**	**$77**	**$133**	**0.13%**	**0.13%**	**0.13%**	**0.13%**
Water Costs								
Business-as-Usual	$200	$336	$565	$950	1.00%	0.98%	0.95%	0.93%
Rapid Stabilization	$46	$78	$131	$220	0.23%	0.23%	0.22%	0.22%
Cost of Inaction	**$154**	**$258**	**$434**	**$729**	**0.77%**	**0.75%**	**0.73%**	**0.71%**
Total Costs for Four Categories								
Business-as-Usual	$271	$503	$953	$1,847	1.36%	1.46%	1.61%	1.81%
Rapid Stabilization	$53	$93	$163	$287	0.27%	0.27%	0.28%	0.28%
Cost of Inaction	**$218**	**$410**	**$790**	**$1,561**	**1.09%**	**1.19%**	**1.33%**	**1.53%**

Florida: Higher Risks, Higher Costs

The costs of climate change, measured as a share of GDP, are lower for the U.S. than the world as a whole. This is because the U.S. is colder than many parts of the world, is better supplied with fresh water, and has an unusually large percentage of population and economic activity in the interior of the country, far from the coastal damages caused by hurricanes and sea-level rise. Yet the U.S., of course, is large and varied; in hotter, water-stressed, and coastal states, nature and geography offer less protection against climate change.

A case in point is Florida, where a currently comfortable climate has led to a booming economy and fast-growing population – and where the risks and the costs of climate change will be much worse than the national average. In an analysis parallel to our national study, we found that a partial accounting of the costs of inaction on climate change could amount to as much as 5 percent of Florida's state income (gross state product, or GSP) by the end of this century. As with the national estimates, this figure excludes many important costs of climate change for which we could not develop meaningful monetary estimates; and all the costs will become larger and larger as temperatures continue to rise beyond 2100.

Our Florida analysis used the same climate projections and the same two scenarios as the national study. Although the temperature changes projected for Florida are slightly smaller than for most other states, they are still important: business as usual will make Florida, on average, 5°F warmer than today in 2050 and 10°F warmer in 2100. The winter, when temperatures are lowest, is currently the most popular time to visit Florida; how much of the state's appeal to visitors and residents will survive an increase in year-round temperatures?

Three of our four categories of national cost estimates could be calculated for Florida; each of them was, unsurprisingly, more serious in the Sunshine State than elsewhere in the nation. The impacts of sea-level rise will be felt all along Florida's lengthy coastline. The calculation of residential real estate losses due to sea-level rise, performed exactly as in the national study, yields a larger percentage of the state economy.

And it is not only residential property that is at risk. Data available for Florida made it possible for us to perform a GIS analysis of the effects of 27 inches of sea level rise – a level that will be reached around 2060 under business as usual. If nothing is done to protect the coastline, 27 inches of sea level rise would put 9 percent of the state's land area, including the homes of 1.5 million people, under water. Of the two counties at the southern tip of the state, Monroe County – including the Keys and most of the Everglades – would lose 99.6 percent of its land area, while Miami-Dade County would lose 70

percent of its area.

Statewide, the facilities at risk from 27 inches of sea level rise include

- 2 nuclear reactors;
- 3 prisons;
- 37 nursing homes;
- 68 hospitals;
- 74 airports;
- 82 low-income housing complexes;
- 115 solid waste disposal sites;
- 140 water treatment facilities;
- 171 assisted livings facilities;
- 247 gas stations
- 277 shopping centers;
- 334 public schools;
- 341 hazardous materials sites, including 5 superfund sites;
- 1,025 churches, synagogues, and mosques;
- 1,362 hotels, motels, and inns;
- and 19,684 historic structures.

Florida's long coastline is also exposed to hurricanes; serious hurricane damages are all too familiar throughout the state. Insurance costs have skyrocketed following major hurricanes in the recent past, forcing the state government to provide expensive subsidies to homeowner insurance. The same method we used to estimate national hurricane damages yields much bigger numbers, as a percentage of the economy, for Florida.

Likewise, the demand for electricity in Florida is strongly correlated with temperature on an hourly basis, reflecting the extensive reliance on air conditioning. On the other hand, there are virtually no heating expenditures to reduce as temperatures rise. As a result, the state's energy costs are projected to rise rapidly, along with the average temperature.

Florida is one of the wettest states in the nation, averaging 54 inches of rainfall annually, and is well supplied with rivers, lakes, and underground aquifers. Nonetheless, heavy agricultural water use for irrigation (both for growing fruits and vegetables during the dry winter months, and for the well-entrenched sugar cane industry), along with rapid residential and commercial development, has led to water shortages in many parts of the state. Florida is already investing in expensive desalination plants to increase water supply – and climate change will make the costs of water supply even higher. However, we were unable to develop a numerical estimate, comparable to our national figure, for climate-related water supply costs in Florida.

We did, however, look at a fourth impact of climate change on the Florida economy: the expected effects on tourism.[8] It is no secret that people from other states and countries like to visit Florida; 10 percent of the state's economy currently depends on tourism, with a seasonal peak in the winter months when the temperatures are lowest. Climate change will mean that winter temperatures will become more like current summer temperatures, while intensified hurricanes and sea-level rise will erode sandy beaches and make the outdoor tourist experience generally less pleasant.

Yet despite the winter peak, Florida has sizeable tourism revenues even in the off seasons, drawn in part by indoor and non-beach-oriented tourist attractions. We projected that by 2100, climate change under the business-as-usual scenario would reduce tourism's role in the Florida economy, throughout the year, to the level of the least attractive season today. That is, by the end of the century, year-round tourism spending in Florida (measured as a percentage of the state economy) would drop to the current level of tourism in the autumn months, or 76 percent as high as the current annual average. Thus we are conservatively projecting only a 24 percent decline in the relative importance of tourism, over a century which includes 45 inches of sea level rise, 10°F hotter temperatures, and more intense hurricanes. It is easy to imagine those business-as-usual climate conditions causing much greater tourism losses.

With our assumptions, the decline in tourism is the largest component of our estimated cost of inaction for Florida. Tourism losses account for about half of the state's cost of inaction; the four areas together reach 5 percent of GSP by 2100, as shown in Table 4.

Table 4: Costs of Inaction for Florida

in billions of 2006 dollars, except percentages

	2025	2050	2075	2100
Tourism	$9	$40	$88	$167
Hurricanes	$6	$25	$54	$104
Electricity	$1	$5	$10	$18
Real Estate	$11	$23	$33	$56
Summary: Costs of Inaction				
in billions of 2006 dollars	**$27**	**$92**	**$184**	**$345**
as percent of Florida GSP	**1.6%**	**2.8%**	**3.9%**	**5.0%**

[8] We did not create a comparable estimate of tourism losses for the U.S. as a whole because the effect of temperature and other climate changes is less clear over such a large and diverse area: for instance, would Florida's tourism losses result in net national losses, or in offsetting gains to other areas as tourism shifted to other states?

Maximum Vulnerability: Climate Costs in the Caribbean

Some parts of the U.S., such as Florida, will face larger climate costs than others. But the worst climate impacts will be experienced in other countries that are uniquely vulnerable to the anticipated changes. Low-lying coastal regions and, above all, small island nations, are most immediately at risk.

In another study of the costs of inaction, we analyzed the expected costs of climate change for 24 island nations and territories in the Caribbean. Data limitations did not allow us to produce an estimate that is strictly consistent with our U.S. and Florida projections.[9] We did, however, estimate three categories of climate damages: increased hurricane damages, infrastructure damages due to sea-level rise, and losses of tourism revenues. The cost of inaction on climate change – the difference between the business-as-usual and rapid stabilization scenarios – amounted to 10 percent of the region's GDP by 2050, and 22 percent by 2100.

While the average impact is large, the costs vary widely from one island to another. The largest, most diversified and least tourism-dependent economies, such as Puerto Rico and Trinidad and Tobago, face lower than average projected damages, as do a few of the smaller islands that lie outside the usual path of hurricanes, or rise well above sea level. On the other hand, greater than average damages are projected for low-lying islands, and those that are frequently struck by hurricanes. Rising sea levels and increased intensity of hurricanes will make some islands unattractive to tourists, if not entirely uninhabitable to the local population. For some islands that are heavily dependent on tourism, the expected losses of visitors and revenues due to climate change will all but destroy the local economy.

Haiti, the poorest nation of the region, is also projected to suffer overwhelming damage to its infrastructure, which it will be unable to afford to replace – a projection that is sadly consistent with that country's experience of recent storm damages. The destruction of some Caribbean economies by climate change will lead to increased migration out of the region, and the United States will be one of the most likely destinations for the new climate refugees. Thus even in the narrowest terms of self-interest (let alone a broader and more reasonable humanitarian perspective), we cannot view the destruction of Caribbean nations by climate change as merely someone else's problem.

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[9] The U.S. and Florida projections discussed above include projections of expected growth in population and incomes, based on standard government sources. For the 24 disparate political jurisdictions in the Caribbean study, no such economic and demographic projections were available. Therefore, following the example of an earlier World Bank study of some of the Caribbean islands, we assumed no change in population or per capita income for the region. In cases where projected damages grow at the same rate as GDP, our estimates for damages as a percentage of GDP will remain valid under a range of growth rates.

Conclusion: We Can't Afford the Costs of Inaction

There are real costs involved in taking immediate and forceful action to reduce carbon emissions and control the risks of climate change. Yet the costs of emission reduction will be a bargain, compared to the high and steadily rising costs of *inaction*. The message of my research, as summarized in this testimony, is that for the United States as a whole, even a partial accounting of the costs of inaction is above one percent of GDP by 2025, and grows steadily worse as time passes and temperatures rise. The most vulnerable parts of the country, such as Florida, face proportionally much greater risks, with a partial accounting of the costs of inaction exceeding five percent of that state's income by the end of this century. Just next door, in the Caribbean, some of the world's most vulnerable nations face more extreme damages, in some cases amounting to near-total destruction of islands and their economies, from the projected business-as-usual climate impacts within this century. This should be viewed by Americans, not just as a loss of exotic vacation opportunities, but as a humanitarian crisis in our backyard, and a likely source of increasing numbers of desperate refugees arriving on our shores.

The bottom line is clear: the cost of taking action to reduce emissions is an offer we can't afford to refuse.

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Mr. MARKEY. Thank you, Mr. Ackerman, very much. Our next witness is Ms. Kate Gordon. She is the Co-Director of the National Apollo Alliance. We thank you so much for being here. Turn on that microphone, please.

STATEMENT OF KATE GORDON

Ms. GORDON. Thanks for your patience, also, in staying so late. I also am going to have to run out of here at some point, so, for a flight.

This is a critical moment. You keep hearing this. We are at a moment of climate crisis, but also, economic crisis, and also, an equity crisis. We have an inequality at a high in this country, and everything has sort of converged. We really need to consider whether we are continuing with business as usual, or whether we are looking at a new path, where we can simultaneously achieve climate stability and energy security, and economic prosperity.

And this is, I think the bill in front of you is a good and exciting step toward that, but I also want to say it is critical, at this moment, that we take a comprehensive approach. It is not going to be enough just to regulate. We need to take the kind of comprehensive approach that the countries that are beating us in this space, which I agree are the European countries, that those countries have taken.

What those countries have done is to say not only do we create the regulations that create demand in these sectors for clean energy and efficiency, they have also invested in their workforce. They have also invested in their manufacturing sectors. These countries have not succeeded and they are not ahead of us because of lower wages and cheaper processes. They are ahead of us because they have looked both to demand and supply, when looking at clean energy and energy efficiency.

There is no guarantee. There is no magic pill that is going to create jobs from this bill if we don't take a comprehensive approach. There is no guarantee that, for instance, construction jobs in efficiency will be good jobs, unless we put in prevailing wage standards and other guarantees. There is no guarantee manufacturing jobs will stay in the United States, unless we invest in retooling and scaling up our manufacturing sector, so that the 70,000 manufacturing firms today, that are making the component parts that could be part of the supply chain, unless those firms can retool and retrain to be part of that supply chain.

There is no guarantee that workers will be ready for the clean energy economy unless we invest in training programs that really help all Americans, including those without four year college degrees. And I would just urge the committee to think about the workforce provisions of the bill, and really expand those, to include folks who are not in four year colleges. The vast majority of the jobs that we have seen coming out of the green economy in manufacturing and construction operations and installation, the majority of those will be the kind of middle skill jobs that are really most available to those with two year associate degrees, with technical degrees. So, really looking at those folks as well.

We have seen, I think, in some ways, the Recovery Act as a precursor to the kind of bill we are looking at today, the way of doing

comprehensive investment, combined with workforce investment. That bill is already leading, through its sections on creating demand for efficiency and renewable energy. It is already leading to jobs throughout the country. In my testimony, written testimony, I talked about the company, Serious Materials, which just bought a Chicago window factor, and is turning it into an efficient window factory, in part, because of demand created by the Recovery Act for efficient products.

We also have seen companies in other parts of the Midwest retool, going from producing regular glass to efficient glass, going from producing gearboxes for tractors to gearboxes for wind turbines. This is already happening, and it will continue to happen. There is a hundred stories from the Recovery Act. We could turn that into a thousand or ten thousand stories from this type of bill.

So, we encourage you, as you are looking at the bill, to think big. Don't just think about, you know, the cap and trade section. Don't just think about imported oil and energy savings. Think about workers, and the countless Americans who might finally be able to earn a living wage, and be able to enter the middle class, or be able to invent cutting edge technologies that will put us on the forefront of the clean energy future.

We have, as a country, always come to crisis, come out of crisis stronger, and come out of crisis with new innovations and new leadership, and we can do that again.

And I just encourage you to look beyond the individual pieces of this bill, to where we want to go as a country, and how we want to be competitive.

Thank you.

[The prepared statement Ms. Gordon follows:]

Kate Gordon
Co-Director, Apollo Alliance
Remarks to U.S. House of Representatives
Committee on Energy and Commerce
Wednesday, April 22, 2009

Chairman Waxman and Subcommittee Chairman Markey, and members of the committee, thank you for inviting me here today to talk about the critical question of how a strong, comprehensive energy and climate bill can bolster the American economy and create millions of high quality jobs.

The time is now for America to take bold steps to catalyze a clean energy revolution. It is a time of daunting challenges and boundless opportunities. We have become more and more dependent on foreign oil, putting our national security and economic future at risk. We have seen a collapse of the financial sector that has had rippling effects on the rest of the American economy. And we have seen the growing threat of climate instability and all its economic, environmental and human costs.

At the same time, our energy, climate, and economic crises present a tremendous opportunity – the opportunity to embrace a truly sustainable path for economic growth. The Apollo Alliance and its partners in the labor, business, environmental, and social justice communities firmly believe that our nation can and must achieve a triple bottom line: energy security, climate stability, and broadly shared economic prosperity.

Last fall we released our *New Apollo Program*, a comprehensive proposal for targeted federal investments in renewable energy and energy efficiency that, combined with a cap on carbon emissions, would create or retain five million good green jobs in this country. We argued that to build a strong clean energy economy we must build on America's strengths, such as our can-do spirit, our technological leadership, our industrial infrastructure, our skilled workforce, and our world-class educational system. We must not be content with lagging behind Europe and Asia, and with taking other nations' ideas and technologies and implementing them here. Instead, we must work toward a future where Americans invent, commercialize, manufacture, install, use and maintain the systems that will move this country away from our dependence on fossil fuels and imported oil.

With the introduction of the **American Clean Energy and Security Act of 2009**, Congressmen Waxman and Markey have taken a bold and exciting step toward the clean energy future our coalition has long envisioned.

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We are particularly pleased to see that the bill takes a comprehensive approach, integrating energy, environmental, and economic policy. It simultaneously creates new markets for new clean and efficient energy systems – through upgraded building codes, a national Renewable Energy Standard, and a cap on greenhouse gas emissions – while investing in America's workforce to ensure that these new markets translate into new jobs here at home. At the same time, the bill invests in emerging technologies such as the smart grid and carbon capture and sequestration (CCS), with the understanding that if we are not at the cutting edge of the clean energy revolution, we will be left behind. And the bill imposes border mechanisms to ensure that when America caps our own carbon emissions, we do not simply end up importing carbon-intensive goods back into our economy from countries with far less stringent environmental and labor standards.

Because it takes a comprehensive approach, there is no doubt that this bill will create scores of green jobs across a wide swath of industry sectors and geographic locations. New efficiency requirements for industrial, commercial, and residential buildings will create new jobs in the construction industry, ranging from lower-skilled laborer jobs to very high-skilled jobs in the building trades. These standards will put people back to work while offering new opportunities to job seekers who are looking to move beyond minimum wage service jobs and into more sustainable employment in the green economy.

New investments in renewable energy, the smart grid, alternative-fuel vehicles, and new coal technologies will create jobs for scientists, engineers, and inventors, but also for workers all the way down the manufacturing supply chain. These new technologies will also, if successfully commercialized, eventually revitalize our export economy and bring new jobs to our nation's ports. Similarly, grants to cities to improve transportation efficiency and public transit will spur innovation in these sectors, and – even more important – provide an efficient transportation network for the eighty percent of Americans who live in metropolitan areas.

These are not idle musings. In some ways the precursor to the bill we are discussing today is the American Recovery and Reinvestment Act (ARRA), which coupled strong investments in energy efficiency and weatherization with targeted funds for worker training. These investments have already spurred new demand for efficient products, and for workers with the skills to make these products.

Republic Windows and Doors in Chicago provides a perfect illustration of the power of clean energy investments to create real American jobs. In early December 2008, 260 members of United Electrical, Radio and Machine Workers of America Local 1110 lost their jobs at the window company. In February 2009, Kevin Surace, the chief executive officer of Serious Materials, an efficient window manufacturer in Sunnyvale, California, reached an agreement with the plant's former owner and with United Electrical Workers to purchase the Chicago factory. Mr. Surace also committed to honoring the union contract and to eventually rehiring all of the plant's union workers. In late March, President Obama commended Mr. Surace for his work to reopen another window plant in Vandergrift, Pennsylvania where 150 people once worked.

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The ARRA has spurred a hundred Republic Windows stories. We believe the American Clean Energy and Security Act could create tens of thousands more.

While we truly applaud the efforts of Chairmen Waxman and Markey, there are several areas where we feel the bill could be strengthened if it is to fully capture the potential of the clean energy economy.

First, while the bill includes a Renewable Energy Standard and Energy Efficiency Resource Standard aimed at dramatically increasing demand for new clean and efficient energy, it does not target investments toward the domestic manufacturing firms that are ideally placed to meet this demand. Currently, looking across all technologies, America imports more than seventy percent of clean energy components – at the same time as we are bleeding manufacturing jobs, especially in the heartland. We have an opportunity with this bill to invest in domestic firms, so they can retool their equipment and retrain their workers to make the wind turbines, solar panels, advanced batteries, and other clean energy systems of the future. These investments would create hundreds of thousands of manufacturing jobs – jobs that usually pay family-supporting wages and benefits and that, unlike construction jobs, offer year-round employment to working women and men. We must not squander this opportunity.

Second, we urge this committee to fill out Title III of the bill, which lays out a market-based system to ulate carbon emissions, so that it includes strategic investments for the workers and communities that are currently dependent on carbon-intensive industries. Every time America has experienced a major economic shift, we have recognized the need to ease the transition for those most negatively affected. When soldiers came back from World War II and re-entered the economy, we passed the GI Bill to help them. Similarly, we must help workers in the industries of yesterday become leaders in the industries of tomorrow. And we must help communities that are dependent on carbon-intensive industries to embrace new economic development strategies.

We recommend a range of transition policies from income and benefits replacement, career counseling, and training for workers to investments in brownfield and coal mine remediation for communities. In the same spirit of a fair and just transition, we recommend the committee include direct assistance to those low- and moderate-income consumers who will have the hardest time adjusting to the short-term energy cost increases that will come as we move to a carbon-constrained world.

Only by ensuring that all Americans come out winners will we build enough public support to do what must be done on the scale necessary to boost the economy, stabilize the climate, and achieve energy independence.

As the committee considers the draft put forward by Chairmen Waxman and Markey, we encourage you to think big. Think not only about the millions of barrels of imported oil and the billions of dollars in energy costs we will ultimately save if we reduce the carbon we pour into the atmosphere; think also about the

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countless Americans who might finally be able to earn a living wage, or enter the middle class, or invent a new cutting-edge energy technology if we embrace and invest in the transition to a clean energy future.

Time and again in our history, periods of great risk have prompted America to mobilize its wealth, skills, leadership, natural resources, and entrepreneurial spirit to overcome the challenges confronting us. Time and again, we have emerged from crisis better and stronger.

With your leadership, we know this country is up to the current challenge.

Thank you.

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Friday, April 17, 2009

The Honorable Nancy Pelosi
The Office of Speaker of the House Nancy Pelosi
H-232, United States Capitol
Washington, DC 20515

The Honorable Henry A. Waxman
United States House of Representatives
2204 Rayburn House Office Building
Washington, DC 20515

The Honorable Harry Reid
The Office of Senate Majority Leader Harry Reid
522 Hart Senate Office Building
Washington, DC 20510

The Honorable Jeff Bingaman
United States Senate
703 Hart Senate Office Building
Washington, DC 20510

Dear Speaker Pelosi, Majority Leader Reid, Congressman Waxman, and Senator Bingaman:

As Congress prepares to debate upcoming energy and climate bills, you have an opportunity not only to help make America a global leader in clean energy but also to strengthen our middle class, which has shed 4.6 million manufacturing jobs since 1999, including more than a million since late 2007. We can accomplish both of these ends by investing in the manufacture of renewable energy and energy efficiency systems, especially small firms that make component parts for these systems.

Demand for clean energy technology is on the rise: the domestic market for solar panels, wind turbines, and biofuel equipment will reach $325 billion annually by 2018. A national renewable electricity standard will increase this demand, as will an eventual carbon pricing program. However, if legislation does not help domestic manufacturers retool their facilities and retrain their workers to produce clean energy products, we will be unable to meet this demand with American supply. And if we do not ramp up American supply, the jobs and other economic benefits of the clean energy future will go overseas, leaving us just as energy dependent on foreign countries as we currently are for fossil fuels.

We must invest in domestic manufacturing to ensure that clean energy products are made in America. This investment should use multiple financial instruments, including direct loans, bonds, and tax credits, and target the entire supply chain, from original equipment manufacturers to component parts suppliers. It should help manufacturers meet international product standards so that systems and components are compatible with their foreign counterparts, granting us access to overseas markets. Importantly, federal dollars should go only to firms providing well-paying jobs with benefits.

We estimate that $50 billion in federal and private financing for industrial retooling and retraining programs could create 1 million new jobs (250,000 direct manufacturing jobs and an additional 725,000 indirect jobs) and generate as much as $120 billion in industry revenue. This investment would capture only a fraction of the clean energy economy's potential: by installing enough new clean energy equipment to generate 25 percent of our electricity, we could create approximately 3.5 million new jobs (1 million direct manufacturing jobs and 2.5 million indirect jobs) and revenues of over $400 billion.

Investing in manufacturing in energy and climate legislation will ensure that clean energy technologies are not only installed in America, but made and assembled here as well. We need a strong commitment by the federal government to invest in quality manufacturing jobs, invest in energy independence, and invest in our future.

Thank you for considering this important request.

Sincerely,

Phil Angelides, Chairman

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Peter Strugatz, IceStone
Carol Sturman, Sturman Industries
Marco Trbovich, Tricom Associates
Joel Yudken, High Road Strategies

Mr. MARKEY. Thank you, Ms. Gordon, very much. Our next witness, Denise Bode, is the CEO of the American Wind Energy Association. Welcome back.

Ms. BODE. Thank you, Mr. Markey. It is always nice to be here.

Mr. MARKEY. We look forward to your testimony.

STATEMENT OF DENISE BODE

Ms. BODE. Thank you very much. I would like to start off by thanking you all for drafting the American Clean Energy Security Act. It is an important step forward. In my testimony, I will focus on all aspects of it, but my oral testimony, I want to focus on the wind industry's top priority, and that is early passage of the Renewable Electricity Standard, and what it means to jobs, good manufacturing jobs, as well as electric generation jobs in the United States.

Short-term extensions of the Renewable Energy Production Credit, the PTC, have helped keep wind energy companies competitive with traditional forms of energy, but the short-term extensions have created planning and investment uncertainty. The booms and busts, the extension and the lack of extension have created uncertainty for new development of wind generation businesses, and most especially, for the build-out of brand new manufacturing base in the U.S.

By eliminating this uncertainty, a National Renewable Electric Standard would provide the long-term commitment to manufacturers and developers alike to invest billions of dollars in the American worker, that will be around forever in an industry where the source of fuel is infinite.

This business certainty will help quickly deploy renewable energy sources in the short term, to help achieve stronger emission reductions in the future at a lower cost. If you thought last year's historic high for wind, contributing 42 percent of new generation capacity in the U.S., just wait to what you will see with a lasting commitment to renewables.

Last year, while the U.S. economy was shedding hundreds of thousands of jobs, the wind industry added 35,000 new jobs, in addition to 55 new expanded or announced manufacturing facilities across the country. The renewable energy industry, with wind power playing a major role, is really poised to help lead the country out of the current recession and create a more sound economy.

During the Bush Administration, the Department of Energy concluded that wind energy could feasibly supply 20 percent of the Nation's electricity by 2030. The 20 percent wind energy report, that is just one scenario, certainly, we can do more, and we are already doing more. But I wanted to announce this. Even this one scenario, that they said that the numerous benefits from achieving that level of deployment would include supporting 500,000 new jobs, generating over $1 trillion in economic impact by the year 2030, decreasing natural gas prices by 12 percent, saving consumers between $43 billion and $171 billion, and avoided 825 million tons of carbon dioxide emissions in the electric sector in 2030, the equivalent of taking out 140 million cars off the road.

Unfortunately, though, the United States is at a competitive disadvantage compared to the 37 countries around the world that

have national renewable electric energy requirements, including China and India, which have mandatory requirements.

The importance and benefits of a national RES are unbelievable, because we stand at a critical crossroads, as we determine how to promote job growth, building back a new economy of jobs that will be there forever.

In addition to keeping our Nation competitive with other countries, there are many other benefits. Numerous studies conclude that a national RES would save consumers money, as renewable energy sources displace fossil fuel, and avoid the volatility of fossil fuel prices.

An excellent real world example that I was involved in as the Chairman of the State Commission in Oklahoma was the renewable electricity development that brought down costs to consumers, is the experience of Oklahoma Gas & Electric. The entire cost of Oklahoma Gas & Electric's Centennial Wind Project in Oklahoma was entirely offset by the natural gas fuel savings in 2007 alone, saving consumers in Arkansas and Oklahoma money. And that is a state that clearly can benefit.

A national RES would create jobs. Of course, you know, the 46 states with power plants and manufacturing facilities, job growth is already expanding in every region of the country. A national RES will also bring benefits to all areas. The Energy Information Administration has found that the Southeastern United States would be a net renewable energy exporter by 2019 under a national RES. Because a variety of resources are eligible for RES compliance, all regions of the country will be able to utilize other abundant renewable resources besides wind to meet the requirements. Further wind energy projects exist in 35 states already.

Whereas other fuels are shipped by rails, pipelines, a national RES would promote the shipment of wind via transmission lines, and allow utilities to purchase renewable energy credits from windy regions. It is a downpayment too, on the greenhouse gas emissions. And I know I am up against my deadline, and I know you will pound that, but I want to tell you more thing.

What is really critical here is the study, just came out within the last month, that said in Europe alone, the wind generation that was added has avoided 7 percent of the greenhouse emissions from electric generation that would have been there before. So, it is an immediate impact on removing carbon right now.

Thank you very much for my opportunity.

[The prepared statement of Ms. Bode follows:]

Testimony of Denise Bode
CEO, American Wind Energy Association
House Energy and Commerce Committee and
Energy and Environment Subcommittee Hearing on The American Clean Energy Security Act of 2009
April 22, 2009

Introduction

Chairman Waxman, Ranking Member Barton, Subcommittee Chairman Markey and Ranking Member Upton, and distinguished members of the Committee, thank you for the opportunity to testify.

My name is Denise Bode. I am the new CEO of the American Wind Energy Association (AWEA). AWEA is the national trade association of America's wind industry, with over 1,900 member companies, including project developers, manufacturers, and component and service suppliers.

I would like to start off by thanking the Chairmen for drafting The American Clean Energy Security Act, which includes a national Renewable Electricity Standard (RES) that would provide the business certainty to keep the wind industry growing strong. AWEA and its member companies also appreciate the effort to address our nation's electricity transmission system and to control the emissions of greenhouse gases.

My testimony this afternoon will focus on the importance of passing a national RES to promote domestic wind energy development and related manufacturing and job creation, as well as the need to include enabling provisions related to transmission policy and providing allowance allocations for renewable generators.

The U.S. Wind Industry Today

Last year over 8,500 megawatts of wind energy were installed, making wind energy second only to natural gas in new generating capacity for the fourth year in a row. This new capacity resulted in a 50% growth rate. With over 25,000 megawatts of installed capacity, the U.S. surpassed Germany to become the world leader in wind energy. Last year, while the U.S. economy was shedding hundreds of thousands of jobs, the wind industry added 35,000 jobs, with the addition of 55 new, expanded, or announced manufacturing facilities across the country. The renewable energy industry, with wind power playing a major role, is poised to help lead the country out of the current recession and to help create a more sound economy that is reliant on clean, domestic resources to meet our growing energy needs.

During the Bush Administration, the Department of Energy (DOE) concluded that wind energy could feasibly supply 20% of our nation's electricity by 2030[1]. The *20% Wind Energy by 2030* report identified a number of benefits associated with the greater use of wind energy. Meeting the 20% by 2030 goal would support 500,000 jobs. Natural gas demand would drop, producing net savings for consumers between $43 billion and $171 billion. 825 million tons of carbon dioxide would be avoided by 2030, which is the equivalent of taking 140 million cars off the road. Finally, cumulative water consumption in the electric sector would be reduced by 8% through 2030, with an annual reduction of 17% in 2030[2].

President Obama's campaign position of a 25% RES by 2025 is exactly what our industry needs to achieve stable, long-term growth, invest in manufacturing facilities in the U.S., and continue our trend of reducing costs to consumers. Unfortunately, the United States is at a competitive disadvantage compared to thirty-seven countries around the world that have national renewable energy requirements, including China and every country in the European Union. Without the investment certainty associated with a national RES, the United States will continue to play on an uneven playing field. That is why the adoption of a national Renewable Electricity Standard as included in the American Clean Energy Security Act is crucial for us to meet our nation's renewable energy goals.

Short-term extensions of the renewable energy production tax credit (PTC) have helped keep wind energy competitive with traditional forms of energy. However, the short-term extensions have created planning and investment uncertainty for businesses. By eliminating this uncertainty, a national RES would promote long term planning for renewable project developers. In turn, a long-term planning horizon will enable the wind industry to attract investment capital and achieve manufacturing economies of scale that will spur economic development.

The Importance and Benefits of a National RES

Mr. Chairman, our nation stands at a critical crossroads as we determine how to promote job growth and economic development to transition to a clean energy economy. Unfortunately, resistance to this change is fed by disingenuous arguments that attack the very policies that will move our country forward. In addition to keeping the United States on an equal footing with the rest of the globe, there are numerous benefits of a national RES that would be enjoyed by Americans in all regions of the country.

A national RES would save consumers money. Numerous studies conclude that a national RES would save consumers money as renewable energy sources displace fossil fuels, the price-setting fuels in electricity markets across the country. For example, a 2007 study from EIA shows that a 25% RES by 2025 would lower natural gas

[1] U.S. Department of Energy, "20% Wind Energy by 2030" (July 2008), http://www.20percentwind.org/20p.aspx?page=Report.
[2] U.S. Department of Energy, "20% Wind Energy by 2030" (July 2008), http://www.20percentwind.org/20p.aspx?page=Report.

expenditures by 1%, which amounts to a total reduction of $17 billion[3]. This more than offsets the minimal increase in electricity prices of 0.4%, or $15 billion, leading to a net savings of $2 billion. A study from power and gas sector energy consultant Wood Mackenzie found that a national RES would save consumers over $100 billion through 2026, including reducing power prices by over 10% in the former East Central Area Reliability Coordination Agreement (ECAR) region, which includes the states of Indiana, Michigan, Kentucky, and West Virginia[4].

An excellent real-world example of the ability of renewable electricity development to bring down costs for consumers is the experience of Oklahoma Gas and Electric (OG&E). The entire cost of the OG&E Centennial wind project in Oklahoma was entirely offset by the natural gas fuel savings in 2007 alone, saving consumers in Arkansas and Oklahoma money[5].

A national RES would create jobs. The business certainty provided by a national RES would put the United States on the path to achieving 20% wind energy by 2030. As I mentioned earlier, DOE found that meeting this goal would support over 500,000 jobs[6]. The wind energy industry contributes directly to the economies of 46 states with power plants and manufacturing facilities. As a result, this job growth will occur in all regions of the country, even in those states without a strong wind resource.

A national RES will bring benefits to all areas of the country. The Energy Information Administration (EIA) has found that the southeastern United States would be a net renewable energy exporter through 2019 under a national RES because of the abundant availability of biomass resources. Even during the later years of a national RES the southeast would generate more than 80 percent of its own renewable energy[7]. Since a variety of resources are eligible for RES compliance, all regions of the country will be able to utilize other abundant renewable resources besides wind to meet their requirements. In fact, EIA has concluded that the use of biomass energy production would increase much more than wind energy production. EIA also found that solar power would receive a substantial amount of renewable energy credits[8].

It is also important to note that our nation has historically relied on interstate commerce to meet its energy needs. Critics argue that a national RES will lead to a transfer of wealth outside the region. However, wind energy projects exist in 35 states. Whereas

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[3] EIA, 2007, http://www.eia.doe.gov/oiaf/servicerpt/eeim/index.html

[4] Wood Mackenzie, The Impact of a Federal Renewable Portfolio Standard, February 2007.

[5] Oklahoma Gas & Electric Testimony before the Arkansas Public Service Commission, http://www.oge.com/content-oge/investors/pdfs/Rowlett%20Direct_7-28-06.PDF

[6] U.S. Department of Energy, "20% Wind Energy by 2030" (July 2008), http://www.20percentwind.org/20p.aspx?page=Report.

[7] Howard Gruenspecht, Testimony before the House Committee on Energy and Commerce Subcommittee on Energy and Environment, 2/26/09

[8] See e.g., "Impacts of a 15-Percent Renewable Portfolio Standard", Energy Information Administration (June, 2007); "Energy and Economic Impacts of Implementing Both a 25-Percent Renewable Portfolio Standard and a 25-Percent Renewable Fuel Standard by 2025", Energy Information Administration (August, 2007).

other fuels are shipped by railcar or pipeline, a national RES would promote the shipment of wind via transmission lines or allow utilities to purchase renewable energy credits from windier regions. For example, the recent Joint Coordinated System Plan found that building transmission lines to carry over 15,000 MW of wind into the Southeast would reduce consumers' electric bills by more than enough to pay for the transmission[9].

Furthermore, a national RES is a down payment on the greenhouse gas reductions required elsewhere in the American Clean Energy Security Act. By itself, a 25% RES by 2025 could produce more than 40% of the emission reductions needed to reach 1990 levels by 2020 in the electric sector. An RES will ensure deployment of renewable energy in the critical early years of any climate program when the carbon price alone is insufficient to drive investment in renewable technologies. An RES is a key element for any successful greenhouse gas reduction effort

Mr. Chairman, the PTC has promoted the growth of the domestic wind industry for years. Unfortunately, the short-term extensions of the credit and resulting business uncertainty have inhibited the establishment of a domestic manufacturing base and supply chain. A national RES is needed to provide this business certainty and to quickly deploy renewable energy sources in the short-term to help achieve stronger emission reductions in the future at a lower cost.

Enabling Transmission

Another topic of critical importance to the wind industry is electricity transmission. In the DOE's *20% Wind Energy by 2030* report the most significant barrier was transmission. The regulatory structure in place now is not suitable to building the green power superhighways we need. AWEA thanks the committee for addressing this issue in the American Clean Energy Security Act and we are hopeful the Committee will consider the approach used by Senators Reid, Dorgan, and Bingaman to address interconnection-wide planning, interconnection-wide cost allocation, and increased federal permitting.

Allowance Allocations

AWEA also appreciates the strong emissions reduction requirements included in the American Clean Energy Security Act. The near-term reductions are particularly relevant to the deployment of wind energy. As you finalize the allowance allocation portion of the bill, AWEA would request that renewable generators receive a portion of the allowances for new generation to be distributed on a per megawatt hour basis. This type of distribution will deploy renewable energy above and beyond the RES requirements. It will also promote early emissions reductions by maximizing deployment of renewable energy, when there are few other cost-effective options for large-scale emissions reductions.

[9] Joint Coordinated System Plan, "Joint Coordinated System Plan Study," http://www.jcspstudy.org/

Conclusion

U.S. wind energy capacity is exceeding the projections needed to reach the 20% goal by 2030. The American Clean Energy Security Act, combined with fair allocations of emissions allowances for renewable energy and broader transmission cost-allocation, planning, and siting policies will put us on the path to meeting the 20% vision.

I again thank the Chairmen for this opportunity to testify and look forward to any questions you and the other members of the Committee may have.

Mr. MARKEY. Thank you, Ms. Bode. Our next witness is Mr. David Manning. He is the Vice President for External Affairs at National Grid, where he is responsible for federal issues and relations. He has also served as the President of the Canadian Association of Petroleum Producers, so we welcome you, sir. Whenever you are ready, please begin.

STATEMENT OF DAVID MANNING

Mr. MANNING. Thank you very much, Mr. Chairman. As you know, I may be the only one here that was on the rigs in the high Arctic and also a delegate to Kyoto. So, just quickly, thank you, Mr. Chairman, Ranking Member Upton, and members of the committee.

National Grid is a very large natural gas and electricity provider in the Northeast. We work from New York to New Hampshire. We serve about 15 million people. I am here to speak very specifically, however, sir, on the analysis which is available to us to explain the economic benefits of energy efficiency investment.

A couple of years ago, at the World Economic Forum, there was great debate over whether or not we can do climate change, whether or not we can drive energy efficiency without bankrupting the economy, and we heard a lot about that this evening, in terms of the cost of action.

There was a lack of substantive evidence, and a group pulled together, including ourselves, Shell, DTE, Honeywell, Environmental Defense, the NRDC, the Natural Resources Defense Council, and we all partnered with McKinsey, and produced a study. It took over a year in production, and it analyzed all of the various means open to us, in terms of investing in energy efficiency technologies. It was vetted by MIT, Princeton, Texas A&M, UC–Davis, and if you look at nothing else, I have attached to my written testimony what I call the McKinsey Curve. And the McKinsey Curve, which came out in 2007, demonstrates that about 40 percent of the technologies that they reviewed fully pay for themselves within their lifetime. So, there is no net cost to those technologies. Quite obviously, you start with residential electronics. We know that computers can be much more effective, much more efficient. Residential lighting.

And as you work through, you then go into vehicles, you go into fuel, intensity of carbon fuels. So, we have a pretty thorough analysis, setting out all of the various opportunities, and it is to drive a significant shift in capital investment away from less efficient, more emitting technologies, and driving us to more cost-effective solutions that assume no technological breakthroughs, 80 percent of the options reviewed relied on proven technology. The balance were considered high potential, and high potential in 2007 included cellulosic biofuels and plug-in hybrids, and of course, now, a number of companies are testing plug-in hybrids.

So, it looked at a series of options, going from least cost to greatest cost, and this is consistent with what New York City found in its New York City 2030 Program, that a great deal of the emissions within urban centers are in buildings. So, your easy and earliest hits were in buildings and appliances. Moving on, vehicles and fuel carbon intensity. The third move was industrials, sinks and forests, and then, finally electric power options.

What it also found was the maximum of all of those categories, no one category contributed more than 11 percent to the solution. So, it is widely dispersed through the economy, and of course, that is part of our point, is that in order to invest in these technologies, you are driving an entire new industry.

Just a few examples. Obviously, we have been doing a lot of work in energy efficiency in New Hampshire. We have been working throughout New England. In Massachusetts, we go back some 30 years in this experience.

Just in the last year alone, we are partnering with Positive Energy. This is a firm doing a pilot in Massachusetts. They are based on the West Coast, and they are coming up with a tracking system for customers to demonstrate how their fuel consumption relates to those with similar properties.

Reflex Lighting Group, now doing state of the art design work in Boston for commercial space. DMI, R.G. Vanderweil, two new design firms that are doing energy efficiency programs and products for commercial and customer installations. We are working with them.

Evergreen Solar, Sharp Solar, these are made, locally manufactured solar providers and Solar Design Associates are designing our new building, which we are about to open just outside of Boston, which will be the second largest solar array in New England, and that will be open in May, 330,000 square foot lead-certified building, dedicated for National Grid, powered, of course, by a solar array.

So, those are all, those companies didn't exist a year or two ago, so my point, sir, is that, and panel, is that we have a very real opportunity to not only pay for these opportunities and energy savings, but to drive new jobs.

Very quickly, we spend $215 billion annually on the production of electricity. We only invest $2.6 billion in energy efficiency.

In natural gas, we spend $1 to $2 per mcf on energy efficiency, compared to, I mean, the cost, I am sorry, would be $1 to $2, compared to the cost of the fuel of $6 to $8. And multiple studies have demonstrated that you can do energy efficiency for approximately $0.03 per kilowatt-hour saved, and electricity costs, of course, range anywhere from $0.06 to $0.12 and beyond.

A lot of this has taken place in New England, because of our highest cost of energy, but we can do it.

[The prepared statement of Mr. Manning follows:]

U.S. House of Representatives Energy and Commerce Committee
Energy and Environment Subcommittee

Legislative Hearing on "The American Clean Energy and Security Act of 2009"
(March 31 Discussion Draft)

April 22, 2009

Testimony of David J. Manning
Executive Vice President, External Affairs, National Grid

Chairman Waxman, Ranking Member Barton, Subcommittee Chairman Markey, Subcommittee Ranking Member Upton, and Members of the Committee and Subcommittee, thank you for including National Grid in this very important hearing on Green Jobs and the Economic Benefits under the American Clean Energy Security Act of 2009. I will focus my testimony on the economic benefits of energy efficiency programs.

National Grid is an international energy delivery company. In the U.S., National Grid delivers electricity to approximately 3.3 million customers in Massachusetts, New Hampshire, New York and Rhode Island and operates the electricity transmission and distribution network on Long Island, serving an additional 1.1 million customers. We are the largest distributor of natural gas in the northeastern U.S., serving approximately 3.4 million customers in Massachusetts, New Hampshire, New York, and Rhode Island. National Grid also owns and operates over 4,000 megawatts of electricity generation under contract with the Long Island Power Authority.

May I first congratulate you and your colleagues for your focus and success with important initiatives on energy efficiency, renewable energy, infrastructure such as smart grid, and other critical energy support in the American Recovery and Reinvestment Act (ARRA). The $3.1 billion in state matching grants for energy efficiency, the funding for weatherization assistance, and the funding for efficiency improvements at affordable housing units are critical steps towards moving energy efficiency to the forefront of a comprehensive national energy policy.

As mentioned, our service territory includes Massachusetts, New York, Rhode Island and New Hampshire, and I want to take this opportunity to thank Representatives Markey, Towns, Engel, and Weiner for their longstanding leadership on energy issues.

Finally, I want to express my appreciation to Chairmen Waxman and Markey for your release of The American Clean Energy and Security Act of 2009. The bill represents an important step toward Congress enacting comprehensive federal climate change policy. National Grid has been a long time advocate of a federal climate change program, and as member of the Clean Energy Group, we believe that Congress should immediately enact mandatory, economy-wide legislation that slows, stops, and ultimately reverses

the growth of U.S. greenhouse gas emissions. In order to achieve this, National Grid's President, Tom King, recently testified before the subcommittee with the simple message – "we need it all." He explained that we need more expansive, robust energy efficiency programs as well as significant new sources of renewable energy: wind, solar, biomass and geothermal. We need a comprehensive strategy to address our transmission infrastructure, including policies that will enable us to bring renewable energy resources, which are often isolated, to dense urban areas and other load centers. We need smart grid technology and smart meters to maximize the potential of current and future energy efficiency technologies to automate the most efficient use of energy. When combined with clean, no- or low-emitting base-load power generation such as nuclear, hydroelectric, natural gas, and emerging clean coal technologies, these components will lower customers' bills and play an important role in an effective national energy policy that helps us meet our economic, national security, and environmental goals.

As the Administration and Congress work to develop a national energy policy and implement policies to stimulate economic recovery, investment in the "green energy" sector will not only create new jobs in a new industry but will result in a stronger, more efficient economy. Investment in this area, including energy efficiency, will reduce our dependence on carbon and imported fuels and ensure a meaningful impact on our carbon footprint and carbon dioxide emissions.

While a national energy strategy must be multifaceted, my comments today will focus on energy efficiency. National Grid stands with many other energy providers and the environmental community in recognizing that energy efficiency uniquely addresses many of our nation's core energy issues – it is more cost-effective than building new power plants, has the potential to dramatically lower greenhouse gas emissions, and provides consumers with long-term savings on their energy bills.

National Grid's Energy Efficiency Programs

National Grid's experience throughout the Northeast demonstrates that cost-effective energy efficiency measures are ready to be deployed today with the right mix of policies and incentives. We have decades of experience in delivering low-cost energy savings, which we believe can be replicated throughout the country. The certainty available from federal legislation, a state regulatory compact that encourages energy efficiency, the ability to rate base energy efficiency technologies in order to expedite and expand their market penetration, and tax policies and grant structures designed to stimulate investment will all assure the success of a concerted effort to use energy more efficiently.

National Grid has efficiency programs in place in our New England states that are saving customers over $300 million annually, after an expenditure of more than $1.5 billion on efficiency technologies. As a result of these programs, more than 4.7 million National Grid customer projects have been completed to date, often with a payback period of five years or less, and saving more than $3.6 billion in energy costs. This

includes converting almost all of Boston's public schools from oil to natural gas, which helps cash strapped schools focus their limited resources on education, and includes residential boiler conversions, which reduce carbon dioxide and other emissions by up to 40 percent. In 2007 alone, our gas programs saved 4.6 million therms and avoided 27,000 tons of carbon dioxide. Our electricity program saved 380,000 megawatt hours, avoiding 218,000 tons of carbon dioxide. The total carbon emissions avoided equate to 48,000 cars off the road for a year.

We expect National Grid's efficiency programs to enjoy significant growth during the next several years as we expand our New England and downstate New York programs and develop new programs in upstate New York. Our spending on efficiency is forecast to more than double over the next five years, reaching approximately $700 million in 2014. This increase reflects our commitment to energy efficiency, as well as the supportive regulatory environment in the states we serve. The Regional Greenhouse Gas Initiative signals the commitment of the northeastern states to address climate change and pursuing energy efficiency is a major component of meeting the new requirements. State legislation is also driving energy efficiency investment, with New York, Rhode Island, and Massachusetts all adopting groundbreaking energy efficiency policies and programs over the last few years, and New Hampshire continuing to build upon the efficiency goals of its comprehensive energy plan. These changes have enabled us to pursue new approaches, such as partnering in solar initiatives and offering efficiency programs, which integrate the delivery of electric and gas efficiency for the first time.

Independent Analysis of Energy Efficiency

To assess the costs and opportunities available now in energy efficiency, National Grid, together with Pacific Gas and Electric, Shell, DTE Energy, Honeywell, Environmental Defense Fund, and the Natural Resources Defense Council partnered with McKinsey and Co. and the Conference Board to produce the study "Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?". The McKinsey team worked with leading companies, industry experts, academics, and environmental non-governmental organizations to examine opportunities to reduce greenhouse gas emissions across the main carbon-emitting sectors of the U.S. economy. Analysis focused on options likely to yield greenhouse gas reductions at a cost of less than $50 per ton of carbon dioxide equivalent. While McKinsey conducted the research and is solely responsible for its content, the work was critiqued by academics from leading universities including MIT, Princeton, Texas A&M, and U.C. Davis.

The study was over a year in the making, and its outcome is based on a detailed analysis of 250 opportunities for reducing emissions of carbon dioxide and other gases thought to contribute to global warming. It focused on five clusters of greenhouse gas abatement potential:

- improving energy efficiency of buildings and appliances;

- encouraging higher energy efficiency in vehicles while reducing the carbon intensity of transportation fuels;
- pursuing a range of targeted measures across energy intensive portions of the industrial sector;
- expanding and enhancing carbon sinks; and
- reducing carbon intensity of electric power production.

The report evaluated the potential to reduce manmade emissions within the U.S. by 2030. It shows reductions in the range of 3.0 to 4.5 gigatons in 2030 are achievable at manageable costs using proven and emerging high potential technologies, but only if the U.S. pursues a wide array of options and moves quickly to capture gains from energy efficiency. Almost 40 percent of the identified reductions come from options that more than pay for themselves over their lifetimes, thereby creating a net savings for the economy. For example, improving energy efficiency in buildings, appliances, and industry could yield net savings, while offsetting some 85 percent of projected increased demand for electricity in 2030.

The scenarios included in the report represented a significant shift in capital investment away from less efficient, higher emitting technologies to clean cost-effective energy solutions. Analysts who worked on the report assumed no technological breakthroughs – about 80 percent of the options reviewed rely on proven technology; the remaining 20 percent consisted of "high potential" technologies such as cellulosic bio-fuels and plug-in hybrid vehicles, which are being tested today. Moreover, everything in the analysis was predicated specifically on maintaining our standard of living. The fastest and most important measures all involve energy savings that translate directly into cost savings for businesses and consumers.

However, the report warned that private sector innovation and policy support would be necessary to unlock these opportunities. A McKinsey director at the time said "without forceful and coordinated action, it is unlikely that even the most beneficial options would realize their full potential".

While the report did not promote specific policies, it did mention some possible solutions. For example, regulations for utilities could be rewritten to assure that companies would not have a disincentive to promote conservation when selling electricity. The study also indicated climate change programs might require emission limits and other government mandates as well as incentives like tax breaks to promote efficient buildings, cars, and appliances.

Principal findings of the report included:

- Opportunities to reduce greenhouse gas emissions, including energy efficiency, are highly fragmented and widely spread across the economy. The largest single option – carbon capture and storage (CCS) for coal-fired power plants – offers less than 11 percent of total potential identified. The largest sector, power generation, accounts for less than one third of the total.

- Reducing emissions by 3 gigatons of carbon dioxide equivalent in 2030 would require $1.1 trillion of additional capital spending, or roughly 1.5 percent of the $77 trillion in real investment the U.S. economy is expected to make over this period.

- Investment would need to be higher in the early years and highly concentrated in the power and transportation sectors in order to capture energy efficiency gains at the lowest overall costs and accelerate the development of key technologies. If pursued, such investment would likely put upward pressure on electricity prices and vehicle costs. Policymakers would need to weigh these added costs against the energy efficiency savings, opportunities for technological advances, and other societal benefits.

- Five clusters of initiatives, pursued in unison, could create substantial progress toward the reductions targets included in several Congressional bills. From least to highest average cost, they are: improving energy efficiency in buildings and appliances (710 – 870 megatons); increasing fuel efficiency in vehicles and reducing carbon intensity of transportation fuels (340 to 660 megatons); pursuing various options across energy-intensive portions of the industrial sector, including energy efficiency (620 to 770 megatons); expanding and enhancing carbon sinks, such as forests (440 to 590 megatons); and reducing the carbon intensity of electric power production (800 to 1,570 megatons.)

The full report is available at:
www.mckinsey.com/mgi/publications/Curbing_Global_Energy/executive_summary.asp.

The McKinsey report as well as several other studies demonstrate that energy efficiency can cost as little as 3 cents per kWh saved, while electricity costs 6 to 12 cents per kWh. Thus, energy efficiency measures are often the most effective way to avoid unnecessary energy supply investments, and lower customers' energy bills on a sustainable basis. Despite the obvious advantages of energy efficiency, we spend about $215 billion annually on the production of electricity, but invest only $2.6 billion in securing electricity savings through efficiency programs. The savings are similar for natural gas, where efficiency costs $1 to 2 per thousand cubic feet (mcf) compared to a typical market cost ranging from $6 to 8 per mcf. Yet we spend approximately $91 billion annually on natural gas supplies and only $500 million on natural gas efficiency.

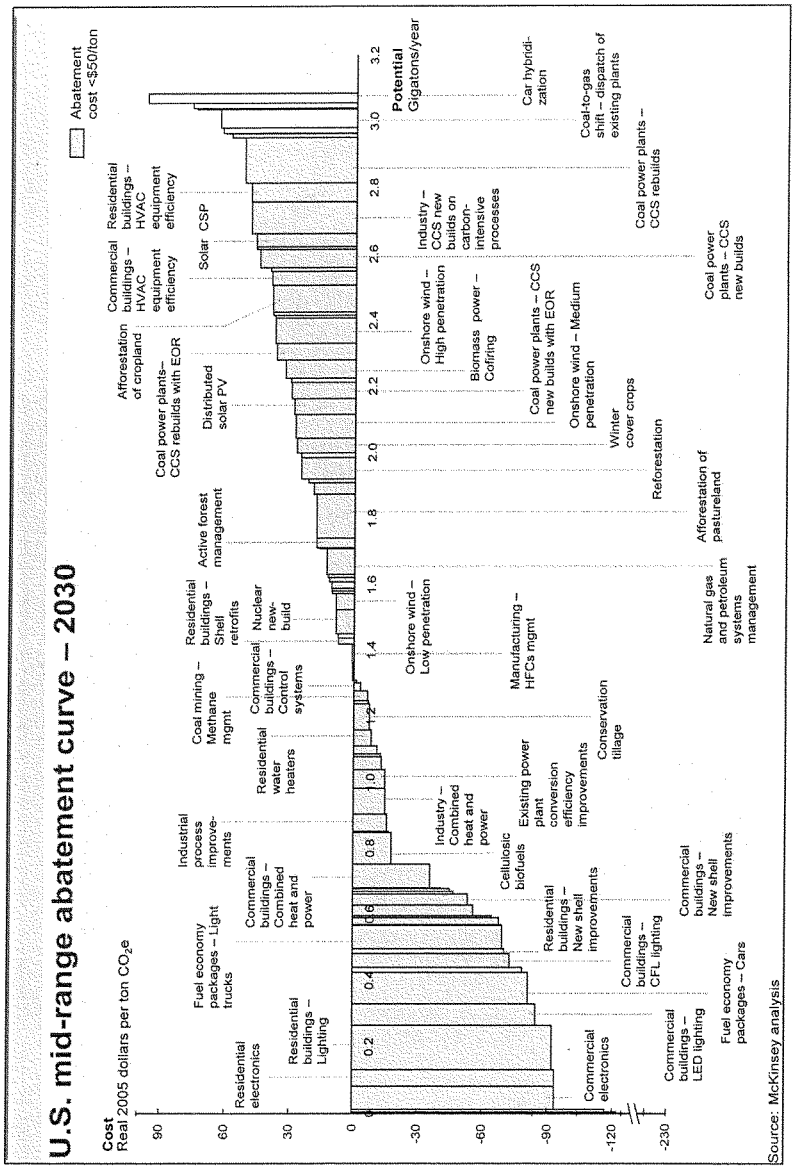
A recent study by the Electric Power and Research Institute (EPRI) shows the potential for realizing energy efficiency savings. By analyzing the impact of codes and standards, as well as market driven efficiency, the study shows measurable reductions in energy consumption. Opportunities in the EPRI study range from commercial lighting to massive reductions in consumption through residential appliances and standby wattage. The full EPRI study can be found at http://my.epri.com/portal/server.pt?Abstract_id=000000000001016987

Prioritizing Energy Efficiency

While spending on energy efficiency is increasing, it remains but a small fraction of what the total country spends on energy requirements, effectively leaving billions of dollars in potential savings on the table. This country must take better advantage of this opportunity and prioritize energy efficiency. National Grid supports the concept of federal energy efficiency resource standard legislation as one of the strategies that will pave the way towards a more energy efficient future.

Mr. Chairman and Members of the Committee, we believe the current economic downturn provides a real opportunity to respond to a multitude of challenges in our economy. Driving economic activity in the energy sector can create significant employment, all here at home, while reducing our dependence on foreign fuels and the release of harmful emissions into our atmosphere. Energy efficiency should act as a foundation of our national energy policy as we take other key steps to develop and implement innovative investments to ensure a reliable low carbon and efficient energy strategy for America. Importantly, these programs can be quickly expanded to provide much needed jobs and energy savings in the near term. The existing programs are not nearly sufficient, and we look forward to working with you on developing energy efficiency policies that will help us to reorder our economy for a greener future.

We commend your work and we thank you for the opportunity to answer your questions.


U.S. mid-range abatement curve – 2030
Cost
Real 2005 dollars per ton CO_2e
Abatement cost <$50/ton
Potential
Gigatons/year
Residential electronics
Residential buildings – Lighting
Commercial buildings – LED lighting
Fuel economy packages – Light trucks
Fuel economy packages – Cars
Commercial buildings – Combined heat and power
Commercial buildings – CFL lighting
Industrial process improvements
Commercial buildings – New shell improvements
Residential buildings – New shell improvements
Commercial electronics
Cellulosic biofuels
Residential water heaters
Industry – Combined heat and power
Existing power plant conversion efficiency improvements
Coal mining – Methane mgmt
Residential buildings – Shell retrofits
Commercial buildings – Control systems
Conservation tillage
Nuclear new-build
Onshore wind – Low penetration
Manufacturing – HFCs mgmt
Natural gas and petroleum systems management
Active forest management
Afforestation of pastureland
Afforestation of cropland
Coal power plants– CCS rebuilds with EOR
Distributed solar PV
Reforestation
Winter cover crops
Onshore wind – High penetration
Biomass power – Cofiring
Coal power plants – CCS new builds with EOR
Onshore wind – Medium penetration
Commercial buildings – HVAC equipment efficiency
Solar CSP
Residential buildings – HVAC equipment efficiency
Industry – CCS new builds on carbon-intensive processes
Coal power plants – CCS new builds
Coal power plants – CCS rebuilds
Car hybridi-zation
Coal-to-gas shift – dispatch of existing plants
Source: McKinsey analysis

Mr. MARKEY. Thank you, Mr. Manning, very much. Our final witness is Yvette Pena, who is Legislative Director of the Blue Green Alliance, a partnership between labor unions and environmental organizations, comprising more than six million people in support of good jobs and a green economy. We welcome you.

STATEMENT OF YVETTE PENA

Ms. PENA. Thank you. Thank you, Mr. Chairman and members of the committee. I am testifying today, I am afraid David Foster was supposed to testify, so obviously, I am not him. He is our Executive Director. He is very sorry he had to leave. He had a commitment outside of the country.

The Blue Green Alliance is made up of the United Steelworkers, the Sierra Club, the Laborers International Union, the National Resource Defense Council, the Communication Workers of America, and SEIU. This collaboration of labor unions and environmental organizations is based on our common goal to build a clean energy economy, and economy that both creates good green union jobs and combats global warming.

Several weeks ago, in response to the deepening economic and climate crisis, the Blue Green Alliance put forward a policy statement on climate change, the first such statement issued jointly by both labor unions and environmental organizations. The policy statement stressed the importance of including targets that rely on the best scientific evidence in an economy-wide cap and trade system that contains mechanisms to prevent job loss and globally competitive energy-intensive industries. And above all, the statement made clear that comprehensive climate change legislation should focus on the creation and retention of millions of family-sustaining green jobs. I have submitted a copy of our policy statement for the record following my written testimony.

Solving global warming will not be the economic calamity that some are predicting. Done right, the transition to a green economy will be the most important economic development tool of the Twenty First Century. The American Recovery and Reinvestment Act of 2009 took the first step in that direction, with a meaningful down payment on investment in the green economy. But this down payment could be wasted, if we don't continue to make the large scale investments that are necessary to transition the Nation into a clean energy economy.

Policies, such as the strong Renewable Electricity Standard, which is included in the draft bill, are essential in creating a regulatory framework that supports renewable energy, energy efficiency, and new transmission, as they provide important market signals that will attract private investment at the scale necessary to put Americans back to work.

A study released by the Blue Green Alliance on the Renewable Energy Policy Project of component manufacturing in the renewable energy industry found that 850,000 manufacturing jobs could be created with $160 billion of investments in manufacturing.

New wind turbine equipment plans have also been built in communities across the country, including North and South Dakota, Minnesota, Iowa, Pennsylvania, Oklahoma, Colorado, Arkansas,

New York, North Carolina, and other places directly employing thousands of workers.

Comprehensive climate change legislation will also reinvigorate the construction industry, in which 1.9 million people are now out of work. We must make greater investments in both commercial retrofitting and residential weatherization, with the right standards that others have spoken about.

Such energy savings can be put to use to finance a high wage, high road weatherization industry, where livable wages are paid, health care is provided, and essential career and apprenticeship job training opportunities are made available to communities across America.

As members of the committee are fully aware, global warming is a global problem. U.S. climate change legislation must not create perverse incentives for energy-intensive industries to close their U.S. facilities because of rising energy costs and relocate them to countries that do not take effective action to curb emissions. Nor should energy-intensive industries be left vulnerable to imports from countries that do not price carbon in energy-intensive products. In either case, Americans lose jobs and global warming emissions increase.

Among the mechanisms available to resolve the international competitive issue are allowance allocations to energy-intensive industries, border adjustment mechanisms, and globally measurable and enforceable sectoral agreements within the framework of an international treaty.

We are confident that this committee can craft the appropriate combination of these mechanisms to ensure that our domestic manufacturing industries remain both competitive and play their critical role in reducing their own emissions.

Global warming is already destroying the livelihood of workers available. Doing nothing is not an option. Before us are critical choices and decisions. Will we build the clean energy economy and put America's factory and construction workers back on the job? Will we advocate a new development model for developing countries, that emphasizes consumption in their economies, instead of unsustainable trade deficits and hours?

Will we look back a year from now and say that we stood up for our country, our climate, and all humanity when it mattered? Your choices will decide which path we go down as a Nation. I believe that with the vision that has been laid out in the draft legislation, you have already taken steps down the right path for our workers and for our environment.

The Blue Green Alliance and its partner organizations look forward to working with members of the committee as you continue to work on this critical piece of legislation.

Thank you.

[The prepared statement of Mr. Foster follows:]

Testimony of David Foster
Executive Director
Blue Green Alliance

Committee on Energy and Commerce and the Subcommittee on Energy and Environment
Hearing on the American Clean Energy and Security Act of 2009

April 22, 2009

Mr. Chairman, Members of the Committee, My name is David Foster. I currently serve as the Executive Director of the Blue Green Alliance, a partnership of four major unions and two national environmental organizations with over six million members, touching virtually every community in the country. The Blue Green Alliance is specifically made up of the United Steelworkers (USW), the Sierra Club, the Laborers' International Union of North America (LIUNA), the Natural Resources Defense Council (NRDC), the Communications Workers of America (CWA), and the Service Employees International Union (SEIU). This collaboration of labor unions and environmental organizations is based on our common goal to build a clean energy economy — an economy that both creates good green union jobs and combats global warming.

The Blue Green Alliance has become one of America's leading advocates for global warming solutions and good green jobs, and so I am especially pleased to be given the opportunity to testify before the Committee on this critical issue.

Before serving in this capacity, I spent 31 years as a member of the United Steelworkers, and for 16 years, served on the union's International Executive Board as the Director of District 11, a 13-state region based in Minnesota.

Several weeks ago, in response to the deepening economic and climate crises, the Blue Green Alliance put forward a policy statement on climate change — the first such statement with both labor unions and environmental organizations, and for some of our partners, their first public statement on climate change.

The policy statement stressed the importance of including targets that rely on the best scientific evidence and an economy-wide cap-and-trade system that contains mechanisms to prevent job loss in globally-competitive energy-intensive industries. And above all, the statement made clear that comprehensive climate change legislation should focus on the creation and retention of millions of new and existing, family-sustaining green jobs and should finance the transition to a clean energy economy. I have submitted a copy of our policy statement for the record following my written testimony.

The Blue Green Alliance strongly believes that Congress should act this year and pass responsible climate change legislation that will rapidly put Americans back to work with millions of jobs building the clean energy economy and reducing global warming emissions to a level necessary to avoid the worse effects of climate change. Our partners agree that no course of action would be more destructive than to continue the energy policies that drove oil prices to

$140 a barrel in 2008, contributed to skyrocketing food prices and global food shortages, and resulted in unsustainable trade imbalances.

Solving global warming will not be the economic calamity that some are predicting. Done right, the transition to a green economy will be the most important economic development tool of the 21st century.

We were pleased to see many of the Blue Green Alliance principles in the draft climate change legislation. We believe the draft legislation is a step in the right direction to solving climate change and creating jobs.

The creation and retention of millions of new and existing, family-sustaining green jobs, particularly in manufacturing and construction, must be a top priority of climate change legislation. The American Recovery and Reinvestment Act of 2009 took the first step in that direction with a meaningful down payment on investments in the green economy. Within about a month of passage, 180 workers went back to work at Andersen Windows, a local company that makes energy efficient windows.

But this down payment could be wasted if we don't continue to make the large-scale investments that are necessary to transition the nation into a clean energy economy. Policies, such as a strong Renewable Energy Standard (RES) — which is included in the draft bill, are essential in creating a regulatory framework that supports renewable energy, energy efficiency, and new transmission, as they provide important market signals that will attract private investment at the scale necessary to put millions more Americans back to work. A national RES will also diversify our energy supply, guard against price instability, and reduce imports from other countries.

A study released by the Blue Green Alliance and the Renewable Energy Policy Project of component manufacturing in the renewable-energy industry based on a 10-year effort to introduce 185,000 megawatts of renewables — the rough equivalent of a 15 percent RES — found that 850,000 jobs would be created with $160 billion of investments in manufacturing. Economic models for the state of Minnesota show that a federal RES at 15 percent would generate over 18,000 jobs in renewable-component manufacturing, while Pennsylvania would create 42,000; Michigan 34,000; and Wisconsin, 35,000. My home state of Minnesota currently has a 25 percent RES, and is home to Mortenson Construction, one of the nation's leading construction companies specializing in wind-farm installation.

New wind-turbine equipment plants have also been built in communities across the country including in South Dakota, Minnesota, Iowa, Oklahoma, Colorado, Arkansas, New York, North Carolina and other places, directly employing thousands of workers. If you include the number of people employed in component parts manufacturing, installation of turbines, their maintenance and construction, tens of thousands more are employed.

And investments in clean energy technologies don't just result in new plants and start-up companies. Most importantly, they revitalize existing companies, create new products for old equipment, and give our existing manufacturing infrastructure a new lease on life. For example, ATI Casting Services in LaPorte, Indiana, which makes the hubs and bases for wind turbines, at

one point expanded to nearly 300 workers to meet the demand. And Dow Chemical in Midland, Michigan recently announced that it would build a new facility in Michigan to manufacture batteries for the next generation of electric vehicles, bringing with it the potential of more than 800 jobs.

The wind turbines, solar technologies, geothermal and biomass projects to power our country's infrastructure, along with new transmission, energy efficiency initiatives, broadband investments and mass transportation systems, will revitalize our existing manufacturing capacity even further. We need to invest in all of these as a country since a primary goal of climate legislation must be to create jobs here in the United States and not consumer spending in China.

In order to accomplish this goal we must safeguard our investments with appropriate procurement policies. We shouldn't confuse sensible government procurement policies with the trade rules that govern private commerce.

Comprehensive climate change legislation will also reinvigorate the construction industry, in which 1.9 million people are now out of work and the unemployment rate has reached 21 percent. With this grim news, we must make greater investments in both commercial and residential construction. Imagine a 20-year program to retrofit America's buildings and weatherize America's homes to make them as energy efficient as European buildings where energy consumption is half the per capita rate of our country. Such energy savings can be put to use to finance a high-wage, high-road weatherization industry where livable wages are paid, health care is provided, and essential career and job training opportunities are made available to communities across America. Private industry, communities, unions, and workers can all benefit from smart, effective global-warming solutions. And while the issue of auctions still needs to be further defined, it is important that some of the revenue generated from the action also be invested in job creating infrastructure activity that reduces carbon.

While many jobs will be created in areas related to renewable energy and energy efficiency, some jobs in other areas will potentially be lost and communities strained. It is critical that the final climate change bill also has a robust and comprehensive program to provide assistance to workers who are adversely affected by the changes in policy. Workers should not only receive a readjustment allowance, and health care, but also access to employment training.

As members of the Committee are fully aware, global warming is a global problem. U.S. climate change legislation must not create perverse incentives for energy-intensive industries to close their U.S. facilities because of rising energy costs and relocate them to countries that do not take effective action to curb emissions related to products shipped to U.S. markets. Such a result would cost U.S. jobs without curbing local greenhouse gas emissions. Nor should energy-intensive industries be left vulnerable to imports from countries that do not price carbon in energy-intensive products. In either case, Americans lose jobs and global warming emissions increase.

A ton of steel manufactured in the U.S. today results in one ton of carbon emissions. A ton of steel manufactured in China results in 2.5 tons of emissions. It would be a tragedy for both

workers and the environment if our solution to global warming resulted in closing U.S. steel mills and importing needed steel products from China.

Among some of the mechanisms available to resolve the international competitive issue are allowance allocations to energy-intensive industries, border-adjustment mechanisms that level the carbon playing field in energy-intensive industries, and globally measurable and enforceable, sectoral agreements within the framework of an international treaty. We are confident that this committee can craft the appropriate combination of these mechanisms to ensure that our domestic manufacturing industries remain both competitive and play their critical role in reducing their own emissions.

Conclusion

Global warming is already destroying the livelihood of workers everywhere. For example, thousands of Steelworkers who used to make aluminum in the Pacific Northwest have lost their jobs because years of declining snowfalls in the Cascade Mountains meant less water in reservoirs and higher-cost electricity from the mighty dams that Henry Kaiser built more than 60 years ago. Smelters closed because they were unable to afford the higher cost of electricity. These lost jobs are a grim testament to why we can't wait to deal with climate change. Failure to act will mean severe economic consequences.

In Nairobi, where last month I spoke to the United Nations Environment Programme's biennial ministerial, global warming isn't just about lost jobs. It is about starvation and mass migration. What little hope countries like Kenya, or others in the developing world, had of climbing the development ladder out of extreme poverty and into the ranks of the so-called emerging economies, is evaporating as surely as the deserts of Darfur are expanding. That is the price of failing to act on global warming.

Before us are critical choices and decisions.

Will we build the clean energy economy and put America's factory and construction workers back on the job?

Will we advocate a new development model for developing countries that emphasizes consumption in their economies, instead of unsustainable trade deficits in ours?

Will we look back a year from now and say that we stood up for our country, our climate, and all humanity when it mattered?

Your choices will decide which path we go down as a nation. I believe that with the vision that has been laid out in the draft legislation, you have already taken steps down the right path for our workers and for our environment. The Blue Green Alliance and its partner organizations look forward to working with Members of the Committee as you continue to work on this critical piece of legislation.

Thank you.

BLUEGREEN ALLIANCE

POLICY STATEMENT ON CLIMATE CHANGE LEGISLATION

MARCH 2009

In response to deepening economic and climate crises, the Blue Green Alliance and its labor and environmental partner organizations – including the United Steelworkers, Sierra Club, Communications Workers of America (CWA), Natural Resources Defense Council (NRDC), Laborers' International Union of North America (LIUNA) and Service Employees International Union (SEIU) – strongly advocate for domestic energy and climate change legislation that will rapidly put Americans back to work with millions of jobs building the clean energy economy and reducing global warming emissions to a level necessary to avoid the worst effects of climate change. A sound energy and climate change policy can put our country back to work quickly and efficiently and put us on a path for sustained economic growth. No course of action would be more destructive than to continue the energy policies that drove oil prices to $140 a barrel in 2008, contributed to skyrocketing food prices and global food shortages, and resulted in unsustainable trade imbalances.

Global warming and unsustainable energy dependence are the foremost environmental issues of our time; they are also the signature economic issues of our day, providing enormous risks to future GDP growth and unparalleled opportunities to create jobs and launch a different model of economic development.

Within this context, the Blue Green Alliance and its partners urge the passage of comprehensive cap-and-trade climate change legislation in 2009 based on the following principles:

SCIENTIFIC TARGETS: The best scientific consensus must be continuously updated and inform our policies on greenhouse gas emission reductions. Our goal must be to reduce U.S. emissions by at least 80 percent from 1990 levels by 2050. We also support a renewed U.S. effort to forge a global treaty to reduce worldwide emissions by 50 percent by that same date. In order to meet these important 2050 goals, climate change legislation should reduce U.S. emissions significantly below 2005 levels by 2020. Individual BGA partners advocate targets ranging from 14 to 25 percent below 2005 levels by 2020. This would be supplemented with a combination of domestic and international reductions in uncovered sectors (e.g. forestry and agriculture).

ECONOMY-WIDE ARCHITECTURE: Although different sectors of the economy face different regional and international challenges, we believe that our economy is best served by an economy-wide cap-and-trade system. This architecture will best drive the innovation and investment necessary to transform our energy production and consumption systems. For an economy-wide system to work, however, both regional disparities and international competitiveness issues must be addressed. Otherwise, regions of our country most heavily dependent on fossil fuels will be unfairly penalized, and trade-exposed energy-intensive industries will be driven to less regulated countries.

JOB CREATION AND RETENTION: The creation and retention of millions of new and existing, family-sustaining green jobs, particularly in manufacturing and construction, must be a direct goal of climate change legislation. The recent American Recovery and Reinvestment Act of 2009 provided a meaningful down payment on investments in the green economy, saving or creating 3.5 million jobs. But this down payment could be wasted if we don't make the next installments in the clean energy economy at the scale necessary to convert our country to renewable energy. The wind turbines, solar technologies, geothermal and biomass projects to power our country's infrastructure, along with the new transmission, energy efficiency initiatives, broadband investments and mass transportation systems, have the potential to revitalize our existing manufacturing capacity if we safeguard these investments with appropriate procurement policies. The 1.2 million construction workers laid off in the last 18 months will also be called back to work on these projects while, at the same time, we create millions of new job opportunities in retrofitting the nation's building stock.

REGIONAL DISPARITIES, JUSTICE AND EQUITY: Climate change impacts and higher energy costs that may accompany a policy that puts a price on greenhouse gases will affect different sectors of our population and regions of our country unequally. Climate change legislation must provide a variety of mechanisms that offset rising energy costs to low- and moderate-income Americans and adversely impacted regions of the country. Such mechanisms might include energy efficiency programs, energy rebates and dividends, and tax credits and fiscal incentives for investment in the new energy economy.

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International Competitiveness. Global warming is a global problem. U.S. climate change legislation must not cause energy-intensive industries to close their U.S. facilities because of rising energy costs and relocate them to countries that do not take effective action to curb emissions related to products shipped to U.S. markets. Such a result would cost U.S. jobs without curbing global greenhouse gas emissions. Among the mechanisms available to resolve this problem are allowance allocations to energy-intensive industries, border adjustment mechanisms that level the carbon playing field in energy-intensive industries that produce import-sensitive products, and globally measurable and enforceable, sectoral agreements within the framework of an international treaty.

Green-Collar Opportunity. Recent studies by the Center for American Progress and University of Massachusetts have demonstrated that the most commonly needed job skills for global warming solutions are already held by millions of Americans, many of them standing in unemployment lines. Clean energy and global warming solutions will put them back to work. The scope and scale of the work to be done also will provide our country with an historic opportunity to set a new urban and rural social agenda to bring jobs and opportunity to marginalized communities. Climate change legislation should directly link its solutions to a broad agenda for economic opportunity that engages the communities with high unemployment rates first and funds our training and transition needs at a level commensurate with success.

Allowance Allocation. Allowances should be auctioned or used for public purposes, while avoiding windfall profits. This will maximize the investment of public revenues in public "goods" such as creating jobs, minimizing leakage due to international competition, upgrading technology in vital industries, revitalizing research and development, investing in clean energy, broadband and transportation infrastructure, and supporting equity programs that help transition workers and vulnerable communities.

Complementary Regulation. We strongly support an approach to climate change legislation that includes regulatory measures such as standards for power plant emissions, low-carbon fuels, renewable electricity, energy efficiency resources, fuel efficiency and appliance efficiency. Such approaches have proven to be effective market-building tools that attract investment and create jobs.

Research and Development. Investments in research and development are critical to the efficient transformation of our nation to a clean energy economy. R & D investments should include a wide range of technologies, including carbon, capture and sequestration technology.

International Investment. Any effective domestic climate change legislation must recognize our country's opportunity and responsibility to help fund a clean energy economic development model for developing and emerging economies. We recognize that the old model based on extraordinary U.S. trade deficits and energy dependence on the Middle East was both environmentally and economically unsustainable. The transfer of clean energy and energy efficiency technologies and the preservation of the world's significant rain forest carbon sinks must happen in a way that effectively raises international standards of living, protects the rights of indigenous peoples, provides decent work and promotes a consumption model of economic development in the developing world. The results of both technology transfer and rain forest preservation must be measurable, reportable and verifiable.

Adaptation. In both the U.S. and other countries, global warming is already having negative impacts on economies, jobs, communities, natural resources and natural habitats. We recognize that a significant portion of the revenues raised through cap-and-trade legislation in the U.S. must be used for adaptation measures that provide solutions to those immediately impacted by global warming both domestically and internationally.

Financing the Clean Energy Transition. We believe in the basic responsibility of government to lead in funding the transition to a clean energy economy. Cap-and-trade auction revenues are one source of those funds. However, just as in the current financial crisis some banks have been considered essential assets, our atmosphere is "too big to fail." Just as we believe that scientific goals must be continuously reevaluated according to emerging data, so, too, the scope of our investments must be continuously revisited to see if they are adequate to succeed.

Conclusion. We recognize the range of debate within our country today on the targets, timetables, and policy mechanisms to implement comprehensive climate change legislation. We do not claim to have unique solutions, nor to have the only path to successful resolution of the climate crisis. We do, however, share a common conviction that any successful climate change legislation must be guided by two overriding principles -- the best scientific advice on the reduction targets and implementation mechanisms that rapidly put Americans back to work, building the solutions to reach those targets.

The Blue Green Alliance is a national partnership of labor unions and environmental organizations dedicated to expanding the number and quality of green jobs in the United States. Launched by the United Steelworkers and the Sierra Club in 2006, BGA has since grown to include the Communications Workers of America (CWA), Natural Resources Defense Council (NRDC), Laborers' International Union of North America (LiUNA) and the Service Employees International Union (SEIU), uniting more than six million union members and environmentalists in pursuit of good jobs, a clean environment and a green economy.

Mr. MARKEY. We thank you, Ms. Pena, very much. And now, we will turn and recognize Ms. Castor, from the State of Florida.

Ms. CASTOR. Thank you, Mr. Chairman. Thank you all very much for your testimony today. I hear a lot from students and young entrepreneurs, and they are very motivated these days to enter a green jobs field.

What is your best advice for a young person, what should they be studying in school? How should they be preparing? Where are the opportunities today for those jobs?

Mr. MANNING. I would love to start. We have a real issue in this country, in terms of math and science education. And this doesn't just apply to the new economy, the new energy economy. It applies to all of the work that we must do as utilities to keep our own systems reliable.

So, I would have to say off the top that if you are having that conversation, if anyone has the aptitude or the interest to pursue science and—speaking as a retired lawyer, I can offer great respect for mathematicians, for scientists, for engineers, but beyond that, of course, I think what is really significant is that the educational institutions that we now meet with and talk to, they are designing these programs, in terms of design, architecture, engineering, science, that it is very difficult for us to know what we are going to need. The Bipartisan Action Group is meeting again tomorrow on this very issue, trying to figure out what sorts of means they will have, in terms of personnel.

Don't forget also, the average age of an employee within our company is very close to 50. So, when you talk to these people, remind them that there is an entire generation of energy providers who are very close to retirement. So, I think there is a pretty broad scope open to them.

Ms. GORDON. Thank you for the question. I think it is a great one. It is incredibly important to not limit the scope of the notion of what a green job is. Ideally, we would love to see jobs in inventing, making, installing, using, maintaining, operating all of these systems here in this country, and that is a huge range of occupations, and a huge range of areas and sectors. It is one of the reasons it has been hard to count the jobs, because they are so diverse across so many sectors.

I think, I would agree that math and science, math and science are critical not just for engineering, but what we are hearing from the folks, our union partners who are running apprenticeship programs in electrical and in the building trades, is they also need folks to come in with basic math and science. It is an incredibly important skill.

I would also just reiterate what I said earlier, that many of these jobs are jobs that don't need a four year degree, and while we want our young people, who are interested, all the young people who are interested and excited about going to a four year college should be able to do that. But not all young people are in that category.

There is 150,000 dropouts last year in California. The Gates Foundation surveyed them, and found 80 percent of them said if they had had job experience while in school, they would have stayed in school.

And that is an incredibly important statistic, and I think we need to give opportunities to folks who want to go into the trades, opportunities to folks who want to be building hands-on, building these systems that we are talking about.

Ms. BODE. As one of the mainstream, sort of new renewable industry.

Mr. MARKEY. Turn on the microphone, please.

Ms. BODE. We want, am I on? OK, now I am. We represent both the people involved in manufacturing of wind turbines, and there is over 8,000 parts in a wind turbine, as well as those people that develop the wind farms. So, we deal with both, so what we have been trying to do, and are doing through our Education Committee, is developing curricula that will provide the job training, and working with a number of educational institutions, junior colleges, votech schools, as well as four year colleges, to develop the breadth of training that will be necessary for these jobs.

We have, at our Wind Power Conference that will be in Chicago, Illinois the first week in May, we will have approximately 20,000 people attending that conference. We have one of the days of the conference set aside for young people and for people in academics, who want to come in and meet the 1,200 exhibitors who are manufacturer, supply chain folks, as well as developers, to talk with job possibilities. And we are there to talk with them as well.

So, contact us. We are putting together an internship program. We are all about the jobs and the people.

Ms. BODE. And I have another question. It is a bit broader. You know, last week, the Environmental Protection Agency issued its proposed endangerment finding, that follows on the U.S. Supreme Court decision that says EPA has the legal authority and obligation to regulate greenhouse gases.

And you know, if the Congress, if we can't get it together and pass a cap and trade, or an Energy Bill here, it will probably be left to EPA to regulate it. What would that do to green jobs initiatives and to your growing industries?

Mr. MANNING. Again, if I could open. I think we had a strong preference, which is one of the reasons we are very pleased to be included in this panel, we have a strong preference for a legislative response which can provide the kind of flexibility and the investment opportunities that make sense.

We are a very large company. We are a very large industry, all of us collectively. Our preference would be that we come up with a regime, or that you come up with a regime which we can, instead of rules that we can live by, and drive the right kind of investments.

So, Mass. v. EPA, we are very familiar with that case. We are very familiar with the work of the EPA, in terms of regulating what we do as power generators. Our preference would be that we come up with, or that you come up with a set of rules that will address this problem. We are very anxious to get on with it.

Ms. BODE. Thank you.

Mr. MARKEY. Thank you. The gentlelady's time has expired.

Ms. BODE. OK.

Mr. MARKEY. The chair recognizes the gentleman from Michigan, Mr. Upton.

Mr. UPTON. Mr. Manning, we sort of chuckled back here when you said you were very glad to be on this panel. If I were you, I would have asked to have been on panel 2 or 3. I have just a couple questions, and hopefully, will not take my full five minutes.

Ms. Pena, you talked about the Blue Green Coalition and how broad it is, which was exciting to hear. I am a supporter of a renewable portfolio standard. Obviously, the question is what is in the details, what is in the base. I am one that happens to believe that hydro ought to be in there, both old and new. Waste energy, I think, is very important. We see that in my district. A gas line runs right through a landfill, and they provide gas heat or gas for, I believe, 1,200 homes a day from the methane produced from that.

I am a supporter of nuclear, and that is my question for you. We have two nuclear plants in my district. We had the unfortunate incident last fall of having a turbine lose a blade, and it was destroyed. And there are now 500 folks working to repair that turbine. As you can imagine, it is pretty big. That turbine was made in Germany, because we turned the switch from green to red on nuclear, we lost, we have lost a lot of jobs. Among them, I think in your coalition, you talked about the steelworkers.

When my two plants were built, 85 percent of the components of those two plants were built in this country. Because we have not turned on a new plant in a couple of decades, 85 percent of the components are now made someplace else, as we have seen with this turbine. Would your organization support nuclear, with no greenhouse gas emissions, as part of the renewable portfolio standard?

Ms. PENA. We do not have a position on nuclear energy. Some various organizations——

Mr. UPTON. Well, we might be able to convince you.

Ms. PENA [continuing]. Have varying positions on the issue.

Mr. UPTON. I just know that the steelworkers, I believe they are supportive of that. Well, I don't know. It would be great if you could go back to them, because this would really create tens of thousands of jobs, if we are able to do that.

Knowing my time is running out, I am going to not use all my time. Ms. Bode, a question that I have been asking my crew for a long time, and maybe you know the answer.

This proposal, the draft deal, has a 25 percent standard by '25. Obviously, a lot of that is wind. Unlike some people from Massachusetts, I actually support in water, Lake Michigan, though I don't, maybe Mr. Manning, I don't know whether you support it off Nantucket or not. Do you? You do. Do you hear that, Mr. Markey? He supports wind off Nantucket.

Maybe, you will be delegated to panel 5 next time.

Mr. MARKEY. How about wind in Lake Michigan?

Mr. UPTON. I just said that I support that.

Mr. MARKEY. Oh, you do. OK, oh, good.

Mr. UPTON. I do. I do support that.

Mr. MARKEY. Excellent, excellent.

Mr. UPTON. The question, though, that I have for you, Ms. Bode, is we actually, we have some of those green jobs that we've talked about. In my district, we actually make the cap, which weighs 32,000 pounds, on the 80 meter wind turbines. Great, good jobs, in

a little town in my district. Now, they provide, if we end up going to 25 percent, I don't know what the wind component of that will be. I would guess what, 10 to 15 maybe, if we don't include—how much, knowing that today, it is less than 1 percent wind, how much space in America do we need for, how many wind turbines do we need, at 80 meters tall, because they are the most efficient, right?

Ms. BODE. Actually, they are actually going up to 100 feet.

Mr. UPTON. OK. Well, 80 meters. But in essence.

Ms. BODE. One hundred.

Mr. UPTON. How much space do we need, land space do we need?

Ms. BODE. Right now, there are 35 states that are producing, that have wind turbines and wind generation.

Mr. UPTON. Right.

Ms. BODE. In terms of producing wind. In terms of the space to do that, I think, I haven't measured it in terms of half of the state, or part of the state, but I think the footprint is probably less important, in the fact that the wind turbine——

Mr. UPTON. Well, do we need——

Ms. BODE. A wind turbine, put up on land, continues to allow the land to have multiple uses, and in fact, you know, that is, you know, in some respects, that is very different than all——

Mr. UPTON. Do we need——

Ms. BODE [continuing]. Other forms of generation.

Mr. UPTON. But how close do you put these 80 meter jobs together?

Ms. BODE. Well, let us put it this way. In Germany, they have 20 percent penetration, and I think they are very comfortable with the amount of wind turbines they have put up in their country. The same thing with Italy, France, and it is a much smaller space for them to put it——

Mr. UPTON. Again, remember, I am a supporter.

Ms. BODE. Yes.

Mr. UPTON. Do we need the size of Iowa? Do we need the size of—I mean, how much space do we need to generate 10 to 15 percent of our energy from wind?

Ms. BODE. I have no idea.

Mr. UPTON. All right.

Ms. BODE. Well, I mean, but the point is that you do not—you are not taking land out of——

Mr. UPTON. Can you find out and get back to me?

Mr. SHIMKUS. If the gentleman would yield, I have got some stats.

Mr. MARKEY. Tell you what, the gentleman's time has expired, and I can recognize from, if the gentleman wouldn't mind, I can recognize the gentleman from Illinois on his own time.

Mr. SHIMKUS. Then I am not going to use my stats instead of my question.

Ms. BODE. Well, and I would be up to answer to his question, my brilliant staffer, who has a lot more statistics than I do at his fingertips, if I could answer.

Mr. MARKEY. Sure.

Ms. BODE. Apparently, it is, actual land use is 2 to 5 percent of the land covered, which is less than half of the area of Anchorage,

Alaska. So, onshore land use would be approximately 12.3 million acres, but of course, in almost every case, that land has continued to be multiple use.

Mr. UPTON. OK. Understand that. Thank you.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentleman from Illinois.

Mr. SHIMKUS. Let me just add to that, then. Thank you, Mr. Chairman. Take a steel mill that uses 545 million kilowatts per year. It would require roughly 138 wind turbines on roughly 12,443 acres of land, for a total output. However, during peak load at that steel mill, it requires 100,000 kilowatts. For that, you would need roughly 825 turbines on 33,000 acres of land to account for peak load. This wind panacea is just scary.

The President, in his inaugural address, said we will run our factories, manufacturing factories, on wind and solar. Dr. Seuss couldn't write a better line. That is irresponsible. Base load generation will always be major traditional electricity generation, whether that is coal or that is nuclear power, or it is going to be major hydro. Now, renewables can help, and I am probably one of the few Members who climbed a wind turbine, Mr. Chairman. I know you would be shocked that I actually climbed one during my break.

I encourage everybody to visit coal-fired power plants or coalmines. I also did climb all the way up to the top of a turbine, and got a good tour of that. So, we are not anti-this, but for people to propose that we are going to solve our electricity problems and stay competitive worldwide on wind and solar, are being very disingenuous. And so, that is why part of our debate is, in this bill, which has a gaping hole, which is the credit allocation. Are you all comfortable with the fact that there are some folks cutting backroom deals on the credit allocations, and that we are not here discussing the allocation of those credits right now.

Ms. Pena?

Mr. MANNING. If I could——

Mr. SHIMKUS. No, I asked Ms. Pena first.

Mr. MANNING. Oh, I am sorry.

Ms. PENA. Thank you for——

Mr. SHIMKUS. Real quickly. I have only got 2:40, and the chairman's hot on time.

Ms. PENA. And that question will be answered, and obviously, we are having a lot of discussions on it. We need to——

Mr. SHIMKUS. So, you are part of the backroom deals, too.

Ms. PENA. Well, I——

Mr. SHIMKUS. Yes?

Ms. PENA. No, no. I mean, obviously, the chairman has——

Mr. SHIMKUS. No. There is deals being cut right now, so if you are not back there, you had better get back there, because folks are negotiating these credits. Now, we should be discussing these credits out here in the open, so that we can then also score them. So, do you think we should have those out for everyone to see, so we can address the benefits?

Ms. PENA. I believe we need allocations, and we need investments——

Mr. SHIMKUS. How about transparency?

Ms. PENA [continuing]. Manufacturing——

Mr. SHIMKUS. How about transparency? You all are for transparency, aren't you?

Ms. PENA. There is transparency in this process, sir.

Mr. SHIMKUS. There is. So, can you tell me the credit allocation right now?

Ms. PENA. It is being discussed.

Mr. SHIMKUS. And who is discussing it?

Ms. PENA. The chairman, the various constituencies. The——

Mr. SHIMKUS. In the backrooms. In the backroom, which I have not been invited to yet. That is not dealing and helping me on coal production and electricity generation.

Ms. PENA. I can only answer what we believe, and——

Mr. SHIMKUS. Mr. Manning?

Mr. MANNING. Our position has been very public, in terms of allocation. We believe that——

Mr. SHIMKUS. Should there be, let me ask this question. My time is—should there be 100 percent auction? Ms. Pena, yes or no, 100 percent auction? Yes or no.

Ms. PENA. We need to continue to discuss that.

Mr. MANNING. We need to move promptly to——

Mr. SHIMKUS. 100 percent auction, yes or no.

Mr. MANNING. Ultimately, yes.

Ms. SHIMKUS. Yes. Ms. Bode, 100 percent auction. Should we have 100 percent auction? Ms. Bode?

Ms. BODE. I don't know what is being discussed in the back rooms. I am sorry.

Mr. SHIMKUS. No, the question is should we have 100 percent auction of credits?

Ms. BODE. Oh, OK.

Mr. SHIMKUS. The question is, should we have 100 percent auction of credits? Aren't these important questions? Mr. Chairman?

Ms. BODE. Yes.

Mr. SHIMKUS. Well, did you invite the panel here?

Mr. MARKEY. I don't think there should be 100 percent.

Mr. SHIMKUS. I am asking the panel that you have invited.

Mr. MARKEY. OK. Please.

Mr. SHIMKUS. Should they be answering? Should there be 100 percent auction of credits?

Ms. BODE. I don't know the answer to your question.

Mr. SHIMKUS. OK. Next.

Ms. GORDON. I think we, our alliance hasn't come to a specific position on this, but we definitely believe there needs to be a transition period, where——

Mr. SHIMKUS. Mr. Ackerman, please.

Ms. GORDON. Ultimately, yes.

Mr. SHIMKUS. Should there be 100 percent—someone.

Ms. GORDON. But there needs to be a transition period, that includes some allocations, and we need to make sure we invest auction proceeds back into the clean energy economy.

Mr. SHIMKUS. Mr. Ackerman.

Mr. ACKERMAN. Well, I am in favor of 100 percent auction.

Mr. SHIMKUS. Thank you. Thank you.

Mr. ACKERMAN. And I am in favor of transparency in making these deals.

Mr. SHIMKUS. Thank you.

Mr. ACKERMAN. I think the question of is there transitional assistance needed is a separable question.

Mr. SHIMKUS. Right. But we should be discussing these credits. If we move to markup of a bill on Tuesday, and we don't have the credit allocation, that will pose a question, Mr. Chairman, one that you asked in past Energy Bills, of who is writing the bill in the back room. And with that, I yield back my time.

Mr. MARKEY. I thank the gentleman very much. And I thank all of the members of the committee for this historically long hearing, and you don't hear many witnesses ever say thank you for inviting me this evening to testify. As one of our witnesses——

Ms. BODE. Mr. Markey.

Mr. MARKEY. Yes.

Ms. BODE. I just wanted a point of personal privilege. I wanted to share the fact that my brother and sister-in-law are here from Carlisle, Massachusetts. They are in the tiers with their two daughters.

Mr. MARKEY. Where are they, please? I would love to see them, and welcome from Carlisle.

Ms. BODE. And this is the first Congressional hearing they have ever been to, and so, I just wanted to make sure that everyone knew that they were here.

Mr. MARKEY. Hopefully they weren't here at—Carlisle is like the aristocracy of Massachusetts. So, thank you so much for being here today, and your sister-in-law did a fantastic job here today.

Tomorrow morning, by the way, our first hearing is on the allocation policies of carbon credits, in order to assist and benefit consumers, and we will have seven witnesses, beginning at 9:30 tomorrow morning, to begin the discussion of carbon credits and its implementation, in a way that will protect consumers in America.

Again, we thank all of you for your patience today, and for your tremendous contributions to this process. Thank you.

This hearing is adjourned.

[Whereupon, at 6:40 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN - 9 2009

OFFICE OF CONGRESSIONAL AND
INTERGOVERNMENTAL RELATIONS

The Honorable Henry A. Waxman
Chairman
Committee on Energy and Commerce
U.S. House or Representatives
Washington, DC 20515

Dear Mr. Chairman:

Thank you for the opportunity to respond to questions for the record that followed an April 22, 2009 hearing entitled "Legislative Hearing Regarding the American Clean Energy and Security Act." I hope the information attached will be helpful to you and members of the Committee.

If you have any further questions, please contact me or your staff may contact Diann Frantz in my office at (202) 564-3668.

Sincerely,

Joyce Frank
Acting Associate Administrator

EPA Responses to Questions for the Record from April 22, 2009 Hearing

1.a. What are your thoughts on how EPA will measure and evaluate foreign competitors' greenhouse gas emissions?

In order for the President to make a determination that a US sector is still at risk of carbon leakage under section 767 of the bill as introduced, EPA may need to assess the energy or greenhouse gas intensity of other countries. Among the sources of information that EPA would use for that purpose are the greenhouse gas inventories that are required of all countries under the United Nations Framework Convention on Climate Change (UNFCCC). As part of its position for the upcoming Copenhagen meeting in December, the United States has stated that all countries, except the least developed countries, should be required to provide greenhouse gas inventories on an annual basis (as developed countries currently do).

1.b. If a nation has established a comparable greenhouse gas reduction program, how will that program be evaluated in terms of reliability of compliance?

In 2007, the UNFCCC Parties agreed to address consideration of nationally appropriate mitigation action that is measureable, reportable, and verifiable. Common procedures and protocols and institutions exist for developed countries to produce timely and transparent inventories. Additional considerations may be necessary in some cases; for example, in some developing countries an assessment will need to balance the necessity of a rigorous measurement reporting and verification system with the reality of resource limitations in the developing world. However, by combining capacity building with aspects of established institutions, we believe an acceptable framework can be established globally that will provide the United States with information to be used in evaluating other countries' compliance with their domestic programs.

2.a. In the draft bill, the EPA is charged with establishing an offset credit program for carbon dioxide equivalent emissions. Northern Michigan has the potential to supply reforestation or afforestation projects under an offset program, but we also have large timber companies, as well as large pulp and paper companies that are major employers in the district. How the offset program is structured can determine whether it will help or hurt my district and many others across the country, and I want to know what your thoughts are on restricting the end use of forestry products from forestry-offset sites? In other words, can a landowner who participates in the offset program still market wood products for use in construction while complying with the EPA offset requirements?

We anticipate that in the case of forest management, a landowner opting to participate in the offset program could still continue to market wood products while also generating offset credits. The forest sector provides a number of opportunities to help mitigate climate change. For the working forests of large pulp and paper companies, offsets could potentially be generated through improved forest management. Forest management activities, such as lengthening harvest rotation age, enhancing tree density

in understocked stands, or improving felling practices, could increase carbon stocks and/or reduce emissions. To participate in the offset program, the practices applied to produce those wood products would need to be improved above and beyond the business-as-usual practices. In the case of crediting the carbon stored in the wood products themselves, we know, through our work with the US Forest Service, that carbon can be stored in wood products for long periods of time, but we have not yet explored how such storage could be included in a crediting system.

3.a. Is EPA's movement toward regulating mobile source greenhouse gas emission realistic?

Yes, it is realistic to move forward on regulating greenhouse gas emissions. As President Obama announced on May 19, 2009, the Administration plans to move forward on vehicle greenhouse gas and fuel economy standards for the 2012 through 2016 model years.

3.b. Have you consulted with the Dept. of Transportation on your plan to regulate greenhouse has emissions, and its impact on the current Corporate Average Fuel Economy (CAFE) standards that the Dept. of Transportation administers?

Yes, EPA and DOT have worked closely together and recently released, on May 19, a notice of intent to propose a joint rulemaking on a coordinated approach for greenhouse gas and fuel economy standards for 2012 through 2016.

4.a. As the bill is currently written, the EPA will have authority to regulate the greenhouse gas emissions of engines or vehicles defined as "nonroad vehicles." This regulation will cover everything from tractors and bulldozers to snowmobiles and lawnmowers unless the EPA deems it inappropriate. What criteria will EPA use to determine which engines are regulated?

The Agency would consider the relative contribution of all nonroad classes or categories to GHG emissions and the costs and technological feasibility for achieving reductions in each category before determining whether to establish standards, and if so, what types of engines to regulate. Any regulation of greenhouse gas emissions from nonroad sources under the bill, if passed, would be issued through rulemaking, which would include an opportunity for public comment on any proposed standards.

4.b. What will the expected costs be to industry and consumers from these potential regulations?

The Agency has not yet determined which categories should be regulated under the bill, if passed. EPA would need to assess potential costs as those determinations are made and as the structure and stringency of the standards are developed.

5.a. Under the SmartWay Transportation Efficiency Program, how does EPA differentiate between companies with their own employees and trucks doing

shipping as opposed to companies that contract out that work in terms of meeting their energy and greenhouse gas performance?
5.b. Are companies with integrated operations penalized in terms of efficiency and emission standards?

The goal of the SmartWay program is to reduce GHGs from goods movement, primarily by working with carriers and shippers. Section 223 in the American Clean Energy and Security Act would authorize EPA to develop the SmartWay Transport Efficiency Program to develop enhanced measurement protocols and tools to help shippers and carriers evaluate their energy and GHG performance; these protocols and tools would reflect the unique characteristics of carriers and shippers and their energy- and GHG-saving opportunities.

Under the current SmartWay Transport Program, companies with integrated operations are not penalized in terms of efficiency or emission standards. The programs that EPA's SmartWay program has constructed to date create a level playing field for all freight companies and account for all GHG emissions associated with goods movement. Specifically, companies with their own employees and trucks as well as companies that contract out that freight work would each have to account for all of the GHG emissions associated with their freight activities. EPA envisions that a Smartway Transportation Efficiency Program defined by the legislation would also account for all GHG emissions associated with moving goods.

6. In the President's Fiscal Year 2010 budget proposal, he indicated his desire to have a large portion of projected revenue from a cap-and-trade program to be devoted toward a long-term extension of the Make Work Pay tax credit to avoid families having projected increased energy costs. At the existing rate of $400 per individual and $800 per couple, is this level of tax relief sufficient to offset what you believe will be the projected increased costs of energy under a cap-and-trade program? I have seen reports of projected, annual per household carbon costs anywhere from $140 in EPA's study to $300 in a study done by MIT and $1600 from the Congressional Budget Office. With my district requiring more energy usage in terms of heating and transportation as well as deriving nearly all our power from coal-fired power plants, I want to know the Administration's view on mitigating costs for those least able to pay.

EPA believes that change in projected annual per-household consumption is the best measure of the cost that a cap and trade program would impose on consumers. Based on preliminary analysis of the introduced Waxman-Markey bill, the Agency currently projects that the cap and trade portion of the bill would reduce annual per-household consumption by an average of no more than $140 on a net present value basis over the 2010 to 2050 time period. This relatively modest number reflects the assumption made in this analysis that the bulk of the allowance value from the program would be returned to the people as a lump-sum rebate; in other words, the $140 estimate is net of any reimbursement of auction revenue back to consumers. Returning the auction revenues to

households would enable consumers to decide how best to use the value created in the program, for example, to buy more energy efficient light bulbs, to pay for electricity bills, or to use on the consumption of other goods and services. Furthermore, while the bill does not specify a particular method for using the value of allowances, returning the revenues in this fashion could make the median household, and those living at lower ends of the income distribution, better off than they would be without the program. However, a policy that failed to return these revenues to consumers would lead to substantially larger losses in consumption. A long-term extension of the Make Work Pay tax credit would be one way to return these revenues to consumers that would be consistent with EPA's analysis.

THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

June 30, 2009

The Honorable John Dingell
Chairman Emeritus
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Dingell:

Thank you for your letter regarding follow-up questions concerning my April 22 testimony before the Energy and Commerce Committee. I am pleased to respond to your questions.

1. As you know the current authorization for Section 136 is $25 billion. How many applications has the Department of Energy received for this program? Of these applications, what is the total amount of funding that has been requested? Does this program have adequate funding to meet the demand? If so, explain why. If no, please explain why.

   Answer: The lead agency for the implementation of Section 136 of the Energy Independence and Security Act is the Department of Energy. I defer to Secretary Chu on these questions.

2. EPA is moving forward with the endangerment finding for greenhouse gases. Regulating greenhouse gases under the Clean Air Act, in my opinion, will result in a glorious mess. Do you believe regulation under existing law is the best way to move forward? If so, please explain why. If no, please explain why.

   Answer: The President has called upon Congress to pass comprehensive greenhouse gas legislation. I look forward to working with EPA and Congress to develop this legislation. A legislative approach to regulating greenhouse gas emissions that meets the President's requirements would be more efficient than regulating greenhouse gas emissions under existing law.

3. The American Clean Energy and Security Act would give authority of regulating greenhouse gases back in the hands of Congress as was the original intention in the Clean Air Act. Do you support Congress passing comprehensive climate change legislation as an alternative to regulation under the Clean Air Act? If so, please explain why. In no, please explain why.

   Answer: The President strongly supports passing comprehensive climate change legislation. The role played by existing law will depend, in part, on the specifics of the legislation that Congress passes.

4. As you know, General Motors and other domestic automobile companies have made considerable progress in developing hybrid-electric cars, including the Chevy Volt; however, the first Volt out of the factory was powered by a battery made in Korea. This is largely because the Korean government subsidizes research and development for technologies like advanced batteries. We in the United States do so to a much lesser degree, and we change the focus of our research with every new Administration. What is the role of the government in stimulating new technology and assisting its advancement? What do you think must be done to stimulate technology of the American industry so that Chevy Volts and other American-made hybrid-electric cars will drive out of the factory on American-made batteries?

   Answer: I believe that the Federal Government can play a useful role in stimulating the development of new technologies, such as advanced batteries, provided it is done in a manner consistent with U.S. international obligations. As you know, with the support of the Administration, Congress appropriated $2 billion to the Department of Energy under the American Recovery and Reinvestment Act to fund grants to improve battery technology.

It was a pleasure to see you and all of my former congressional colleagues at the hearing. I look forward to working with you to craft and implement an effective climate change law. If I can provide additional information or assistance, please feel free to call me.

Sincerely yours,

Ray LaHood

DuPont
1007 Market Street
Wilmington, DE 19898

Charles O. Holliday, Jr.
Chairman of the Board

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May 28, 2009

The Honorable Henry Waxman, Chairman
U.S. House of Representatives
Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515

Representative Bart Stupak
U.S. House of Representatives
2268 Rayburn House Office Building
Washington, DC 20515

Dear Mr. Chairman and Representative Stupak:

Thank you for the opportunity to appear at your April 22, 2009 hearing regarding the American Clean Energy and Security Act. Congratulations on the subsequent passage of the bill out of your Committee. I look forward to working with you as the bill goes forward in the legislative process.

Below please find responses to the follow-up questions contained in your letter of May 14.

Q. Iron ore is one of the largest industries in Michigan's Upper Peninsula. As you all know, Congress passed an economic stimulus bill that increased infrastructure funding, to encourage the construction of bridges, roads, and other projects, which I hope will make sure the employees at our mines have work and can avoid future layoffs. But, this Committee is currently debating a global warming bill that will add costs to steel production facilities. If the iron ore industry is excluded from a rebate program, that's just going to pass additional costs on to trade exposed industries, defeating the purpose of the rebate program. Steel is a covered entity eligible for rebates due to their energy intensity, but do you believe that inputs or feedstock for later products, in this case iron ore, should also be eligible for rebates? What about other activities like mining?

A. While I am not familiar with the specifics of the iron and steel value chain, as a general matter the provisions of a climate bill need to address competitive disadvantages for US companies that may exist until other nations take action on climate.

Q. As major consumers or producers of energy, as well as operating companies with sizeable workforces, how will this bill affect your businesses? Have you conducted cost estimates for your industries? What figures have you come up with in terms of reductions in revenue through higher energy costs?

A. **DuPont is a very diverse company. We make many different products with multiple end use markets. Each of those markets will respond differently to action on climate. Combine that with the uncertainty of costs in future energy markets and we are not really able to estimate the effects of climate legislation in quite the quantified manner a utility might. However, on balance we do believe that sound climate legislation can be a net positive for our company, employees and shareholders.**

Q. Have your companies analyzed the impact of not only a cap-and-trade program, but the energy efficiency and renewable electricity standards being proposed in this bill? Are those additional standards, beyond the cap-and-trade program, helpful or harmful in your transition to a lower carbon footprint?

A. **DuPont strongly supports the cost effective generation and use of renewable energy. We are a founding member of the World Resource Institute's Green Power Market Development group, intended to help get the renewable power market to scale. We employ a substantial amount of renewable energy in our own operations. We also supply key materials into a variety of renewable power generation and storage technologies. Renewable portfolio standards have worked well in states with suitable capacity for generating renewable electricity. As a general matter we believe that cap and trade is a more economically efficient tool for expanding the generation and use of renewable electricity, and that the decision whether to combine portfolio standards with cap and trade is best made at the state level.**

Sincerely,

Charles O. Holliday, Jr.

NATURAL RESOURCES DEFENSE COUNCIL

May 27, 2009

Honorable Henry A. Waxman
Chairman
Energy and Commerce Committee
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515-6115

Dear Chairman Waxman:

Thank you for the opportunity to testify at the "Legislative Hearing Regarding the American Clean Energy and Security Act." Enclosed please find my response to a question from Rep. Stupak following the hearing.

Sincerely,

Frances Beinecke

Frances Beinecke
President

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Question from Mr. Stupak:

1. *Iron ore mining is one of the largest industries in Michigan's Upper Peninsula. As you all know, Congress passed an economic stimulus bill that increased infrastructure funding, to encourage the construction of bridges, roads, and other projects, which I hope will make sure the employees at our mines have work and can avoid future layoffs. But, this Committee is currently debating a global warming bill that will add costs to steel production facilities. If the iron ore industry is excluded from a rebate program, that's just going to pass additional costs on to trade exposed industries, defeating the purpose of the rebate program. Steel is a covered entity eligible for rebates due to their energy intensity, but do you believe that inputs or feedstock for later products, in this case iron ore, should also be eligible for rebates? What about other activities like mining?*

Response:

We support the concept of output-based rebates for firms in sectors that are both energy-intensive and trade-exposed as a means to prevent leakage of domestic production, jobs, and emissions. We want to work with members of Congress to refine these provisions as the bill moves forward. Those provisions create eligibility criteria and procedures for determining whether to include industrial sectors and subsectors. We support including sectors including the iron ore mining industry in this program if they meet those criteria and procedures.

Alcoa

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May 28, 2009

The Honorable Bart Stupak
Member
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20515

Dear Sir

Following are responses to written questions for the record you posed in conjunction with my appearance before the Subcommittee on Energy and Environment on April 22, 2009 at the hearing entitled "Legislative hearing regarding the American Clean Energy and Security Act".

Yours sincerely,

Meg McDonald
Director Global Issues
Alcoa Inc

The Honorable Bart Stupak

1. *Iron ore mining is one of the largest industries in Michigan's Upper Peninsula....If the iron ore industry is excluded from a rebate program that's just going to pass additional costs to trade exposed industries defeating the purpose of the rebate program. Steel is a covered entity eligible for rebates due to their energy intensity, but do you believe that inputs or feedstock for later products, in this case iron ore, should also be eligible for rebates? What about other activities such as mining?*

   Answer:

   Industry sectors or activities should be determined as energy intense and trade exposed according to clear cut objective criteria. Inclusion of additional activities and sectors should not dilute the allowance pool for energy intense trade exposed sectors and activities and thereby be at the expense of the treatment of those sectors and activities.

2. *As major consumers or producers of energy, as well as operating companies with sizeable workforces, how will this bill affect your businesses? Have you conducted cost estimates for your industries? What figures have you come up with in terms of reductions in revenue through higher energy costs?*

   Answer:

   The degree of material impact and costs depends on a number of critical factors, including the extent of allocation of free allowances, the cost of allowances, which in turn is determined by the stringency of the cap and the suite of cost containment measures in the legislation and the speed with which a global accord comes into force that removes competitiveness impacts.

3. *Have your companies analyzed the impact of not only a cap-and-trade program, but the energy efficiency and renewable electricity standards being proposed in this bill? Are those additional standards, beyond the cap-and –trade program, helpful or harmful in your transition to a lower carbon footprint?*

   Answer:

   The degree of material impact and cost of energy efficiency and renewable electricity standards depends on a number of critical factors, including the geographic variability of their applicability, the extent to which those measures increase the cost of energy to our operations across the various regions in which Alcoa has its operations

NRG Energy, Inc.
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Princeton, NJ 08540

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Fax: 609.524.4501

May 28, 2009

The Honorable Henry Waxman
Chairman
House Energy and Commerce Committee
2125 Rayburn House Office Building
Washington, DC 20515 - 6115

RE: Legislative Hearing Regarding the American Clean Energy and Security Act

Dear Chairman Waxman:

Attached please find NRG Energy's responses to the questions raised by members of your committee, which you forwarded to my attention on May 14th. I appreciate the opportunity to appear before the Subcommittee on Energy and Environment on April 22, 2009.

Sincerely,

David Crane
President & CEO

cc: Early Green, Chief Clerk, Energy and Commerce Committee

The Honorable Bart Stupak

NRG respectfully offers the following answers to these questions:

1. **Iron ore mining is one of the largest industries in Michigan's Upper Peninsula. As you all know, Congress passed an economic stimulus bill that increased infrastructure funding, to encourage the construction of bridges, roads, and other projects, which I hope will make sure the employees at our mines have work and can avoid future layoffs. But, this Committee is currently debating a global warming bill that will add costs to steel production facilities. If the iron ore industry is excluded from a rebate program, that's just going to pass additional costs on to trade exposed industries, defeating the purpose of the rebate program. Steel is a covered entity eligible for rebates due to their energy intensity, but do you believe that inputs or feedstock for later products, in this case iron ore, should also be eligible for rebates? What about other activities like mining?**

Iron and steel clearly are trade exposed energy intensive industries, and taconite production is also subject to intense international competition and is highly energy intensive. While NRG does not provide electric service in taconite producing regions, we understand that historically roughly 7% of taconite production costs have been associated with fuel and 15% have been associated with electricity.

Under the Waxman-Markey bill, production costs in the electricity sector will likely increase due to the need for electric generators to purchase allowances to cover their greenhouse gas emissions. Customers should have their exposure to such increased costs mitigated to a large degree by the bill's provision that electric utilities will get roughly 30% of all allowances and, with the oversight of their state, municipal or cooperative regulators, pass through the financial benefit as an offset to their retail customers' rates. This should significantly mitigate increased electricity costs for taconite producers.

Our view on whether additional allowances should be provided to energy intensive, trade-exposed industries is that, to the extent a national climate policy creates additional costs for such industries that cannot be passed through to customers, they should receive allocations based on the net incremental costs that cannot be passed through in order to avoid or at least mitigate the risk of shifting production and emissions from the U.S, to competing industries in countries that have not committed to an internationally recognized reduction in GHG-emissions.

2. **As major consumers or producers of energy, as well as operating companies with sizeable workforces, how will this bill affect your businesses? Have you conducted cost estimates for your industries? What figures have you come up with in terms of reductions in revenue through higher energy costs?**

NRG is a producer of electric power. Our view is that this bill will provide regulatory clarity and strong incentives for us to deploy low and no-carbon electric generation equipment, such as new nuclear power, coal with carbon capture and sequestration (CCS) and solar power over time, in a

manner that will allow us to transition to an environmentally and economically sustainable generation portfolio. The incentives include both negative consequences for the failure to act, and positive opportunity if we do act, e.g. by aggressively building new low / no carbon generation technology. For example, the bill's transitional allocations to merchant coal generators will initially buffer most, but not all, of the negative impact on our coal fired fleet. This will allow us to continue to allocate a positive cash flow in manners that support aggressive investment in low / no carbon facilities. But as these transitional allocations phase out late in the 2020's, we will face a highly challenging economic situation if we have not augmented and supplanted our coal-based fleet with a competitive portfolio of low and no carbon technologies. Meanwhile, the financial assistance in the bill for new technologies, such as CCS, will help us address the challenge of deploying such emerging technologies while their costs and risks exceed those of established alternatives.

Our analysis of the cap and trade portion of the Waxman – Markey bill shows that it will initially have roughly a neutral impact on our bottom line, which will get increasingly negative starting late in the next decade, unless we succeed in achieving our goals of deploying a significant amount of new nuclear, CCS, solar and other renewable energy. We believe the bill's provisions regarding cap and trade and CCS deployment will help ensure that these low / no carbon technologies can earn a competitive return during and after the transitional period.

3. **Have your companies analyzed the impact of not only a cap-and-trade program, but the energy efficiency and renewable electricity standards being proposed in this bill? Are those additional standards, beyond the cap-and-trade program, helpful or harmful in your transition to a lower carbon footprint?**

Our analysis of the bill's RES and efficiency provisions indicate mixed results for companies like ours. On the one hand, these provisions will assist us in our efforts to deploy renewable and select "smart grid" technologies, and could boost electric car development and production. These provisions will help us grow. On the other hand, too big of an RES and extreme subsidies for efficiency could depress wholesale market power prices, while increasing the rates for retail consumers who must pay for these subsidies through the retail, not the wholesale, portion of their electric bills. This would tend to reduce our earnings and reduce our ability to invest aggressively in these new technologies. In addition, too aggressive an RES and efficiency mandate could become a very expensive way for the United States to reduce emissions of carbon dioxide and other greenhouse gases, because it would exclude certain low cost, zero or low carbon options such as nuclear power and coal with CCS. However, we believe the compromises in the current bill regarding the RES provisions will help reduce the potential for such negative effects.

Honorable Jerry McNerney
c/o Earley Green, Chief Clerk
Room 2125
Rayburn House Office Building
Washington, DC 20515-6115

Dear Mr. McNerney:

In response to the following question you put forward regarding the application of prevailing wage:

> "Federal support provided by this legislation will help spur renewable energy construction projects and create millions of jobs. I was proud to introduce a bill, now part of this discussion draft, which will provide funding for green job training. As with jobs in every sector, however, I believe that basic labor protections are important. The federal government has consistently applied Davis-Bacon prevailing wages to ensure that construction workers are paid community-standard wages when they perform federally-assisted construction. Do you support the application of Davis-Bacon prevailing wages to federally-assisted construction for renewable energy projects, whether that assistance is in the form of grants, loans, tax credits, or another financing mechanism?"

The Apollo Alliance has always supported the application of prevailing wage and equivalent wage standards to all jobs created by federal investments in renewable energy and energy efficiency. Indeed, we define green-collar jobs as career-track jobs which pay a family-supporting wage.[1] Prevailing wage requirements are essential in ensuring that jobs created are quality jobs.

An Economic Policy Institute report, released in July of 2008 and entitled *Prevailing Wages and Government Contract Costs*, found strong evidence of the benefits of prevailing wage. The report surveyed a number of studies, and found that payment of prevailing wage generates social benefits from higher wages, results in better workplace safety due to increased training and retention of experienced workers, and elevates worker skills through expansion of apprenticeship opportunities. The report also found that prevailing wage regulations do not increase government contracting costs, and in fact tend to increase state tax revenues.

We strongly believe that prevailing wage should apply to all construction projects supported by federal grants, loans, tax credits, and other financing mechanisms authorized by the American Clean Energy and Security Act of 2009. This is the best way to guarantee the quality of jobs created by these investments, and maximize the benefits for American workers and their families.

We thank you for your continued support of basic labor protections, and for your work on this bill.

Sincerely,

Kate Gordon
Co-Director

[1] Apollo Alliance, *Green-Collar Jobs in America's Cities* (2007). http://apolloalliance.org/downloads/greencollarjobs.pdf

May 27, 2009

The Honorable Henry A. Waxman
Chairman
House Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, D.C. 20515-6115

Dear Chairman Waxman:

Thank you for the opportunity to testify before your Committee last month on behalf of the members of the American Wind Energy Association (AWEA). I sincerely appreciated the opportunity to explain the critical role a federal renewable electricity standard (RES) can play in creating good jobs here at home and expanding domestic manufacturing while protecting consumers. I also want to personally thank you for the inclusion of an RES in H.R. 2454 and for defending the RES from attacks during the Committee markup last week.

Per your follow-up letter of May 14, 2009, below is my response to the question submitted for the record by the Honorable Jerry McNerney:

> Q: Federal support provided by this legislation will help spur renewable energy construction projects and create millions of jobs. I was proud to introduce a bill, now a part of this discussion draft, which will provide funding for green job training. As with jobs in every sector, however, I believe that basic labor protections are important. The federal government has consistently applied Davis-Bacon prevailing wages to ensure that construction workers are paid community-standard wages when they perform federally-assisted construction. Do you support the application of Davis-Bacon prevailing wages to federally-assisted construction for renewable energy projects, whether that assistance is in the form of grants, loans, tax credits, or another financing mechanism?
>
> AWEA Answer: "As a diverse association with more than 2,000 members, AWEA has not taken a position on this issue."

Thank you again for the wonderful opportunity to appear before your Committee. If I or AWEA can be of any assistance to the Committee in the future, please don't hesitate to ask.

Warm regards,

Denise A. Bode

Denise A. Bode
CEO
American Wind Energy Association

nationalgrid

David J. Manning
Executive Vice President
US External Affairs

May 27, 2009

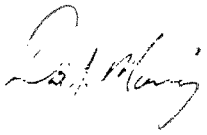
The Honorable Jerry McNerney
Committee on Energy and Commerce
United States House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

Dear Congressman McNerney:

I appreciated the opportunity to appear before the Energy and Environment Subcommittee on April 22, 2009 at the hearing entitled "Legislative Hearing Regarding the American Clean Energy and Security Act" to discuss our views on energy efficiency as an integral part of an overall comprehensive climate change and energy policy.

Attached please find our response to your follow-up question to that hearing. If we can be of further assistance, please don't hesitate to contact me directly or Rick Carter, our Washington representative, at 202-783-7959.

Sincerely,



cc: The Honorable Henry Waxman
Chairman, Committee on Energy and Commerce

The Honorable Edward Markey
Chairman, Subcommittee on Energy and Environment

The Honorable Joe Barton
Ranking Member, Committee on Energy and Commerce

The Honorable Fred Upton
Ranking Member, Subcommittee on Energy and Environment

One MetroTech Center, Brooklyn, NY 11201-3850
T 718/403 3323 ■ F. 718/403 1093 ■ david manning@us.ngrid.com ■ www.nationalgrid com

**ANSWERS OF DAVID MANNING,
EXECUTIVE VICE PRESIDENT, NATIONAL GRID,
TO QUESTIONS FROM THE APRIL 22, 2009 HOUSE ENERGY AND
ENVIRONMENT SUBCOMMITTEE LEGISLATIVE HEARING REGARDING
THE AMERICAN CLEAN ENERGY AND SECURITY ACT**

FROM REPRESENATIVE JERRY MCNERNEY

1. Federal support provided by this legislation will help spur renewable energy construction projects and create millions of jobs. I was proud to introduce a bill, now part of this discussion draft, which will provide funding or green job training. As with jobs in every sector, however, I believe that basic labor protections are important. The federal government has consistently applied Davis-Bacon prevailing wages to ensure that construction workers are paid community-standard wages when they perform federally-assisted construction. Do you support the application of Davis-Bacon prevailing wages to federally-assisted construction for renewable energy projects, whether that assistance is in the form of grants, loans, tax credits, or another financing mechanism?

National Grid is compliant with the requirements set forth in the Davis Bacon Act and is aware of the underlying principles concerning such legislation regarding prevailing wages. We are committed to facilitating development of new technologies and technology applications, renewable energy projects and providing customers with opportunities and incentives to be more energy efficient. National Grid supports the development of new markets, and, as stated in our testimony, believes energy efficiency can compete as a resource to reduce impacts of climate change, reduce energy consumption and address other environmental concerns. At the same time, companies like National Grid need to make sure requirements to participate in these emerging areas mesh with current practices.

ONE HUNDRED ELEVENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115

MAJORITY (202) 225-2927
FACSIMILE (202) 225-2525
MINORITY (202) 225-3641

energycommerce.house.gov

May 14, 2009

Mr. David Foster
Executive Director
Blue Green Alliance
2929 University Ave. SE #208
Minneapolis, MN 55414

Dear Mr. Foster:

Thank you for appearing before the Subcommittee on Energy and Environment on April 22, 2009, at the hearing entitled "Legislative Hearing Regarding the American Clean Energy and Security Act".

Pursuant to the Committee's Rules, attached are written questions for the record directed to you from certain Members of the Committee. In preparing your answers, please address your response to the Member who submitted the questions and include the text of the question with your response, using separate pages for responses to each Member.

Please provide your responses by May 28, 2009, to Earley Green, Chief Clerk, in Room 2125 of the Rayburn House Office Building and via e-mail to Earley.Green@mail.house.gov. Please contact Earley Green or Jennifer Berenholz at (202) 225-2927 if you have any questions.

Sincerely,

Henry A. Waxman
Chairman

Attachment

The Honorable Jerry McNerney

1. Federal support provided by this legislation will help spur renewable energy construction projects and create millions of jobs. I was proud to introduce a bill, now part of this discussion draft, which will provide funding or green job training. As with jobs in every sector, however, I believe that basic labor protections are important. The federal government has consistently applied Davis-Bacon prevailing wages to ensure that construction workers are paid community-standard wages when they perform federally-assisted construction. Do you support the application of Davis-Bacon prevailing wages to federally-assisted construction for renewable energy projects, whether that assistance is in the form of grants, loans, tax credits, or another financing mechanism?

BLUEGREEN ALLIANCE

Question from The Honorable Jerry McNerney:
Federal support provided by this legislation will help spur renewable energy construction projects and create millions of jobs. I was proud to introduce a bill, now part of this discussion draft, which will provide funding for green job training. As with jobs in every sector, however, I believe that basic labor protections are important. The federal government has consistently applied Davis-Bacon prevailing wages to ensure that construction workers are paid community-standard wages when they perform federally-assisted construction. Do you support the application of Davis-Bacon prevailing wages to federally assisted construction for renewable energy projects, whether that assistance is in the form of grants, loans, tax credits, or another financing mechanism?

Response:
Thank you for your question, Rep. McNerney. The Blue Green Alliance appreciates the dedication of the Committee, Chairmen Waxman and Markey, and specifically Members like yourself and Rep. Sutton to the issue of providing workers good jobs in the new clean energy economy. We greatly appreciate your efforts as a champion for green job training.

We strongly support the application of Davis-Bacon prevailing wages to all federally-assisted construction activities, established as a result of climate and energy legislation. It is vital that the clean energy economy we are establishing creates high-road, long-lasting jobs that revitalizes the middle class and protects the environment.

THE AMERICAN CLEAN ENERGY SECURITY ACT OF 2009—DAY 3

THURSDAY, APRIL 23, 2009

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 9:40 a.m., in Room 2123, Rayburn House Office Building, Hon. Edward J. Markey [chairman of the subcommittee] presiding.

Present: Representatives Markey, Doyle, Inslee, Butterfield, Matsui, McNerney, Welch, Dingell, Green, Capps, Harman, Gonzalez, Baldwin, Ross, Matheson, Barrow, Waxman [ex officio], Upton, Hall, Stearns, Shimkus, Shadegg, Pitts, Walden, Sullivan, Burgess, Scalise, Sutton, Barton [ex officio].

Staff Present: John Jimison, Senior Counsel; Karen Lightfoot, Communications Director; Matt Weiner, Special Assistant; Mitch Smiley, Special Assistant; Melissa Bez, Professional Staff; Alex Barron, Professional Staff; William Carty, Minority Professional Staff; Peter Spencer, Minority Professional Staff; and Garett Golding, Minority Legislative Analyst.

Mr. MARKEY. This hearing will come to order.

Today we will begin our second full day of hearings on the American Clean Energy and Security Act. Yesterday we heard from three members of the Obama Cabinet, from CEOs of the United States Climate Action Partnership, from Mayor John Fetterman of Braddock, Pennsylvania, and from numerous experts, scientists, and economists, all with a stake in the best way to go about creating a new energy economy.

Today we will hear from three panels. The first panel will provide us with input on how best to allocate emission allowances and ways that can assist and benefit consumers. That panel includes representatives of major trade associations associated with electricity production and natural gas usage, as well as advocates for low-income consumers.

The second panel will advise us on ways in which we can ensure international competitiveness and help encourage international participation in our efforts to fight global warming and maintain a level playing field. It will feature major stakeholders like Dow Chemical and the United Steel Workers.

And our final panel will help us to understand how we can produce low carbon electricity, both from coal with carbon capture and storage, and from renewable energy sources like wind, geothermal, and solar.

Today is about the nuts and bolts of our legislation, how we help consumers, keep jobs here in America, and begin transforming our energy system. With the information that we glean from today's witnesses, we can better craft solid solutions for our energy and environment future.

I look forward to hearing from our witnesses today. And I turn to recognize our Ranking Member, if he has any introductory comments.

Mr. UPTON. I hope you liked the movie last night.

Chairman Markey and I were the co-host of the Disney movie on Earth last night. That is one of the reasons we finished Panel 4 by 6:45, so we could get there to the opening.

But I have no opening statement. Let's just get right to it.

Mr. MARKEY. Let me turn to the Chairman of the full committee, Mr. Waxman, and ask if he has any. And I do not see Mr. Barton.

So let me then turn and introduce Jeff Sterba. He was elected chairman of the Edison Electric Institute in 2007. Edison Electric Institute is a national association of shareholder-owned electric companies, their international affiliates, and industry associates. He is also the chairman, president, and CEO of PMN Resources, an energy holding company serving New Mexico and Texas.

Mr. Sterba, please begin when you are ready.

STATEMENTS OF JEFFRY E. STERBA, CHAIRMAN AND CEO, PNM RESOURCES INC., ON BEHALF OF THE EDISON ELECTRIC INSTITUTE; GLENN ENGLISH, CEO, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION; MARK CRISSON, PRESIDENT AND CEO, AMERICAN PUBLIC POWER ASSOCIATION; JOHN SOMERHALDER, II, CHAIRMAN, CEO, AND PRESIDENT, AGL RESOURCES, ON BEHALF OF THE AMERICAN GAS ASSOCIATION; RICHARD MORGAN, COMMISSIONER, DISTRICT OF COLUMBIA PUBLIC SERVICE COMMISSION, ON BEHALF OF THE AMERICAN GAS ASSOCIATION; RICHARD COWART, DIRECTOR, REGULATORY ASSISTANCE PROJECT; ROBERT GREENSTEIN, EXECUTIVE DIRECTOR, CENTER FOR BUDGET AND POLICY PRIORITIES; ROBERT MICHAELS, PROFESSOR OF ECONOMICS, CALIFORNIA STATE UNIVERSITY; AND DARRYL BASSETT, EMPOWER CONSUMERS

STATEMENT OF JEFFRY E. STERBA

Mr. STERBA. Thank you very much, Mr. Chairman. I appreciate the introduction. And I would first like to commend you and this committee for holding these hearings. This is a complex topic, and education and understanding of the ramifications of what you may do is an exceptionally important aspect of it, and I very much appreciate the opportunity to appear before the committee.

I am here to represent Edison Electric Institute. And as an organization, we have endorsed principles associated with climate change that will help ensure that we can achieve the kinds of greenhouse gas reductions that are necessary, but to do it in a way in which we protect the impact on consumers. That is a very important aspect of, I think, this program, because electricity is so pervasive in everything that consumers use, whether you are a business, a residential consumer, or a major industry.

For our industry, moving to a low carbon future is about turning over capital stock. These are expensive, long-lived generation assets that are currently being paid for in customers' rates. The turnover of this capital stock is not going to be simple, it is not going to be cheap, it won't occur overnight. It has to be done in concert with the development of technologies that will allow us to move to low carbon equipment to be used to meet customers' needs, things like carbon capture and storage which you have addressed in your proposed legislation.

Care in this transition is paramount to ensure that the resulting cost increases to customers are reasonable and absorbable by the economy. We strongly believe that an allocation of allowances for the benefit of consumers is a critical part of this care and transition that will enable an affordable path to aggressive greenhouse gas reductions.

I want to spend my limited time talking about why we believe the allocation of emission allowances to the electric sector is the most effective way to minimize adverse impacts on customers, and then to explain a specific proposal that EEI has developed that our entire membership has endorsed as to how this allocation could occur.

The cap-and-trade system that Congress established to reduce sulfur dioxide as part of the Clean Air Act Amendments of 1990 is truly the most successful example of a cap-and-trade system in the world. To date, emissions have been reduced by more than 50 percent, at a cost far less than what was anticipated at the time it was done and without the existence or the occurrence of any windfall profits. In that case, 97 percent of all allowances were allocated to regulated emissions sources and only 3 percent were put up for auction.

In the proposed cap-and-trade system, by having allowances allocated to consumers or allocated for the benefit of consumers, you avoid the double whammy. By double whammy, I mean customers having to pay for the higher cost of new resources that will have to be added, plus the cost of allowances to cover what you have to remit, to cover the emissions that you have from existing fossil fuel resources.

It is important to note that by allocating these allowances for consumer benefit, the primary goals of a cap-and-trade system are still intact. There is a price that is placed on carbon which we need to understand and see so we can make informed decisions on resources, and the environmental improvements of greenhouse gas reductions occur just as they would if the allowances were auctioned.

Some have argued that money raised by allowance auctions could be provided back to consumers as a means to buffer the cost impact. So what is the difference between that and allocating allowances to the distribution company to flow those benefits back to consumers?

First, most of the proposals to implement either a low income tax credit or send payments to individuals would not benefit commercial customers, industrial customers, the source of jobs within our economy. But it is not just that. It is also the impact on the balance of the public sector. What happens to hospitals? What happens to

schools? They wouldn't receive the value. It would be going to consumers. And so hospitals and bus stations and everything else that provides services to consumers, their rates would go up, and those costs would then be flowed on to consumers.

So the increased cost of electricity would affect the economy through higher prices for goods and services, and higher taxes for local governments to cover their costs. An allocation system that benefits all electricity consumers helps cushion these cost increases through the economy. And I think, also, the efficiency of not taking the money from consumers through high electricity prices in the first place seems, at least to me, a better solution than taking it and then trying to pass it back to consumers through taxation and/or spending policies.

Another argument that is made against allocations is that, look at the European situation, and it led to windfalls. So we shouldn't let that happen, so we shouldn't have allocations. But what led to windfalls is because of the structure of their system in the EU.

First, they overallocated allowances because they did not have a good baseline on what greenhouse gas emissions were. In the United States, we have that good baseline.

Second, they made the allocations totally to all unregulated generators in the electricity sector. And it is a competitive market that they operated over there, where many of the States in the United States are not competitive markets on the retail side. And the result was that they got some benefit of price uplift and they also got an allocation. That led to windfalls.

The approach that we are proposing and that EEI has developed ensures that that will not occur, because we know what the baseline of greenhouse gas emissions are and we know how to structure a system through the allocations being given to the regulated side of the business, to the largest extent, so that they flow to the benefit of customers.

Let me briefly walk through the EEI proposal so that that is out on the table. The initial allocation to the electric public sector should be 40 percent of all allowances, because that is the proportion of our sector's share of the national greenhouse gas carbon dioxide emissions. This 40 percent allocation should remain in place until critical technologies such as carbon capture and storage, which are essential to achieving long-term climate policy objectives, are commercially available. Then our sector share could gradually decline, as consumer costs for cleaner energy would also decline.

Within the electric sector, these allowances would be divided among regulated distribution companies and merchant coal generators. Only merchant coal generators. Merchant coal generators would receive allowances based on about 50 percent of their base year emissions. And this is solely to cover that portion of the cost that isn't recovered through the marketplace.

There is a clear agreement on our part that there should not be windfalls to merchant coal generators, and what we are proposing is very different than what was done in the EU model. The allowances would enable these generation facilities to continue to operate, avoid a rush to gas, which would have consequences to all consumers, while new generation resources are developed. The vast

majority of allowances would be allocated to the distribution company based on an even split between emissions and retail sales.

By allocating to the distribution company, we ensure that the value of that allowance flows through to consumers. And that is the main point: How do we do this in a way in which we mitigate the cost impact to consumers?

So, Mr. Chairman, I appreciate the time to visit with you. I look forward to your questions, and particularly those around how do we make sure that consumers are not adversed by doing the right thing.

Mr. MARKEY. Thank you Mr. Sterba. It was a very important proposal to put on the table for the members' consideration.

[The prepared statement of Mr. Sterba follows:]

Written Testimony
of
Jeffry E. Sterba

on behalf of the
Edison Electric Institute

Before the United States House of Representatives
Committee on Energy and Commerce
Subcommittee on Energy and Environment

Hearing on Allocation of Emissions Allowances

April 23, 2009

Messrs Chairmen and Members of the Committee and Subcommittee, Thank you for the opportunity to submit a statement before the House Energy and Commerce Committee's Subcommittee on Energy and Environment hearing on allocation of emissions allowances under the American Clean Energy Security Act of 2009. I am Jeff Sterba, past Chairman of the Edison Electric Institute (EEI) and Chairman and CEO of PNM Resources, the parent company of Public Service Company of New Mexico (PNM), Texas-New Mexico Power (TNMP) and First Choice Power.

Headquartered in Albuquerque, New Mexico, PNM Resources is an energy holding company with 2008 consolidated operating revenues from continuing and discontinued operations of $2.45 billion. Through its utility and energy subsidiaries, PNM, TNMP and First Choice Power, PNM Resources serves electricity to more than 859,000 homes and businesses in New Mexico and Texas. Our generation resources of 2,713 megawatts (MW) reflect a balanced mix of coal, natural gas, nuclear and wind generation. In 2008, our capacity was 35 percent coal, 35 percent natural gas, 15 percent nuclear, 7 percent renewables, and 7 percent long-term contracts, and 49 percent coal, 23 percent nuclear, 12 percent natural gas, 11 percent long-term

contracts and 5 percent renewables on an energy basis. PNM Resources and its subsidiaries market power throughout the Southwest, Texas and the West. In addition, through a joint venture with Cascade Investment, the company has a 50-percent ownership of OptimEnergy LLC, which owns approximately 1,200 MW of coal and natural gas generation in Texas.

I am appearing today on behalf of EEI. EEI is the trade association of U.S. shareholder-owned electric companies and has international affiliate and industry associate members worldwide. EEI's U.S. members serve 95 percent of the ultimate customers in the shareholder-owned segment of the industry and represent about 70 percent of the U.S. electric power industry.

I. Introduction

EEI has endorsed climate change principles intended to help ensure that U.S. climate policy is successful both in reducing greenhouse gas (GHG) emissions and addressing the cost concerns of consumers. This framework calls for an 80-percent reduction in GHG emissions from current levels by 2050, together with a series of actions to mitigate impacts to our customers and the economy. Under any scenario, these reductions will be expensive, but the most cost-effective way to accomplish them in the power sector is through the development and deployment of a full portfolio of climate technologies and measures over the long term. These include: energy efficiency for both supply and demand; renewable energy; advanced coal technologies integrated with carbon capture and storage (CCS); new nuclear power plants; plug-in hybrid electric vehicles (PHEVs); and the smart grid.

Although some of these technologies are currently available—albeit at a higher cost than conventional generation sources—others are not. For example, significant deployment of new nuclear plants is at least 10 years away. CCS technologies are under development but are not

expected to be commercially deployable until 2020 to 2025. Yet these technologies are critical to our dual goals of addressing GHG emissions and maintaining a reliable and affordable electricity supply in a carbon-constrained world.

For any carbon policy to reduce GHG emissions effectively and to protect the U.S. economy, compliance timeframes must correspond to the availability of technologies needed to reduce emissions. Near-term targets will be met primarily by efforts on energy efficiency, current technology for renewable resources and natural gas-based power plants. Medium-term targets should be set in the 10- to 15-year timeframe after enactment, in order to match up with and enable technology development, particularly advanced coal technologies with CCS and new nuclear facilities. The long-term target of an 80-percent reduction below current levels by 2050 will require all of these options, plus other options in other sectors of the economy.

It is important to point out that increased use of electrotechnologies in end uses—such as through increased market penetration of PHEVs—will increase electricity usage and thus GHG emissions in the power sector to some degree, while reducing overall emissions in the U.S. Accordingly, while we strongly support increased use of electrotechnologies, particularly PHEVs, we would also like to see the power sector credited in some way for helping to decrease overall U.S. emissions.

There is widespread agreement that these measures will be costly and will raise electricity prices substantially. Since electricity is used by everyone—residential customers, commercial customers and large industries—this is a matter of national concern. Furthermore, there is widespread agreement that these costs will disproportionately affect low-income families and energy-intensive businesses, particularly those businesses that compete internationally with businesses not subject to a comparable GHG reduction obligation.

The March 31 discussion draft addresses many of the complex issues in a comprehensive way, but leaves unaddressed the issue of disposition of allowances. I will focus on that issue. While there are certainly other key issues, the purpose of my testimony today is to explain, first, why the allocation of emissions allowances to the electric sector is the most effective way to soften cost impacts to electricity consumers during the transition to a decarbonized economy while maintaining the environmental benefit of putting a price on carbon.

Second, EEI's membership has developed a proposal for allocating allowances within the electric sector. I will describe that proposal and explain why it offers the most efficient and fair way to mitigate cost increases to all consumers throughout the nation in a way that avoids the potential for windfall profits.

II. Allocations Of Allowances Are A Proven, Effective And Practical Distribution Method That Protects Customers From Huge Electricity Price Spikes While Maintaining The Environmental Benefit Of Putting A Price On Carbon.

The cap-and-trade system that Congress established for the acid rain program under the Clean Air Act (CAA) is the most successful example of a cap-and-trade program in the world. It is one that the electric industry knows well. Under that program a declining cap on emissions was established and 97 percent of emission allowances were allocated without charge to electric utilities. About 3 percent of allowances were auctioned under the title IV sulfur dioxide (SO_2) emissions trading program. Utilities are required annually to submit to EPA the allowances allocated to them to match their emissions and, under the regulatory supervision of state public utility commissions (PUCs), recover the costs of these allowances net of any gains from allowance trading activity in order to mitigate price increases to their electricity customers. To date, emissions have been reduced more than 50 percent at far less cost than initially estimated, and "windfall profits" do not occur under this PUC regulatory supervision. The direct allocation

of allowances for permitted emissions is an important reason why this program has worked so effectively.

This model demonstrates why allocations are proven, effective and practical. It guides our recommendations on why and how to implement a similar program in a GHG cap-and-trade context and in an industry where the wholesale electricity market is competitive. First, allocations to a regulated local distribution utility company (LDC) ensure that the benefits and costs of those allowances flow directly to end-use consumers. LDCs are the "wires" companies that deliver electricity to all customers. LDCs connect with every electricity customer—residential, commercial and industrial customers. LDCs are best suited to ensure that the customers themselves see any costs or benefits from the value of the allowances. LDCs measure how much power each customer uses and send bills to every customer. Thus, they have a practical, efficient way to flow through the costs and benefits of allowances to all customers. LDCs also have many programs designed to serve and identify low-income customers. They can work with their state PUCs to design programs to benefit low-income customers if policy-makers desire.

Second, LDC rates are regulated by state PUCs. The PUCs have extensive experience making sure utilities flow through cost changes to their customers, and specifically with assuring the flow-through of the costs and benefits of allowances under the CAA allowance program. The utility ratemaking process provides transparency and accountability through a tested, public mechanism. Allocation to LDCs under state PUC supervision addresses any concern that allocations would benefit shareholders, not customers.

Third, allocations to LDCs can take into account regional variations in electricity use, generation and cost. The portion of fossil fuel used for electricity generation varies substantially

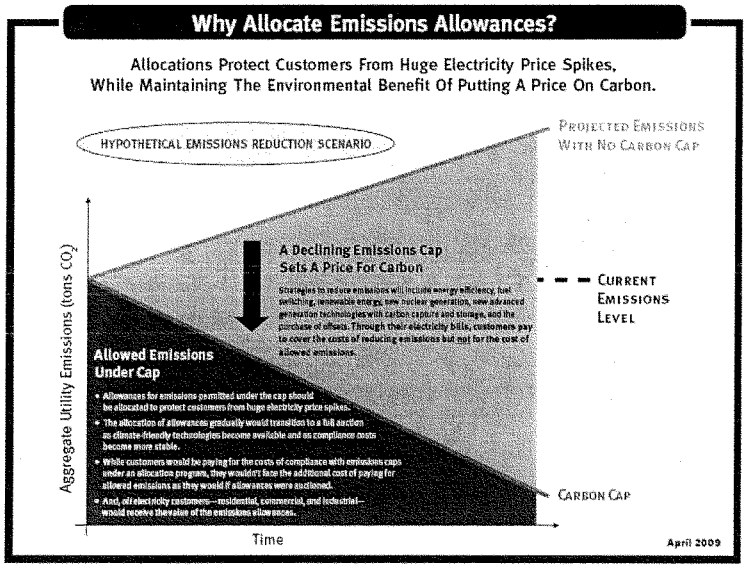
across our nation. Some regions use more coal than others. Average customer demand for electricity also varies by region largely due to factors such as weather and climate—as does the price of electricity. The allocation system that EEI recommends for LDCs has the flexibility to take all of these factors into account. In comparison, a cap-and-rebate approach through the U.S. tax code or a cap-and-dividend approach is fundamentally ill-suited for addressing the disparate impacts that federal climate change policy will have on families and businesses across the country.

Fourth, electricity customers of all types—residential, commercial and industrial—can benefit under an allocation approach. This ability to reach all customers is something that no tax rebate system or cap-and-dividend approach can achieve. Proposals to implement a low-income tax credit or send a payment to all individuals (like the Alaska oil fund payment) would not benefit commercial or industrial users of electricity. In fact, under a cap-and-tax rebate or cap-and-dividend approach, public transit systems like Washington's Metro, school systems, hospitals and other large users of electricity would receive no benefit. Their increased electricity costs would affect the economy through higher prices for goods and services and higher taxes for governments to cover their costs. An allocation system that benefits all electricity customers helps cushion these cost increases throughout the economy.

Fifth, the average person is not likely to connect a tax rebate, refund or payment with substantial increases in their electricity bills, much less with price increases for goods and services nor jobs lost from businesses that cannot afford the higher energy prices. Our industry's experience with sudden, large cost increases during the western energy crisis—as well as the public reaction to last year's large gasoline price rise—shows that customers and voters respond quickly and angrily to large price spikes in essential commodities like electricity. Our allocation

approach helps mitigate these adverse impacts, which could otherwise undermine public support for a carbon-reduction program or even create a public backlash against such policy.

Finally, allocations maintain the environmental benefit of putting a price on carbon and other GHGs. As the following chart shows, our allocation proposal would operate within the emissions cap that is established by the discussion draft. The Environmental Protection Agency (EPA) would allocate allowances only for emissions that are allowed under the cap.



Some claim that allocations give away allowances for "free" and thus are suspect on that account. In truth, allocations only would apply to emissions that utilities are permitted by the cap to emit. As long as the emissions cap remains below expected emissions levels, there still would be an active credit trading market setting a price for allowances based on the marginal cost of staying within the cap. This is precisely how the SO_2 allowance program has worked

with only 3 percent of the allowances up for auction. Also remember that the allowances that are allocated must be turned back to EPA at the end of the year to match the emissions associated with the electricity sold by the LDC.

Under an allocation approach, customers would pay through their electricity rates for the costs of measures to reduce emissions to stay within the cap. But customers would not face the additional cost of paying for allowed emissions as they would if all allowances were auctioned. In comparison, under the auction approach, consumers would pay through their electricity rates both for the costs of reducing emissions and for the costs of purchasing allowances for emissions permitted under the cap. Customers would be much more vulnerable to substantial price spikes if all allowances were auctioned and allowance costs become highly volatile or substantially exceed expectations.

III. Understanding EEI's Allocation Proposal

EEI proposes that allowances should be allocated to the electric sector in the early years of a climate program with a gradual transition to a full auction. **The initial allocation to the electric power sector should be 40 percent of all allowances since this is proportionate to our sector's portion of national carbon dioxide (CO_2) emissions.** EEI is not proposing to obtain sufficient allowances to cover all electric sector emissions. As long as the emissions caps are below the level of projected domestic emissions, which is clearly the case under the discussion draft, the electric sector's share of allocated allowances will be less than its total emissions. The electric sector still will need to reduce emissions to stay under the declining cap or purchase additional allowances based on the price of carbon.

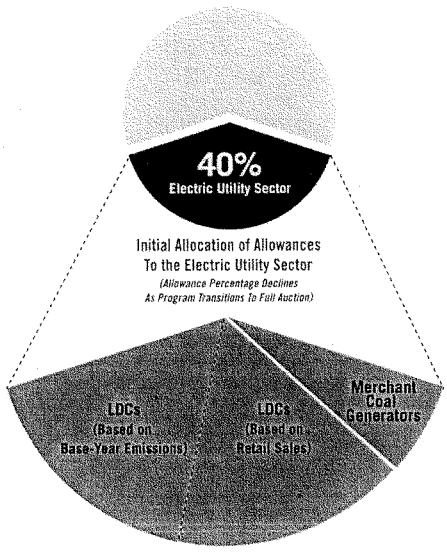
This 40-percent allocation share—of a declining quantity of allowances—should remain in place until needed new climate-friendly technologies, such as CCS, are commercially available, which we anticipate would occur in the 2020-2025 timeframe.

After that time, our sector's share should gradually decline until 2050, when the electric sector would receive no allowances. This reduces the electric sector's allocation share by about 4 percent a year. However, since the cap on emissions itself declines throughout this period, the actual decline in allowances allocated to the electric sector is much faster.

Within the electric sector, the vast majority of allowances should be allocated to LDCs based on an even split between emissions in the base period (including emissions associated with purchased power) and retail sales.[1] Because the electric sector now includes competitive merchant generators, a portion of allowances should go to merchant coal generators based on their base-period emissions. No LDC or merchant coal generator may receive more allowances than the emissions attributable to it.

The following chart shows the basic proposal for the first year.

[1] In traditional regulated markets, a utility's retail sales are identical to its retail deliveries. However, in competitive retail markets, we would actually measure deliveries by an LDC to retail customers because this is the best measure of output and avoids problems distributing allowance benefits that could be caused if customers switch electricity suppliers.



Let me expand upon the details and explain why this proposal is fair, efficient and feasible.

A. <u>Determining Allocations to LDCs</u>

A federal agency such as the Department of Energy (DOE), working in close coordination with the Environmental Protection Agency (EPA), would calculate each LDC's share of the "LDC allowance pool" using a formula in which 50 percent of the total is allocated based on each LDC's share of average annual electric sector CO_2 emissions during a defined base period and 50 percent of the total is allocated based on each LDC's share of average annual electricity sales during a defined base period.

The determination of each LDC's fossil fuel emissions could be made in the same manner as specified in section 114 of the discussion draft, which creates the Carbon Capture

and Sequestration Demonstration and Early Deployment Program. This section incorporates H.R. 1689, which was introduced by Representatives Boucher, Barton and many others on this Subcommittee. Essentially, subsection 114(f) establishes a process that would require DOE, acting in consultation with EPA, to make a best estimate of the fossil fuel electricity emissions attributable to individual LDCs and publish the estimate for comment and public input. This provision provides needed flexibility to adjust the available data on emissions from individual generators to determine emissions at the LDC level in a fair and transparent manner.[2] And it provides a transparent process for public input into these determinations. DOE could make a similar determination of each LDC's share of total electricity sales in the base period, which is a comparatively easy process. This information would be used by DOE, working with EPA, to determine each LDC's share of total utility emissions and total electricity sales for the base period.

Why do we rely upon both sales and emission levels? Frankly, it is a compromise. With the exception perhaps of a few totally hydroelectric-based entities, all LDCs will earn allowances based on both sales and emissions factors. The emissions factor gives weight to concerns of utilities with significant fossil generation that their customers will face higher compliance costs and serves to help offset those costs. The sales factor gives weight to the concerns of other utilities that their customers already face higher prices because those utilities already have invested in non-emitting resources, and their customers have not been compensated for such investments. The 50-50 allocation recognizes the validity of both views.

[2] This section directs DOE to "balance the need to be efficient, reasonably precise and timely, taking into account the nature and cost of data currently available and the nature of markets and regulation in effect in various regions of the country. Different methodologies may be applied in different regions if appropriate to obtain the best balance of such factors."

Since no LDC may be allocated more allowances than the emissions attributable to it, none can receive a "windfall" by receiving allowances that it does not need. This addresses one of the major problems with the European allocation experience.

B. Determining Allocations to Merchant Coal Generators

Merchant coal generators sell electricity in competitive wholesale markets. Because of the nature of such markets, they need to be treated differently from regulated electric utilities. Under EEI's proposal, merchant coal generators would receive allowances based on 50 percent of their base-year emissions. Since in most unregulated markets the market price of electricity is determined by natural gas on the margin, and natural gas emits approximately 50 percent of the carbon from coal, it can be reasonably assumed that merchant coal would be able to recover about 50 percent of its increased costs due to carbon through the increased market price. The 50-percent allocation addresses the portion of their increased costs that is not recovered through market prices (*i.e.*, their net compliance costs). As with the LDC sector, merchant coal generators may not be allocated more allowances than they need to meet their emission obligations. These allowances enable these critical generation facilities, which represent as much as one-third of total U.S. generation in a given year, to continue to operate and avoid a "rush to gas" while the generators are developing new low-carbon electricity generation sources.

Under the EEI proposal, no allowances would be allocated to other competitive generators. Non-emitting generators have no need for allowances, whether nuclear, solar, wind or hydro. And, as indicated above, since natural gas generation typically sets the market price in wholesale markets and the carbon cost will be internalized into this market price, merchant gas generators would not require allocations.

C. Determining the Size of the LDC and Merchant Generator Allowance Pools

Because merchant coal generation's share of the electric sector allowance pool is based on its emissions profile, this must be calculated first. Then the total of the allowances issued to all merchant coal generators is deducted from the total allowances for the electric sector to determine the total allowances available to LDCs (the LDC allowance pool). The LDC allowance pool then is allocated to individual utilities using the formula set forth above. As the emissions cap declines, and as the share of allowances to the electric sector declines, so will the number of allowances allocated to LDCs and merchant coal generators. The rate of decline that we propose will help to mitigate price spikes to electricity customers.

IV. There Is Significant Support For An Allocation Approach.

The U.S. Climate Action Partnership—an alliance of major businesses and leading climate and environmental groups—had several representatives testify yesterday and has highlighted the importance of "an allowance value distribution structure (between and within sectors) that cushions the costs to both consumers and business during the transition to a full auction system." The Pew Center on Global Climate Change has said that one important way to contain the cost of carbon regulation is by allocating a significant percentage of emissions allowances during the early years of a cap-and-trade system. Similarly, the National Association of Regulatory Utility Commissioners has stated that allowance allocations to regulated LDCs comprise "an appropriate transition measure" to ensure electric reliability and climate-friendly technology development, while noting that "emitters would still feel the full effect of pricing [GHG] emissions." Likewise, labor groups have called an allowance allocation program "a simple and attractive means to achieve major reductions in [GHG emissions]" that avoids the "uncertainty and potential hidden costs" of an auction.

IV. Conclusion

Climate change presents one of the biggest energy and environmental policy challenges this country has ever faced. An effective federal response will come with an enormous price tag, particularly for electricity customers, which will reverberate throughout the entire economy. In order to mitigate those costs, it is critical that any comprehensive climate legislation have targets and timetables harmonized with the development and deployment of the full portfolio of climate technologies and measures and contain effective cost-containment measures to protect customers. Allocating allowances is critical initially in order to cushion the economic impact of climate change legislation on electricity customers, particularly the low-income families and energy-intensive businesses and industries that will feel these impacts the most.

Mr. MARKEY. Next, we welcome our former colleague and a good friend, Glenn English, who is the president of the National Rural Electric Corporation. He represented Oklahoma's Sixth Congressional District for many years in Congress. His organization advocates for consumer-owned cooperatives on energy and operational issues as well as the rural community and economic development. We welcome you back to Congress, Glenn. Whenever you are ready, please begin.

STATEMENT OF GLENN ENGLISH

Mr. ENGLISH. Thank you very much, Mr. Chairman. I appreciate that. And I do want to stress we are a cooperative; we are owned by consumers, and our focus really is to do two things. First of all, to make sure that our membership have enough power to keep their lights on and to maintain their standard of living; the second is to, of course, make sure that electric power is affordable. So that is where we are coming from. We are not for profit. We are not for profit.

There are no rewards in any way for a particular fuel, so we have no fuel choice from the standpoint of generating that electric power. It all comes down to this question of the cost of power, and how we can deliver that power to our membership in the most affordable manner possible.

Now, Mr. Chairman, I am speaking only from a standpoint of electricity as it applies to the bill, of course. And I would like to also call the attention of the committee to a commitment that was made years ago in 1932, first made in 1932 and then reiterated several times over the next ten years by Franklin Roosevelt when he made the observation that in this country that electric power is no longer a luxury and had become a necessity. A necessity.

And I would suggest, as we move to deal with this particular issue and this challenge, that we keep that in mind. That probably is a little different category perhaps than other issues regarding carbon, food, clothing, housing, and then electricity. I think most people would agree that in order to maintain that standard of living in this country, that is what we have to have.

So, anyway, I would like to just lay out a few markers, Mr. Chairman, as we move forward to deal with this particular challenge. The first thing is, and the dean of the House, I think, made this point some time ago about trying to regulate carbon through the Clean Air Act. I believe he described it as being a glorious mess. And I think that would probably be the case. It wasn't designed to do that. I remember, I was here when we passed it the last time, I believe it was 1990, Mr. Chairman, and I remember I voted for it. I don't remember any discussion about the carbon when we were talking about that. So this is not designed to do that kind of a job.

So in reality, I think we have all got to face the fact that we have got to have a bill; but I would also suggest not just any bill. It has got to be a bill, I think, that addresses the carbon issue and the carbon issue alone. In other words, what I would suggest, it is a bill that needs to be simple, if such things can be done. It needs to be flexible. It certainly needs to be affordable. And it needs to have sustainability. And what I mean by "sustainability," Mr.

Chairman, is one that is going to last through the years. This is a long-term project we are embarking on, and certainly the next 10 or 15 years are probably going to be the most challenging as we move down that road.

And we also need one that is effective. So I would suggest a commonsense approach as we begin to put these pieces together to have a workable bill that accomplishes its objective.

The next thing I would suggest is it not be legislation that is designed to raise revenue. It shouldn't be a revenue enhancing endeavor. It should be something that is trying to achieve the objective of reducing carbon emissions in the country, and that alone. So that means auction is not a good idea. We would discourage the committee from going down that road. That means that allowances should be free, particularly as far as applies to the electric utility industry. And we would also suggest that it should be done on the distribution level, so that the full benefit of those allowances should go to consumers. Of course, our not-for-profit status, that is where they go.

I would also suggest, Mr. Chairman, that as we look at the caps, they should be established with an eye toward the question of technology: What can we do, and when can we do it? I think we all appreciate and understand that this bill, this effort, what we are going to try to accomplish here if we are going to keep the lights on and keep electric bills affordable, we need technology; and we are going to have to make some very significant advancements, and we are very hopeful that is going to be the case.

In some cases I guess you could say, Mr. Chairman, we are betting on the come, and we need to do everything we can to make sure that we speed up that technology and get it developed, get it on line, so it can be utilized, so we can get back to a full complement of fuels.

And we would also suggest, again looking at it from the consumers' standpoint, Mr. Chairman, that there should be some kind of safety valve device that makes certain that consumers are assured that we will, in fact, have a limit on any economic damage, that this thing will get out of control, that we are going to try to contain those costs. I know that you have addressed that in the draft. I would suggest it probably needs to be done in a little different manner than what you have in the draft. I appreciate the thought.

And also as we move forward with renewables, Mr. Chairman, we are very committed to renewables. We in fact serve 70 percent of the land mass of the United States. So most of the renewable energy that is going to be generated in this country is going to be done in rural America and areas served by electric cooperatives. We just established a national renewable cooperative which allows small distribution systems all over the country to invest in renewable projects.

But I would also suggest that there is a wide range of difference in different parts of the country. Some areas can produce renewables far more economically, far easier, and far greater magnitude than you can in other regions. And that is why we think it should be looked at nationally and what can be done nationally.

And, Mr. Chairman, I would also suggest that for that reason there needs to be a small utility exemption, about 4 million megawatts per year. And I think we can make a serious workable start and move down the road to the objective you are trying to achieve.

Thank you, Mr. Chairman.

Mr. MARKEY. Thank you, Mr. English, very much.

[The prepared statement of Mr. English follows:]

Testimony of the Honorable Glenn English
National Rural Electric Cooperative Association

Before the

Subcommittee on Energy and the Environment
Committee on Energy and Commerce
U.S. House of Representatives

April 23, 2009

Introduction

Thank you for inviting me to provide the views of electric cooperatives on the American Clean Energy and Security Act of 2009 discussion draft circulated by the Committee on March 31. The National Rural Electric Cooperative Association (NRECA) is the not-for-profit, national service organization representing nearly 930 not-for-profit, member-owned rural electric cooperative systems, which serve 42 million consumers in 47 states. NRECA estimates that cooperatives own and maintain 2.5 million miles, or 42 percent, of the nation's electric distribution lines covering three quarters of the nation's landmass. Cooperatives serve approximately 18 million businesses, homes, farms and other establishments in 2,500 of the nation's 3,141 counties.

Cooperatives still average fewer than seven customers per mile of electric distribution line, the lowest density in the industry. Low population densities, together with the issues of traversing vast expanses of remote and often rugged topography, present unique economic and engineering challenges for electric cooperatives. As well, many co-op consumers face economic challenges. The service territory average household income for 786 electric co-ops (93 percent) falls below the U.S. average household income of $71,212. The service territory average household income for all electric co-ops is $61,416.

NRECA's objective is to help Congress develop and pass an affordable, workable, and sustainable piece of legislation to address the nation's energy and climate change objectives. Maintaining the affordability of electricity is the principle against which NRECA will judge all climate change and energy legislation.

NRECA will strongly object to any legislation that makes electricity unaffordable or gives Wall Street speculators the ability to set our nation's electricity bills. In 1938 President Franklin Roosevelt declared that electricity was a necessity, not a luxury. We must not turn back on that commitment from over 70 years ago. We do not have to, and should not, in climate change legislation.

I. Climate Change and Related Provisions

NRECA understands that the discussion draft is a starting point from which the Committee will work, and we appreciate the opportunity to express our views as the Committee considers this issue.

My comments will focus on one major objective: keeping electricity bills affordable for all Americans while achieving long-term emissions reductions. To maintain that affordability and achieve those reductions, we must carefully structure a federal climate change policy that utilizes least-cost alternatives and provides maximum flexibility. To meet this goal, the discussion draft must: include realistic timelines and reduction levels; freely allocate emission allowances to electric cooperatives rather than auctioning them; prevent Wall Street speculators from setting electricity prices; include meaningful cost-containment and flexibility mechanisms; establish a single, comprehensive federal program that supersedes other federal and state laws; and address the global nature of the issue.

Unless the program is improved substantially, and the allowance allocation methodology is properly crafted, the cap-and-trade program will unnecessarily raise costs on rural electric cooperative consumers. We look forward to working with the Committee to make these improvements.

I must also point out that NRECA is very concerned that Members of this Committee have a full understanding of the economic and environmental consequences of this legislation. With that in mind, we believe the major provisions of the legislation should be evaluated so members know the effect on costs to consumers. Developing those analyses (both by government agencies and private entities) takes significant time and resources, and it is unlikely at best that the Committee will have adequate information under the current timeline.

The Draft Cap-and-Trade Program Should be Amended to Protect Consumers

Electric cooperatives have a number of suggestions for improvements to the bill that can make it a more workable, sustainable, and most importantly, affordable piece of legislation.

Change the Caps in the Early Years to More Closely Match Technology Availability

The legislation's emission reduction levels and timelines are overly aggressive, particularly in the early years of the program. In the short run, there are relatively few choices to achieve reductions of greenhouse gas emissions. Outside of energy efficiency improvements, switching from coal to natural gas is the most likely scenario to comply with the caps in the bill, with some additional renewable energy being added to the generation mix. Congress and the Administration will have to make federal investments and solve considerable policy challenges if energy efficiency, renewable electricity and natural gas are to be adequate baseload resources.

Additionally, the legislation provides unrealistically little time for the Environmental Protection Agency (EPA), other agencies, and regulated entities to propose and finalize regulations, and prepare for the implementation of the cap-and-trade program. Within the legislation, there are countless new requirements on federal agencies, particularly the EPA. Even with the best leadership, the best of intentions and additional resources, experience teaches us that federal agencies have significant difficulty meeting congressionally-imposed deadlines that are overly aggressive.

NRECA recommends that the reduction requirements be adjusted during the first 15 years of the program to more accurately reflect the expected availability of technology. The Electric Power Research Institute's (EPRI) analysis of the potential to achieve significant emissions reductions using technology concludes that the electric utility sector could, if we hit the "technology lottery," reduce emissions to approximately 1990 levels by approximately 2030. Unfortunately, the discussion draft would seek to achieve those levels before the year 2020 – which is much too ambitious given the lack of affordable, commercially-available technologies to achieve those steep reductions.

NRECA also suggests that the first compliance year for the cap-and-trade program be adjusted to at least five years after the year of enactment to provide EPA, other agencies, and the regulated community time to prepare for the implementation of the program. Previous legislation (S. 139 (introduced in 2003); S. 1151 (2005); S. 280 (2007); S. 2191 (2008); H.R. 5049 (2006); and H.R. 6186 (2008), for example) has generally provided between four and seven years from the time the legislation was either introduced or voted on (for those bills in the Senate) until the first year of implementation. The first compliance year of the program must be more realistic.

Provide Allowances to Local Distribution Cooperatives to Directly Protect Consumers

The bill is largely silent on how emission allowances should be distributed under the program. NRECA strongly opposes an auction tax as a means of distributing emission allowances. Auctioning allowances is not necessary to achieve the environmental objective of a cap-and-trade plan – namely to achieve significant, long-term reductions in greenhouse gas emissions. Those reductions are achieved by the cap established in the legislation. An auction of allowances will not result in any further reductions of CO_2 emissions. It will only raise revenue.

The only reason to auction emission allowances is to raise revenue for the government – the very definition of a tax. NRECA does not believe that climate change legislation should be used as a method to enhance the government's revenues. Such a scheme would only serve to establish a variable tax to fund government programs.

Further, the level of the tax will not be set by Congress, but by the highest bidder in the auction. Given their size, it is extremely unlikely that electric cooperatives, such as Old Dominion Electric Cooperative in Virginia, or Hoosier Electric in Indiana, or Wolverine Power in Michigan will be the highest bidders in the auction. Instead, it will likely be

large, multi-national energy companies or Wall Street speculators who will set the tax on electric cooperatives. If the government needs to raise revenue to fund important national priorities, those taxes should be set by the government and collected by the Internal Revenue Service, not set by Wall Street and collected by utilities.

Given the current state of the financial services sector and the lack of significant cash reserves, cooperatives are very concerned about the possibility that there will be inadequate access to capital to facilitate bidding in an auction. To participate in the auction, utilities must provide financial assurances. Therefore, access to capital is critical to an entity's ability to participate in the auction. Beyond that, electric cooperatives are significantly debt financed, without significant cash reserves in place. (Cooperatives return excess revenue to member-owners in the form of "capital credits" rather than building up significant cash accounts.)

Finally, the principal reason given by auction tax advocates for such a scheme is to avoid giving industries "windfall profits." However, electric cooperatives are not-for-profit, consumer-owned utilities that provide electricity to our members. As not-for-profit entities, it is by definition impossible for cooperatives to receive "windfall profits." And because we provide electricity ***on an at-cost basis***, any additional costs borne by cooperatives are passed directly through to our member-consumers. Conversely, any costs avoided save on our consumers' monthly electric bills.

In the case of electric cooperatives, the most straightforward, efficient method of minimizing higher costs to our member-consumers is to freely allocate allowances to cooperatives. Co-op consumers will still face higher costs resulting from efforts to reduce emissions to the cap levels, and those costs will grow over time as the emissions cap declines. However, consumers can be protected from unnecessary higher costs that would result if co-ops are required to bid on allowances against for-profit entities.

NRECA recommends that the bill allocate emission allowances to local distribution cooperatives (LDCs) based upon the carbon content of the fuel mix used to produce the electricity sold by the LDCs. This allocation should not be phased out in favor of an auction tax. Further, to provide planning certainty, allowances should be allocated at least five years in advance.

NRECA also recommends that the legislation require the Energy Information Administration to develop a uniform methodology for determining the fuel mix used to produce the electricity sold by LDCs. Such standard protocols will be necessary to ensure that emission allowances are fairly and appropriately distributed in a manner that minimizes the economic impact on those who will be most affected by the legislation – namely those consumers who receive electricity generated using fossil fuels. Otherwise, allocation formulas would simply be a wealth transfer to regions that did not pay the carbon tax.

Prevent Wall Street Speculators From Setting Electricity Prices

In just the last decade, we've had a technology bubble, an oil bubble, and a housing bubble, not to mention the Enron fiasco and California's electricity crisis, each of which was at least partly caused by speculators and manipulators trying to make a buck at the expense of consumers. Have we not learned our lesson?

If an auction is used to initially distribute emission allowances, it will be an invitation to Wall Street speculators to develop schemes to manipulate the market, turn emission allowances into just another commodity like pork bellies, and essentially allow Wall Street to determine electricity prices in this country. Are we indeed willing to turn what Franklin Roosevelt called a "necessity" into a luxury available only to those who can afford to have electricity when carbon mitigation can be done at a much lower cost by Congress?

In addition to avoiding an auction, the legislation must include provisions that restrict the primary trading of allowances to only those entities which have a regulatory compliance obligation under the legislation and clearly define the role of non-regulated actors in ensuring a liquid market. Under a cap-and-trade system, the nation's rural electric cooperatives will require a regulatory framework for the markets that prevents market manipulation, excessive speculation, and price bubbles, while providing adequate liquidity and the opportunity for cooperatives to manage their carbon price risk and protect their consumers.

Improve Cost Containment to Promote Long-Term Carbon Reduction and Economic Sustainability

In order to contain costs, the bill establishes a Strategic Reserve, which auctions allowances only to covered entities. NRECA is very concerned that the minimum price is far too high to provide any meaningful cost containment. In fact, this minimum price is the same as the penalty for noncompliance in Section 723. Further, a price floor does not provide cost certainty. Only a price cap provides any assurance that costs will not spiral out of control.

Cost certainty and gradually rising prices are critical in the early years of a greenhouse gas cap-and-trade program as covered entities transform to low-carbon energy sources. The best method of assuring cost certainty is the inclusion of an economic safety valve. A safety valve limits the potentially destabilizing impacts of a cap-and-trade program on energy prices through the sale of additional allowances at a safety-valve price.

Those who argue that there should be no economic safety valve or similar provision are in fact stating that we should achieve the emission reductions ***no matter what the cost*** to the economy or consumers. NRECA strongly disagrees with that approach. We believe the nation's environmental goals must be balanced against the nation's economic goals, not that one automatically trumps the other.

NRECA recommends that a safety valve be included in the cap-and-trade program to assure cost certainty, at least for the initial 10-15 years of the program. The safety valve price should be set no higher than $12 per metric ton of CO_2 in the first year of the program and increase not more than five percent each year.

Promote the Use of Offsets and Biomass without Artificial Limitations

Appropriately, the bill allows the use of offset credits to satisfy a covered entity's compliance obligation but unfortunately limits the use of offsets to a percentage of the obligation. In the early years, the percentage allowed is approximately 30 percent, split evenly between domestic and international offset credits. The provision also requires the covered entity to hold 1.25 offset credits in lieu of each emission allowance.

NRECA recommends that a covered entity should not be constrained by an artificial limit on the use of offset credits to satisfy its compliance obligation. It is not necessary to artificially limit the use of offsets by covered entities. The size of the domestic and international offset programs will be limited by the available verified, cost-effective offsets. In addition, a covered entity should be able to satisfy its compliance obligation by holding an offset credit in lieu of an emission allowance, that is, a one-to-one exchange.

We support the fact that the legislation considers biomass a carbon neutral electricity source. Unfortunately, the biomass definition in Section 700 is overly restrictive, excluding biomass from federal land, among other things. The biomass definition should encourage, not discourage, the use of biomass as a fuel source by acknowledging that it is carbon neutral.

Establish a Single, Comprehensive Climate Change Program

The discussion draft currently includes limitations on the use of other provisions of the Clean Air Act to require greenhouse gas emission limitations. While this is helpful, it is unfortunately incomplete. Other statutes, most notably the Endangered Species Act, could be used to require emission limitations and other provisions of the Clean Air Act could potentially be used to require similar reductions.

The most effective way to address climate change is to develop a new, organic law that is the sole legal authority over greenhouse gas emissions. Therefore, the bill must explicitly clarify that no other provision of federal or state law can be construed to require any greenhouse gas limitation or requirement. If the Committee specifically wants to use certain provisions of existing law (such as for the transportation sector) to address climate change, then language should be included in the bill to explicitly reference those provisions and prevent the use of other provisions of law by including legislative language stating that "unless otherwise specified by the Safe Climate Act, no other provision of law shall be used to require any emission reductions or limitations for any substance regulated by the Safe Climate Act."

The discussion draft also would amend the existing Clean Air Act citizen suits and judicial review provisions to create an open-ended liability regime by allowing lawsuits based on, for example "expected harm," or "harm at risk of occurring." This standard is extremely broad and unworkable if the goal is to systematically reduce carbon emissions in a way that keep electricity affordable. NRECA recommends that Section 336 be deleted, other than conforming amendments to the existing Clean Air Act, so that no additional liabilities or causes of action would be created.

The legislation also partially addresses the issue of existing and proposed state and regional programs by imposing a short five-year prohibition (2012 to 2017) on state programs. The existing Clean Air Act provisions allowing more stringent state requirements are based on states' rights to address state or local air pollution. Obviously climate concerns are of an international nature, and no state or local mitigation efforts can make a significant impact on global concentration levels of greenhouse gases. Therefore, a single, comprehensive federal program to reduce emissions of greenhouse gases is the most cost-effective and efficient climate policy. A patchwork of state and regional programs, each with different reduction requirements, emission permits, and other compliance obligations, in addition to a federal program, would be overly burdensome without providing a clear environmental benefit. A five-year preemption is inadequate. Federal law should preempt all state, local and regional controls of greenhouse gas emissions, including common law, for causes of action arising or in connection with any greenhouse gas delineated by this proposal.

Promote Technology Development and Early Deployment and Minimize Consumer Costs

The legislation very helpfully includes provisions to provide incentives for early deployment of carbon capture and sequestration (CCS) technologies (the "Boucher bill"). NRECA supports this proposal, and believes it is the most realistic proposal to encourage early deployment of CCS. Developing CCS technology will help minimize long-term costs of achieving emissions reductions while allowing the U.S. to continue to use our most abundant, affordable energy source. However, electric cooperative consumers should not be "taxed" more than once for climate change objectives. Therefore, NRECA believes that any revenue cooperatives owe the federal government under any mechanism in this legislation should be reduced by the amount contributed to the CCS fund on a dollar for dollar basis.

Additionally, issues related to potential liability for sequestration of CO_2 must be overcome and an appropriate regulatory and liability system must be developed. Sections 111 and 113 are designed to study the obvious deficiencies in current law regarding defining and fairly apportioning legal liabilities for carbon transport and geologic carbon sequestration. But these sections only create commissions to study the issue and write reports with no mandates for action. NRECA believes that, to foster sequestration, we must construct a fair and comprehensive statutory liability scheme to address the vast and well-known regulatory uncertainties and liabilities in these areas. We look forward to working with the Committee in developing a more detailed program on this issue.

Avoid Duplicative, Unnecessary Command-and-Control Technology Standards

The discussion draft establishes performance standards for "new" coal-fired power plants "finally permitted" after January 1, 2009. For plants currently in the permitting stages, which can take 5 years or more, the overall plant designs and specific locations have been determined years ago. Thus, the trigger date for sources falling under this provision does not match facilities' planning realities. Additionally, since these units are under the cap, no performance standards are necessary. Such standards are only redundant and serve to drive up the cost of compliance.

"Global" Climate Change Must be Addressed Globally

Climate change is a global issue that the U.S. cannot address unilaterally; all major emitting nations, including key developing countries (China, India, etc.) must also address their greenhouse gas emissions in order to make meaningful environmental progress. Unilateral U.S. action to reduce greenhouse gas emissions would disadvantage our industries that trade in global markets during the transition to a low-carbon economy.

NRECA applauds the inclusion of a program to assist the deployment of clean technologies in developing countries. NRECA is active in assisting developing countries with electrification and looks forward to opportunities that may be provided under a program such as this to further assist rural communities in other nations.

There are significant sections of the discussion draft that are intended to address the issue of international competitiveness. Those legislative provisions need significant scrutiny, but any final legislation must include a WTO-compliant program to deal with other nations' emissions to ensure a level playing field internationally and to ensure that global climate change objectives are met.

II. Renewable Electricity Standard

Cooperatives are Leaders in Providing Renewable Electricity to Consumers

According to the Energy Information Administration, the industry as a whole generates about nine percent of its power from renewable sources, with non-hydro renewable electricity providing between two and three percent of power.[1] Cooperatives receive approximately eleven percent of their power from renewable sources, with about nine percent coming from hydropower and two percent coming from other renewable sources. Currently, 755 co-ops (nearly 90 percent) offer renewable energy options to consumer-owners.

[1] According to the most current EIA data available, in 2007 the industry as a whole generated 8.5 percent from renewable sources, of which about 6 percent was hydroelectric and just over 2 5 percent was from "other" non-hydro renewable sources. Preliminary EIA 2008 data projects non-hydro renewable generation at 3 percent and hydro holding steady at 6 percent

Moreover, electric cooperatives have worked to increase their capacity to generate electricity from renewable resources. In 2008, for example, co-ops saw 65 percent growth in their non-hydro renewable capacity. These accomplishments have occurred as electric co-op consumers' demand for power has grown at over two percent annually (twice the national average for utilities) because people are moving into electric co-op territory.

Cooperatives use several tools to invest in renewable electricity. For example, cooperatives worked with Congress to create the Clean Renewable Energy Bonds Program (CREBs) in the Energy Policy Act of 2005. CREBs give the not-for-profit utility sector an incentive for building renewable electricity projects because most co-ops cannot use the Production Tax Credit (PTC) available to for-profit entities. Many cooperative-owned projects are already using CREBs and with funding provided through the American Recovery and Reinvestment Act, even more projects should be possible. Moreover, thanks to amendments to the 2008 Farm Bill, cooperatives have greater access to Rural Utilities Service (RUS) funding for building or acquiring renewable generation resources.

Cooperatives strongly support broader industry efforts to promote renewable energy development. NRECA, for example, has advocated for expansion and extension of the PTC; NRECA has also called on the Department of Energy to expand its National Interest Electric Transmission Corridors to enable construction of transmission for renewable resources; and NRECA has defended in court the federal transmission siting provisions Congress enacted in the Energy Policy Act of 2005.

Electric cooperatives are going beyond even these efforts. Currently, many cooperatives have joined the National Renewables Cooperative Organization (NRCO). NRCO is designed to facilitate the development and deployment of renewable resources for electric distribution and generation cooperatives. NRCO allows member cooperatives to invest in renewable generation projects, no matter their location. This helps get renewable electricity into the nation's fuel mix, while reducing its cost for cooperatives in areas that have less access to affordable renewable electricity.

A Renewable Electricity Standard (RES) Will Increase Consumer Costs

Unless and until legislation addresses many underlying challenges, an RES will increase costs to consumers without significantly increasing the development of renewable resources. For example, if utilities cannot acquire wind turbines fast enough, convince communities to accept the installations, and build the interstate transmission needed to integrate it, the RES will drive up the cost of existing renewable electricity resources and utilities will be forced to pay alternative compliance penalties to meet the balance of the federal requirement. On the other hand, if legislation helps the industry alleviate the challenges facing renewable development, the mandate is unnecessary.

Electricity produced from renewable sources can be considerably more expensive than electricity produced from traditional sources. Even where renewable resources are plentiful, renewable electricity often costs more to generate. While new coal and natural

gas-fired plants produce electricity, on average, for less than seven cents per kilowatt-hour (kWh), generating electricity from new renewable electric plants is significantly more costly. Electricity produced with biomass costs over 9 cents per kWh. Moreover, wind energy costs 11 cents per kWh and solar thermal energy costs 21 cents per kWh (before taking into account generous production and investment tax credits).[2] Furthermore, purchasing renewable electricity from out-of-state sources will be very burdensome and result in transferring massive amounts of money from local ratepayers to out-of-state producers.

On top of that, electric cooperatives would be required to pay additional transmission fees to use the grid to import that power from other states. A recent study examined the current grid serving the eastern half of the country against goals like the RES.[3] The study concluded that if the "U.S. wants to get 20 percent of its electricity from renewable [sources] by 2024, ...it would be necessary to build a new electricity circulatory system, including 15,000 circuit miles of extremely high voltage lines."[4] Such a system would cost up to $100 billion. However, Congress must grant Federal authority for siting for such investments to even be possible.

The Draft RES Should be Amended to Protect Consumers

NRECA opposes the RES in its current form. It would impose a burden on many entities that are too small to have a significant impact on the nation's generation mix and that lack the resources to cost-effectively comply with the mandate.

Only Include Utilities with Retail Sales Above Four Million MWh

The draft legislation proposes an RES that would apply to all distribution utilities with one million MWh in annual retail sales. Many of the covered utilities would still be small utilities, as defined by the Small Business Administration, with annual sales of less than 4 million MWh. These small utilities would be unduly burdened by the administrative requirements imposed by the RES. They also lack the geographic scope, access to capital, and diversity of generation required to permit them to invest effectively in and reliably integrate the large scale renewable projects that offer renewable energy at the lowest costs.

Small utilities and their consumers would likely bear disproportionately high costs to comply with the RES. At the same time, excluding these small utilities will have only a de minimis impact on the nation's resource mix because even in the aggregate these utilities use only a small percentage of the nation's energy but would still be under a carbon cap which will itself incent renewable electricity investments.

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[2] NRECA calculations based on capacity cost and fuel price assumptions from the U.S. Energy Information Administration, Annual Energy Outlook 2009.

[3] "Joint Coordinated System Plan 2008." Organizations responsible for electric-system reliability in roughly half the states, including the Midwest Independent System Operator, SERC Reliability Region, PJM Interconnection LLC, the Southwest Power Pool, the Mid-Continent Area Power Pool and the Tennessee Valley Authority, contributed to the study.

[4] Wall Street Journal - February 9, 2009, "New Grid for Renewable Energy Could Be Costly."

In order to avoid unduly raising the cost of power to consumers served by small utilities, the RES should only apply to utilities selling over four million MWh annually.

Allow a Wider Variety of Renewable Sources and Efficiency to Count

The draft legislation adopts a narrower list of eligible renewable resources than some states allow, frustrating some state and cooperative efforts to promote a broader portfolio of environmentally favorable generation resources. Moreover, it does not fully recognize hydropower's renewable nature or the fact that nuclear generation is emission-free. Only in limited circumstances, generally where a hydro facility has become more efficient or has added capacity since 2001, does the RES allow hydropower as a renewable resource.

In some parts of the country, significant renewable resources are not readily available and therefore are limited in their ability to help meet the new capacity needs. For example, the Southeast lacks adequate wind or solar resources and there isn't enough cost-effective biomass to make up the difference without undermining the forest product industry crucial to the region's economy. The Midwest can't rely on consistent sunshine for solar power. Even where sun and wind are plentiful, the variable nature of the supply means it must be backstopped with other generation, usually gas turbines.

To overcome the challenges of limited supply of renewable electricity in some regions, the draft legislation should be amended to permit 50 percent of the RES to be met in any particular state with generation resources that qualify as "renewable" in that state but do not otherwise qualify under the federal program. Such an approach could easily be designed to offer appropriate respect for state priorities without undercutting national goals for the development of environmentally favorable generation resources. This could be accomplished without affecting a national market for RECs by assuring that RECs provided for a state defined renewable resource can only be retired for the federal RES obligation.

The draft legislation should also be amended to allow at least 25 percent of any year's mandate to be met with energy efficiency. Energy efficiency is often the least-cost generation resource. Preventing utilities from complying with the RES through efficiency gives utilities fewer options for complying in a cost-effective manner.

Adopt a More Feasible Compliance Schedule

The draft legislation would require utilities to make six percent of their retail sales renewable by 2012 and increase that amount to 8.5 percent in 2014. An RES will ultimately be more successful and impose fewer costs on consumers if it is implemented on a more reasonable compliance schedule. An accelerated schedule that moves ahead of parallel efforts to address real challenges to renewable energy development, such as inadequate transmission, merely bids up the cost of the limited base of renewable energy that is available and forces consumers to pay alternative compliance penalties.
The draft legislation should be amended to begin compliance in 2012 with a 2.75 percent reduction required, gradually rising to a 15 percent reduction in 2020.

Lower Alternative Compliance Payments

The draft legislation would require utilities failing to make the required renewable electricity retail sales to pay the lower of either: 1) 200 percent of the average market value of the previous year's credit; or 2) five cents per kWh. Add this cost to increases for new capacity, transmission infrastructure, and climate mandates, and electricity prices will rise quickly and create a hardship for many consumers.

The draft legislation should be amended to set the alternative compliance payment at the lower of either: 1) 200 percent of the average market value of Federal renewable energy credits and Federal energy efficiency credits for the applicable compliance period; or 2) 3 cents per kWh. While still high, this figure creates an incentive for utilities to invest in renewable resources while still capping the cost of the RES at a more affordable level for consumers.

Furthermore, the draft legislation should be amended to return all alternative compliance payments to utilities to further their work on renewable electricity, efficiency and weatherization.

Do Not Allow States to Regulate Transfers of Federal Renewable Energy Credits

The legislation permits the states to regulate the acquisition and disposition of federal renewable energy credits (RECs), permitting states to impose substantial compliance challenges and cost on entities seeking to comply with federal law, particularly those that operate in more than one state.

The draft legislation should be amended to delete this provision. Allowing individual states to impose varying requirements on the acquisition and disposition of these credits will encumber what should be a national market. State regulation creating impediments to the free flow of RECs will result in another layer of unnecessary costs for consumers. Just as the cap-and-trade program should be designed to permit utilities to find the lowest cost means of meeting federal climate targets, so should a federal RES be designed to permit utilities to find the lowest cost means of reaching the federal targets for renewable energy. Inconsistent state rules, confusion, and barriers to trade all undermine efficient decisions and raise costs – making power less affordable for consumers.

Make the CFTC the Regulator of the Renewable Energy Credits Market

The draft legislation would make the Federal Energy Regulatory Commission (FERC) the regulator of the markets for Renewable Energy Credits (RECs) and the derivative financial instruments associated with RECs. Those markets are more properly regulated by agencies such as the Commodity Futures Trading Commission and the Federal Trade Commission who have greater expertise in regulating similar markets.

The RES Duplicates and Potentially Undermines the Goals of CO_2 Regulation

If Congress enacts CO_2 emissions reduction legislation, a RES is unnecessary because utilities are highly likely to expand their investments in renewable electricity under a cap-and-trade regime. In many instances, renewable resources will prove to be the lowest cost means of reducing CO_2 emissions. As the cost of emissions credits required to use fossil generation rises, more utilities will make the economic decision to invest in renewable resources.

Second, the RES undermines the flexibility that is the cornerstone of a cap-and-trade program. The stated goal of cap-and-trade program is to allow utilities the flexibility they need to reduce emissions in the most efficient and cost-effective manner possible. By layering a mandate on sales of renewable electricity on top of the cap-and-trade program, Congress denies utilities the flexibility they need to find the best balance of resources they can to meet Congress' climate goals. The RES could force utilities to over-invest in renewable resources when another technology, such as nuclear or carbon-capture-and-sequestration might better reduce carbon emissions while also keeping electricity costs down for consumers.

III. Energy Efficiency Resource Standard

Electric Cooperatives are Leaders in Energy Efficiency

Energy efficiency comes naturally to electric cooperatives. The not-for-profit business model encourages cooperatives to use all cost-effective methods of distributing electricity as efficiently as possible. One out of seven people served by cooperatives lives below the federal poverty line. These consumers can see striking reductions in energy usage when aggressive efficiency measures are applied. Conversely, their incomes often do not allow them to make needed investments on their own, even in simple efficiency tools and techniques.

This is why NRECA advocates for extensions of consumer efficiency tax credits, increased federal investment in advanced energy technologies, and strengthened efficiency of hydropower projects and other existing generation. In the Energy Investment and Security Act of 2007, NRECA supported a national efficiency model building code. In 2008, NRECA called for a massive investment in weatherization for the poorest fifth of households. Cooperatives in many states are working with their state energy offices to develop effective efficiency programs using resources deployed by the American Recovery and Reinvestment Act of 2009.

Rising costs of new generation resources mean that efficiency is often the "least-cost" generation resource. Cooperatives lead the electricity industry in deployment of advanced meters and demand response.[5] Co-ops have also made a dramatic contribution

[5] A 2008 Federal Energy Regulatory Commission (FERC) study showed cooperatives leading the industry in advanced meter infrastructure penetration at 16.4 percent as compared to 4.7 percent for the industry as a whole

to efficient electric system operation through developing MultiSpeak, a software standard that lets meters, consumer databases and utility plant data "talk" to one another, helping boost service reliability and reducing waste.

Electric cooperatives therefore boast a strong commitment to efficiency, as illustrated by these statistics:

- 92 percent of co-ops communicate directly with consumers about efficiency.
- 77 percent of co-ops offer energy audits for free or minimal costs.
- 49 percent of co-ops offer financial incentives to consumers to increase efficiency.
- 40 percent of co-ops provide weatherization and efficiency services to consumers.
- 50 percent offer advanced meters to some consumers.

Congress Should Not Enact an Energy Efficiency Resource Standard

NRECA opposes the Committee's proposal for an Energy Efficiency Resource Standard (EERS). It would punish utilities that have already been aggressive investors in energy efficiency and impose a burden on many entities that lack the resources or economies of scale to achieve significant energy efficiency savings.

The EERS is a Tax on Consumers

If the EERS actually requires utilities to invest in more energy efficiency than they would otherwise under their state obligations to provide electric service at the lowest reasonable cost, state energy efficiency programs, the CO_2 cap-and-trade program, and the RES, the EERS mandate would force utilities to make un-economic investments in efficiency measures or purchases of savings, imposing even greater costs on consumers than they are already experiencing with rising fuel costs, new capacity investments, and cap-and-trade compliance costs While consumers will use less power if they can no longer afford it, that is not an acceptable policy approach. Electricity is an essential service and the foundation for our economy. Moreover, consumers paying artificially higher electricity costs will have less disposable income to make more efficient choices in operating their homes and businesses.

This EERS is "One-Size-Fits-All"

This EERS ignores the huge difference in the ability of different utilities and regions to achieve efficiency savings based on their climate, customer base and historical efforts to promote energy efficiency. For example, utilities with more industrial and commercial load can more easily make efficiency improvements because the "lowest-hanging fruit" is commercial lighting. Cooperatives have the highest percentage of residential load of any industry sector, and thus less low-cost energy efficiency resources they can tap. Their consumers, who are disproportionately rural and more likely to be living in poverty, will be further burdened with higher compliance costs.

Many electric cooperatives will also be penalized that have long worked with their members to improve energy efficiency. Responsible utilities with long-standing efficiency programs will have to pay more to obtain additional efficiency improvements. As such, the EERS will act as a tax on those who have been most responsible.

Ultimately, usage decisions are made behind the meter by the consumer. If some consumers don't conserve or can't afford to make efficiency improvements, the utility and all other consumers will be unfairly taxed by being forced to pay for additional efficiency savings or compliance payments.

Electricity Experts Say this EERS is Not Achievable

The Electric Power Research Institute (EPRI) has assessed the achievable potential from energy efficiency and demand response programs. Given projected growth rates and technology, EPRI states that by 2020, realistic achievable savings are under five percent and the maximum achievable potential of both energy efficiency and demand response programs combined is just over ten percent.[6] The EERS as drafted would require utilities to make uneconomic energy efficiency efforts and pay alternative compliance penalties to the government to make up for the all but certain shortfall in results. Both act as an unreasonable tax on consumers, raising the cost of electricity and making this essential service less affordable for many low-income consumers.

The EERS Creates a New, Complex Federal Program for Issues Better Left to States

For good reason, Congress has traditionally deferred to states with respect to retail electricity issues, including whether to adopt retail competition, retail rate design, the adequacy and portfolio of generation resources acquired to meet retail energy needs, and the range of retail services utilities provide consumers. Congress has understood that retail electric service directly impacts a broad range of important local matters relating to the public health and welfare, local economic development, local environmental concerns, and more. Congress has also understood that there are significant differences between states and regions that must be taken into account in order to effectively regulate in the interest of local consumers. These include variations in climate, geography, local industries, available local natural resources, consumer income and education level, and many more.

Energy efficiency falls squarely within the class of issues that Congress has traditionally left to the states. For example, EPRI has explained the amount of energy efficiency that can cost-effectively be pursued differs widely by region according to the climate, penetration of appliances and efficiency measures in the existing housing stock, and the predominant industries.

Further, the states have aggressively taken up the challenge to address energy efficiency that Congress assigned to them in EPAct and again in EISA. In both statutes, Congress

[6] "Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U S " Electric Power Research Institute, January 2009.

amended PURPA Title I to require states and covered non-regulated electric utilities to consider a broad range of issues, including several aimed at expanding energy efficiency efforts at the state level. Since that time a number of states have adopted their own EERS and many more are in the process of considering such programs.

The EERS Duplicates and Potentially Undermines the Goals of CO_2 Regulation

If Congress enacts CO_2 regulation, utilities are highly likely to expand their investments in energy efficiency because in many cases, those investments will be the lowest cost means of reducing CO_2 emissions. As the cost of emissions credits required to use fossil generation rises, more utilities will make the economic decision to invest in energy efficiency.

Second, the EERS is counterproductive because it undermines the flexibility that is the cornerstone of a cap-and-trade program. The stated goal of cap-and-trade program is to allow utilities the flexibility they need to reduce emissions in the most efficient and cost-effective manner possible. By layering a mandate on energy efficiency on top of the cap-and-trade program, Congress denies utilities the flexibility they need to find the best balance of resources they can to meet climate goals. The EERS could force utilities to over-invest in energy efficiency when another approach, such as renewable resources, nuclear energy or carbon-capture-and-sequestration might better reduce carbon emissions while also keeping electricity costs down for consumers.

Instead of "One-Size-Fits-All" Mandates, Encourage New Technologies and Incentives

Congress should encourage the development of new energy efficiency technologies and design incentives that match the actions utilities and their customers can take, alone or in concert, to increase efficiency. A better approach is to continue efforts, such as those funded in the American Recovery and Reinvestment Act of 2009, to help utilities increase education, efficiency auditing and weatherization activities. As well, Congress should give consumers at all income levels incentives to install efficient technologies and change electricity usage patterns.

IV. Transmission

The Nation Lacks Adequate Transmission to Deliver Increased Renewable Electricity Supplies

Transporting significant new quantities of renewable power between "have" and have-not" regions will require significant, lengthy, and costly upgrades to the cross-country transmission system. Transmission to handle the new renewable energy supplies should be in place before policies can be developed to accommodate the new demand for renewable energy.

The Draft Legislation Adopts an Effective Transmission Planning Process

The legislation adopts an effective transmission planning process that appropriately builds up from existing local and regional transmission planning efforts and that is focused on meeting consumer needs reliably and affordably, as well as meeting national environmental priorities. The legislation appropriately limits federal involvement in the planning process to coordination and loose oversight to ensure that national priorities are addressed by the planning entities.

The Draft Legislation Should also Address Cost Allocation and Siting

The legislation does not, however, address cost allocation or siting, which are key barriers to the construction of much needed new transmission.

NRECA proposes that the Committee add a new section on cost allocation that provides for all consumers in an Interconnection to share the cost of new extra high voltage interstate transmission facilities that arise from the transmission planning process defined in the legislation as well as the cost of any lower voltage facility upgrades required for the reliable interconnection and operation of the extra high voltage (EHV) facilities. Broad cost allocation should be conditioned on: the facilities arising from the planning process; a right for any entity to own a share of the facilities; and, limits on rate "incentives" available to those who build the facilities.

NRECA also proposes that the Committee add a new section on EHV siting. Entities wishing to build EHV facilities that arise from the legislation's transmission planning process should be able to petition FERC for a federal certificate of convenience and necessity and federal eminent domain authority. Federal siting should be conditioned on: the EHV facilities arising from the planning process; allocation of the costs of the facilities across the entire interconnection; a right for any entity to own a share of the facilities; and, limits on rate "incentives" available to those who build the facilities.

V. Plug-in Hybrid Electric Vehicles

Electric cooperatives support the further development and expanded use of plug-in hybrid electric vehicles (PHEVs). Through the Cooperative Research Network, cooperatives are actively investigating this exciting new technology. A Pennsylvania distribution cooperative has even deployed a PHEV bucket-truck.

However, the draft legislation directs states and unregulated electric utilities to consider an extensive and highly detailed federal standard for the promotion of PHEVs. Considering the large number of extremely complex issues expressly raised by the proposed standard, it would impose an undue burden on state and local regulators. The standard also fails to address a fundamental question - how to reconcile policies that promote vast expansions in use of these vehicles and policies (such as CO_2 emission reduction, the RES and the EERS) which will limit the nation's supply of electric generation capacity.

NRECA recommends that the Committee instead pursue a much simpler standard that gives local regulators greater discretion to determine how best to address questions concerning the integration of PHEVs into the electric utility infrastructure.

VI. Smart Grid Peak Demand Reduction Goals

Cooperatives are leading the electricity industry in deployment of advanced meters and demand response. Co-ops have also made a dramatic contribution to efficient electric system operation through developing MultiSpeak, a software standard that lets meters, consumer databases and utility plant data "talk" to one another, helping boost service reliability and reducing waste. Electric cooperatives continue to support the expansion of Smart Grid technologies where it makes economic sense for utilities and their consumers.

However, the draft legislation adopts a prescriptive approach to the Smart Grid and dramatically expands FERC's involvement in traditionally state and local matters. It does this by giving FERC the authority to review and impose pressure on state and local decisions regarding the nature of retail electric service, the structure and design of retail rates, investments in distribution system technology, and the resource plans adopted by electric utilities. NRECA recommends deleting this provision.

Conclusion

Again, thank you for the opportunity to testify at today's hearing. NRECA looks forward to working with Members of the Subcommittee, the full Committee, other committees with jurisdiction over various aspects of this issue, and the entire House of Representatives to develop an affordable, workable, and sustainable piece of legislation.

Mr. MARKEY. And our next witness is Mr. Mark Crisson. He is the CEO of the American Public Power Association, which is the service organization for more than 2,000 community-owned electric utilities. Prior to his current position Mr. Crisson was at Tacoma Power in Washington State for nearly 30 years. Whenever you are ready, please begin.

STATEMENT OF MARK CRISSON

Mr. CRISSON. Thank you, Mr. Chairman. Good morning. I am Mark Crisson, president and CEO of the American Public Power Association. And, as you said, we represent over 2,000 publicly owned, not-for-profit power systems across the United States, 49 States. We serve cities as large as Los Angeles, but most of our members, the vast majority of our members serve communities of 10,000 people or less.

Mr. Chairman, APPA supports congressional action to address climate change. But as my colleagues have stated we are very concerned that achieving environmental goals be properly balanced with affordable costs to the consumers and the economy. Consequently, we have developed a detailed set of principles on implementation of a cap-and-trade program.

We believe it is critically important that the transition to a low carbon future be managed in a way that keeps electricity affordable and reliable in order to be sustainable and workable in the long term. Thus, our first principle is legislation must include a safety valve or other stringent cost containment mechanism that sets a maximum price on carbon.

While we support the inclusion in your draft bill of an offset regime and the use of banking and borrowing, we do not think these are adequate measures. We urge the committee to include a price ceiling on CO_2 in the next version of your draft. We also have concerns that the provisions governing the establishment and use of offsets are inadequate for cost containment purposes, and would like to work with the committee to improve these provisions.

Regarding the issue of emission allowances, the electric utilities sector should receive an allowance allocation proportionate to its share of total emissions, or about 40 percent, all of which we feel should be allocated to load-serving entities or local distribution companies. This will provide the industry with allowances sufficient to maintain reliability and affording time to adapt during a transition period when low emission technology is under development. Allowances should go to the local distribution companies because they are in the best position to ensure that allowance revenues are used to reduce cost to electric consumers. Allocating allowances, as opposed to fossil fuel generators, would eliminate the prospect of windfall profits that have resulted in some cases in the European Union cap-and-trade system.

We think the allocation to the LLCs is particularly important in regions that have restructured wholesale power markets that are under Federal jurisdiction and run by regional transmission organizations, such as the Northeast, the Mid-Atlantic, the Greater Midwest and California, because allocating allowances to independent generators in these markets will raise the already high wholesale prices these markets are producing. This is because fossil

fuel generators nearly always set the clearing price in the wholesale electricity supply auctions in these markets. Should they receive allowances, these fossil fuel generators will add the value of these allowances to their bids into these markets, thereby adding that cost to other generation bidding into the market, including no- or low-carbon generations such as nuclear plants.

EPP also has serious concerns about auctioning allowances. An auction by its nature disadvantages small entities like most of my member systems. It is important, therefore, that if an auction is conducted, that it be designed to restrict speculation and minimize potential for volatility and allowance prices.

With a stringent cost-control mechanism in place, APPA would support phasing in an auction gradually over time. But without such a control mechanism, we think no auction should occur until new emissions control technology is commercially available to industry.

It is also essential that all net auction proceeds be used only for targeted research and development, energy efficiency, and mitigation of cost impact on consumers. In other words, areas directly related to addressing the climate change issue.

Mr. Chairman, regarding the proposed renewable electricity standard, APPA supports a workable Federal RES of 15 percent by 2020. However, our support contemplates that such a standard would be in place prior to implementation of a Federal greenhouse gas reduction mandate, and would serve to provide a bridge between the present and the time when technology has been developed to significantly capture and store carbon.

We also believe that once a Federal cap-and-trade program is implemented, an RES is neither necessary nor property. By its nature, the RES limits the flexibility of our industry, while a cap-and-trade program is intended to provide the industry more flexibility to tailor a compliance program. Enacting the two simultaneously will increase compliance costs for many utility systems.

Regarding the Energy Efficiency Resource Standard, we do not support such a standard but would urge that the RES permit a significant percentage of the standard be met by using energy efficiency measures.

Finally, Mr. Chairman, APPA has serious concerns about the new source performance standards included in Title I, because several of our members have facilities in various stages of permitting and construction. These standards would also effectively create a moratorium on coal in a post-2015 world and raise some significant challenges for facilities yet to be permitted between 2009 and 2015, because basically there is no commercially deployable coal generation technology in the U.S. that can achieve the proposed standard of 1,100 pounds for megawatt hours. We would strongly urge the committee to delete this provision.

Thank you, Mr. Chairman. I look forward to answering any questions you have.

Mr. MARKEY. Thank you, Mr. Crisson, very much.

[The prepared statement of Mr. Crisson follows:]

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Statement
Of the
AMERICAN PUBLIC POWER ASSOCIATION (APPA)
For the
HOUSE ENERGY AND COMMERCE COMMITTEE'S
Hearing to Review the Discussion Draft Entitled the "American Clean Energy and Security Act of 2009"
April 23, 2009

The American Public Power Association (APPA) appreciates the opportunity to provide the following testimony for the House Energy and Commerce Committee's hearing to review the discussion draft entitled the "American Clean Energy and Security Act of 2009." APPA represents the interests of more than 2,000 publicly-owned electric utility systems across the country, serving approximately 45 million Americans. APPA member utilities include state public power agencies and municipal electric utilities that serve some of the nation's largest cities. However, the vast majority of these publicly-owned electric utilities serve small and medium-sized communities in 49 states, all but Hawaii. In fact, 70 percent of our member systems serve communities with populations of 10,000 people or less.

Overall, public power systems' primary purpose is to provide reliable, efficient service to their local customers at the lowest possible cost, consistent with good environmental stewardship. Public power systems are locally created governmental institutions that address a basic community need: they operate on a not-for-profit basis to provide an essential public service, reliably and efficiently, at a reasonable price.

While APPA's oral testimony will focus on a few key issues addressed in the Waxman-Markey Discussion Draft ("Discussion Draft"), the written testimony will provide an overview of APPA's position on the entire draft bill given that much of the bill would substantially impact our members if passed as drafted.

Overall, APPA is concerned that the bill as drafted presents a substantial paradigm shift – electric utilities would be subject to more federal authority than ever before with regard to their decision-making and operation in a number of areas. This additional authority would range from how much renewable energy they will need to produce or purchase to the amount of mandatory energy efficiency that they will need to undertake to the greenhouse gas (GHG) emissions reductions that will be instituted. Therefore, the flexibility that has enabled electric utilities to keep costs relatively low for customers and provide a diversified portfolio of fuels would be substantially eroded by federal fiat, as envisioned by the draft bill.

We are also concerned that the Discussion Draft seeks to do too much at once, by addressing both climate change and other energy policy issues in the same legislative vehicle. We want to make clear that APPA supports federal legislation to address greenhouse gas emissions. We also support a federal renewable electricity standard if the standard does not exceed 15 percent for

electric utilities that sell over 4 million MWHs (megawatt hours) of electricity at retail annually, and if the additional provisions described below are included. However, we are concerned about both mandates applying simultaneously to the electric utility industry. Given the Discussion Draft's contemplation of a cap-and-trade regime to reduce GHG emissions, we believe that the electric utility industry should be given the maximum flexibility possible to meet the goals of such a mandate. Instead, the Discussion Draft contemplates three overlapping mandates on the utility sector at once – a cap-and-trade regime on GHGs, a federal RES of 25 percent by 2025, and an energy efficiency resource standard of 15 percent by 2020. This "straightjacketing" of the electric utility industry by Congress is likely to result in higher than necessary electricity prices.

Key questions for the Committee are: what are the public policy goals it would like to achieve and what would be the most efficient ways of achieving such goals? If the answer is that the Committee wants to promote development of renewable energy, energy efficiency and low-carbon resources, why is anything beyond a mandate to reduce GHG emissions necessary? Conversely, if Congress mandates high levels of renewable energy production and energy efficiency savings with the concomitant reductions in GHG emissions, what is the need for a complex, multi-decade cap-and-trade program? We would urge the Committee to consider addressing the extremely complex and potentially costly climate change title separate from the other provisions contemplated by the draft.

While APPA supports congressional action to reduce GHG emissions, we have not yet taken a position on the exact type of mechanism to be employed to achieve this goal. However, APPA has adopted a set of principles related to a cap-and-trade approach that appropriately conveys our concerns about the costs and complexity of such a regime if it does not include a strong cost containment mechanism such as a safety valve and if it auctions rather than allocates allowances, among other things. Our policy states that any federal cap and trade program should:

- Include a safety valve (which sets a maximum allowance price) or other stringent cost control mechanisms that mitigate price volatility and protect consumers.

- Minimize the initial auction amount to no more than five percent of total allowances to allow time for efficient markets to develop, to protect consumers and ensure continuing reliable operation of the electric system.

- Require the federal government to conduct regular reviews of allocations and auction of allowances in order to ensure they do not create windfall profits.

- Provide for effective market oversight, including strong enforcement and penalties, to prevent market manipulation

- Allow auction revenue to only be used for targeted R&D, energy efficiency, and mitigation of cost impacts on consumers.

- Provide for allowances sufficient to maintain reliability and to allow time to adapt. Generating units of 25 MW or less should be exempted from mandatory participation in the program.

- Allow credit for early action.

- Allow for regular reviews of the program to determine if changes are warranted to prevent the transfer of wealth and jobs to other countries that have not implemented climate legislation.

- Ensure that offsets are additional, permanent, independently verified, enforceable, and measurable. In addition, offset allowances should be available from an expansive set of sectors and activities without arbitrary geographic or quantity limits on the use of qualified offsets to meet cap requirements.

Our testimony below will provide our views on the Discussion Draft in its totality based on the provisions of direct impact to APPA's members.

Title I – Clean Energy

Renewable Electricity Standard. While there are many important and controversial questions facing the 111th Congress, one of the most important to the electric utility industry is potential passage of a federal renewable electricity standard (RES). APPA supports a workable federal RES mandate of no more than 15 percent by 2020 that includes provisions to: minimize costs to consumers; address grid reliability; provide for Congress to review the need for such legislation once a federal mandate to reduce greenhouse gas emissions is enacted; and allows for the deployment of energy efficiency measures to meet the standard, among other important issues. We believe such an RES would provide significant environmental and energy security benefits. At the same time, we believe an RES of 15 percent by 2020 is the maximum that this economy, electricity consumers, and the electric transmission grid can accommodate in the next 10 years.

In addition, a key concern for public power entities that would be subject to the RES is ensuring that federal financial incentives for renewable electricity – such as Clean Renewable Energy Bonds (CREBs) and the Renewable Energy Production Incentive (REPI) – are not subject to caps or funding shortfalls that make them largely unavailable to us in practice.

Any federal RES should include the broadest range of renewable energy resources to be used to comply with the standard, including those allowed under state renewable energy requirements such as animal waste biomass, incremental hydropower, and new hydropower added at existing hydro and non-hydro dams. In addition, a federal RES should allow a significant portion of the requirement to be met through energy efficiency measures, both utility system efficiencies and customer-based programs, including any such measures allowed under similar state requirements. Federal legislation should permit banking of excess credits to meet future year requirements and at a minimum, existing hydropower and municipal solid waste resources, including those owned by the federal government, should be excluded from the calculation of the baseline against which the renewable energy requirement is applied.

Any federal RES also needs to ensure that any credits that accrue to federally-owned generation marketed by the power marketing administrations (PMAs), including both existing generation and additions, either are provided directly to the PMA customers affected by federal or state RES standards commensurate with their allocations of federally-generated power or sold with proceeds going to repayment of affected projects as determined by federal power costumers in such marketing areas.

The draft legislation before the Committee proposes an extremely aggressive requirement of 25 percent by 2025 for utilities with retail sales of 1 million MWH or more annually. Proponents of this proposal claim that a 25 percent RES will actually lower electricity bills, as well as create

thousands of new jobs and somehow resolve the unavailability of substantial amounts of renewable resources in certain regions of the country. Such arguments are counter intuitive and should be considered carefully and with great skepticism. The fact is that most renewable energy resources are simply more expensive to develop than other alternatives, and will be for the foreseeable future, no matter what the scale of such development. That is precisely why Congress is considering mandating them and why Congress has provided significant financial incentives (mostly to private entities) for their development over the past several years: so that development will actually occur despite their higher cost.

Cost increases associated with an RES will pose special challenges for low-and moderate- income households as these consumers tend to spend a larger share of their budgets on energy related products and services. Electricity consumers in regions where wholesale electricity markets are operated by regional transmission organizations or independent system operators under the supervision of the Federal Energy Regulatory Commission – regions where many consumers are already facing electricity bills that look more like mortgage payments – will pay even more due to the flawed design and operation of those markets. And increased costs will be even more of a problem if an RES is combined with, or soon followed by, climate change legislation, which will have yet additional costs for the consumer. Finally, the intermittent nature of some renewable resources (such as wind and solar) poses challenges to transmission grid reliability as a higher proportion of this type of generation come online. Electricity must be generated and transmitted instantaneously to meet customer demand, which requires a majority of electric generating facilities to be available 24/7. Because the wind doesn't always blow and the sun doesn't always shine, even as forecasted, other types of generation – most often natural gas - must be available to back up these resources.

The engineers operating transmission systems report that, given existing technology and capacity constraints, 15 percent of the grid relying on these resources is more manageable from an operational standpoint than a higher number and will ensure greater stability of the grid in the future. We understand that Congress is also considering new policies designed to spur grid expansion and enhancements, but those proposals are still in the developmental stages and, even if enacted, it will take many years to site, design and construct the actual facilities.

The current draft legislation does not include a waiver provision from the federal RES. APPA believes it is important that the Secretary of Energy is authorized to provide waivers of compliance or penalties on a case-by-case basis. Such waivers potentially would be available, but not limited to, the effects of natural disasters, the recognition of utilities in "negative load growth" circumstances and other economic, operational and contractual impacts, and delays in relevant federal permitting approvals, among other situations to be determined.

Of significant concern to APPA is that the draft RES legislation currently before the Committee would apply to utilities with annual retail sales of 1 million MWH or more annually. APPA opposes this low threshold and supports a more reasonable level of 4 million MWH or more of annual retail sales. The Small Business Administration defines electric utilities of 4 million MWHs or less as "small businesses." This definition has been retained in a variety of statutes, including the Small Business Regulatory Flexibility Act (SBRFA), which codify the widespread recognition that federal regulation is more burdensome on small businesses. The 1 million MWH threshold set in the Discussion Draft ignores the well-defined government definition of an electric utility small business. This threshold would capture 61% of public power customers while the 4 million MWH threshold would capture 43% of public power customers. It is also important to note that public power utilities' ratepayers will experience the full impact of increased costs from implementing an RES since private companies may be able to absorb some of the additional costs

by reducing dividends paid to their shareholders. Not-for-profit public power utilities have no choice but to pass on increased costs to their customers in the form of higher rates.

For these reasons and those set forth in the attached policy resolution, APPA believes our support for a workable 15 percent federal RES by 2020 for utilities with annual retail sales of 4 million MWH or more annually and which include the other provisions described above would strike an appropriate balance to allow Congress to move forward on this important issue. We would support such an RES if it moved on a stand-alone basis.

Carbon Capture and Storage. APPA supports additional and expanded federal support for research, development, and deployment (RD&D) of cost-effective technologies to reduce, capture, transform, transport, or sequester greenhouse gases from emissions sources throughout the economy; and for legislative emission reduction targets to be consistent with commercially available technologies. APPA believes that aggressive research and development must be conducted in the short-term to prudently evaluate the feasibility for future commercial deployment of carbon capture and sequestration (CCS) technologies for reducing carbon dioxide (CO_2) emissions from fossil fuel-fired electric generation. At present, there is not commercially proven and demonstrated CO_2 capture technology or geologic sequestration for reducing CO_2 emissions from utility scale power plants that generate electricity from either coal or natural gas. There are several small power plant CO_2 separation demonstration projects in the U.S., but current technologies in development are prohibitively expensive and require inordinate amounts of energy to operate. It is unclear at this point how long it will take to advance and scale up this technology for widespread application in the electric utility sector.

Given this situation, APPA supports congressional efforts to accelerate RD&D of CCS technologies, including Section 115 of the draft legislation, which mirrors H.R. 1689, the Carbon Capture and Storage Early Deployment Act, bipartisan legislation that was introduced earlier this year by Congressman Boucher (D-VA) and others. During the 110th Congress, APPA worked with Congressman Boucher and other utility industry stakeholders to make significant improvements to similar legislation (H.R. 6258) that were encompassed in the bill introduced this year. The legislation would establish a $1-1.1 billion annual fund, derived from fees on the generation of electricity from coal, oil and natural gas. Grants from the fund would be awarded to large-scale projects advancing the commercial availability of CCS technology. The financing mechanism laid out in the CCS Early Deployment Act provides an important and appropriate bridge to accelerate much needed funding prior to the availability of revenues from a national cap on emissions.

APPA believes that the RD&D efforts should include assessment of legal liabilities associated with CO_2 sequestration, because the ability to secure financing for long-term sequestration projects will depend on who is legally responsible for the sequestered CO_2 during and after the sequestration period. Resolution of the liability issue will be necessary to obtain financing and insurance for new generating units with CCS once the technology becomes available. Additionally, Congress must allow for the testing and verification of the viability of geologic storage in different regions of the country, and in multiple types of geologic formations, before requiring actions that assume the widespread practicality of geologic storage.

New Source Performance Standards. The Discussion Draft contains language in Section 116 which, if enacted, would establish a new source performance standard (NSPS) under the Clean Air Act's NSPS for CO_2 for new coal-fired power plants including possibly some which have received valid permits from state environmental regulatory agencies. We recognize that implementation of these standards is tied to certain commercial demonstration goals.

As proposed, the performance standards, as of Jan. 1, 2009, would require new coal-fired power plants in the future -- at a time when carbon capture and sequestration become feasible -- to operate at a CO_2 emissions limit feasible for only natural gas (combined cycle) plants, thus requiring significant use of capture and geologic sequestration for the majority of CO_2 emissions. As the discussion draft is currently written, these standards arguably could apply retroactively to some plants permitted prior to January 1, 2009, where any group has sought administrative review for any reason, and such review has not been resolved by January 1, 2009.

APPA opposes these provisions because several of our members have these facilities coming online over the next few years in various stages of permitting and building. We also believe, as mentioned below, that there should be a "bright line" between CO2 regulation and the existing Clean Air Act, as the Discussion Draft acknowledges for other parts of the Clean Air Act (CAA). In addition, this language would effectively create a moratorium on coal in a post-2015 world, and raise some significant challenges for facilities yet to be permitted between 2009 and 2015. As of 2009, there is no regulatory permitting system for Class VI (Safe Drinking Water Act) underground storage at power plants. Nor are there regulatory systems in most states to review subsurface geologic permit applications. Most importantly, there is no commercially deployable coal generation technology in the United States which can achieve the 1100 lb/MWH. (See chart below.)

APPA commends the R&D projects enabled under the CCS provisions in the bill as mentioned above, but regards the technology as still in a demonstration stage. It is critical for our nation to explore ways to achieve geologic sequestration of CO_2 under the right circumstances, but it is also important to realize that none of the many necessary component technologies have been linked together to date to operate as a power plant. Until they have functioned as a cohesive set of technologies at a power plant, we are really speculating on the performance, cost, and reliability of the component technologies. At this time there are still many unknown issues which need to be resolved before presuming that an 1100 lb/MWh (or the retrofitted target level of 800 lb/MWh) can be met.

APPA believes that the goal of encouraging new carbon capture and geologic sequestration (or perhaps carbon transformation or beneficial use adaptation) is laudable. However, the NSPS provision in the Discussion Draft would have the perverse consequence of halting state of the art coal plants that have received permitting approval, and are intended to both replace older, dirtier facilities and adapt carbon capture and sequestration technologies in the future. Such new generation coal plants are necessary to continue to promote the transition to cleaner, more efficient, and state of the art power production infrastructure for the nation.

An additional problem with the NSPS is that it would make it impossible to demonstrate coal CCS plants. CCS technology is not yet proven, and no guarantees are available for carbon removal performance or geologic sequestration. Requiring all coal CCS plants to remove carbon to levels of 1100 or 800 lbs/MWh means that there will be no CCS demonstration plants. There is too much risk in constructing a demonstration technology when it is unknown if the technology will meet the mandatory emission limit. The bill should provide separate permitting provisions with sufficient flexibility to allow construction of CCS demonstration plants.

It is also important to note that, once contracted, a power plant owner/operator cannot simply cancel the project with vendors because Congress passes a law with a new plant NSPS or retrofit technology performance standard equal to a natural gas emission limit. These communities would not only have to pay for such facilities, but would also have to buy or build additional generation

to meet their load (customer demand) requirements. This concern is particularly acute for public power utilities since they, unlike some other utilities, have a legal obligation to serve all of their customers.

Waxman-Markey Discussion Draft's NSPS Is Impossible For Current Coal Generation Technology to Meet

Steam Cycle	Efficiency (Percent)	Heat Rate (Btu/kWh)	CO2 Emissions (lbs/MWh)
Sub-critical	36-38	9,000-9,500	1,850-2,050
Super-critical	40-42	8,500-8,200	1,670-1,750
Ultra-critical	43-46	8,000-7,450	1,525-1,625
Advanced Ultra-Critical	46-48	7,450-7,100	1,450-1,525

Achievable

Waxman Markey NSPS Limit 1100 → 800 lb/MWh ← *Not Achievable*

Additional Comments on Section 116:

The draft does not specify whether the pounds of CO2 per MWH requirement is in **gross or net** MWH limit. The current NOx NSPS for post-1997 Subpart D units (which refers to the Clean Air Act's treatment of certain types of utility boilers) is in pounds per MWH, with gross as the measure for MWH. APPA believes that this provision should be consistent with the manner in which Subpart D units are covered in the Clean Air Act.

The Discussion Draft appears to exempt GHGs from NAAQS, HAPs, PSD, and Title V of the Clean Air Act, which APPA supports. APPA would like the additional clarification that GHGs, especially CO_2, would be exempt from the Section 112(d) of the Clean Air Act.

Clean Energy -- Low Carbon Fuel Standard. While APPA has no position on a Low Carbon Fuel Standard, it is worth noting that this section of the draft makes reference to the term "Electricity" and notes that the Administrator of EPA may, at his discretion, issue regulations providing for—"(A) the generation of credits for electricity used as a transportation fuel and that these credits will be given to the manufacturers or importers of such vehicles." While APPA supports the development of plug-in hybrid electric vehicles (PHEVs), the policy trade-off involved in shifting emissions from the transportation to the electricity sector will put additional burden on utilities to reduce emissions, despite significant net societal (cross sector) greenhouse gas emission reduction benefits. Utilities, as the provider of the electricity fuel through retail electricity service, should be credited for providing this significant net greenhouse gas emissions reduction and should not be penalized or subjected to limitations in supporting this new transportation-related electricity load. Allowing utilities to receive partial or full value through, for example, carbon credits, for the net emission reductions associated with electricity as a transportation fuel, would provide certainty and incentives for utilities to further support the transportation sector in helping to address climate change, achieve energy security, and build stronger local and domestic economies.

Plug-In Hybrid Electric Vehicle and Electric Vehicle Infrastructure. APPA is a strong supporter of PHEVs, but we believe this section is not necessary for public power utilities as we

have already taken steps to advance the requirements of this section. In addition, the Energy Independence and Security Act of 2007 (EISA 2007) authorized funding for plug-in hybrid demonstration programs, consumer incentives, fleet purchasing requirements and manufacturing incentives for the both the vehicles themselves and supporting battery technologies. Based upon this success and support, multiple major automakers have announced plans to commercialize battery electric and plug-in hybrid vehicles as early as 2010.

Large – Scale Vehicle Electrification Program. As a member of the Electric Drive Transportation Association, APPA supports this section.

Plug-In Electric Drive Vehicle Manufacturing. Under this provision, DOE is required to provide financial assistance to domestic auto manufacturers to "facilitate the manufacture of plug-in electric drive vehicles as defined in section 131(a)(5) of the Energy Independence and Security Act of 2007." APPA supports this section and believes DOE is the best agency to carry it out.

Transmission Planning. APPA believes that several features of this subtitle are superior to comparable provisions in other transmission-related legislation that APPA has reviewed in recent weeks. First, the federal transmission policy set out in proposed Section 216A(a)(1) is relatively balanced. While deployment of renewable and other low-carbon energy sources is indeed an important policy objective, it is not the only objective that transmission policy needs to meet. APPA supports the inclusion of the other noted objectives, such as ensuring reliability, reducing congestion, ensuring cyber-security and providing for cost-effective electricity services. Similarly, proposed Section 216A(a)(2) accounts for both supply-side and demand-side options in regional electric grid planning.

Second, the transmission planning regime set out in proposed Section 216A(b) builds on existing transmission planning efforts and expertise, by allowing entities that wish to conduct planning under the principles developed by the Federal Energy Regulatory Commission (FERC) to come forward and identify themselves, and then proceed to work in coordination to develop a "bottom up" regional transmission plan, with the FERC's assistance. This approach is superior to the approach outlined in other bills APPA has reviewed, where one or a very few entities are selected to produce a "top down," interconnection-wide transmission "overlay." Many APPA members that rely on the transmission systems of other utilities to obtain the electric power they need to serve their own customers report that their "local" transmission needs have gone unaddressed for some years. Spending billions of dollars on an extra high voltage transmission overlay to move low-carbon energy sources across entire regions makes little sense if that power cannot make it the last leg of the transmission journey to local distribution systems where it is to be consumed. Doing this would be like building a new freeway without an accompanying network of secondary roads to move the traffic to its ultimate destination. APPA members, both transmission owning and transmission dependent, have expended considerable resources to develop and participate in the new regional transmission planning processes required by the FERC's 2007 Order No. 890. Those processes should be built upon, not bypassed.

Third, the Discussion Draft is also significant for what it does not contain. Unlike other transmission-related legislation now pending, it does not provide the FERC with additional transmission siting authorities. APPA supported the "federal back-stop" transmission siting provisions contained in the Energy Policy Act of 2005 (which added new FPA Section 216). While APPA has been disappointed that these provisions have come under attack both in Congress and in the courts, we remain hopeful that a reasonable balance between the use of state and federal transmission siting authorities can be struck, and that a federal backstop regime can be made to work. Nor does Subtitle F contain any provisions "hardwiring" particular

transmission cost allocation methods to recover the costs of new transmission facilities. Transmission facilities cost allocation and cost recovery is a very difficult subject upon which to legislate, because of the cross-cutting arguments surrounding who benefits from each transmission project (and hence who should pay for it), the number of different customer classes that have to be considered (which can give rise to cross-subsidization concerns), and the possibility of changing transmission system flows over time (which means that potential beneficiaries can change over time). For these reasons, APPA supports leaving such transmission cost allocation decisions to the FERC, as the regulatory agency with substantial expertise in these matters. (Attached is APPA's recently passed resolution on transmission policy that underscores the issues delineated above.)

Smart Grid Advancement. APPA is concerned that this subtitle (in particular, Section 143), rather than dealing with "Smart Grid" issues, duplicates efforts already being undertaken by the electric utility industry to implement energy efficiency, demand response, use of distributed generation and similar measures at the retail level. Congress has, through an extensive series of amendments to the Public Utilities Regulatory Policies Act of 1978 (PURPA), has already required electric utilities (including many public power utilities) to review their own retail rate structures and service offerings and to consider how to facilitate such increased demand response, energy efficiency, and use of distributed generation. Many APPA members are already implementing such measures, to reduce their need for new generation investment and to prepare for potential future climate regulation. It is therefore unnecessary, onerous and duplicative for Congress to instruct electric utilities to now come up with "goals" and accompanying "peak load reduction plans," as envisioned in Section 143.

Title II – Energy Efficiency

Building Energy Efficiency Programs. APPA recognizes the need for public power systems to deploy a wide array of energy efficiency programs at the local level in order to reduce greenhouse gas emissions. APPA supports funding of current federal energy efficiency programs such as the Weatherization Assistance Program and encourages the creation of other fully funded voluntary energy efficiency programs to make homes more energy efficient.

Utilities Energy Efficiency. APPA does not support a federal Energy Efficiency Resource Standard (EERS), but instead believes utilities should be able to use energy efficiency measures to meet any renewable electricity standard. The EERS sets nationwide minimum levels of electricity and natural gas savings to be achieved through utility efficiency programs, building energy codes, appliance standards, and related efficiency measures. The EERS in this bill would require electric utilities to save 15% of energy by 2020.

As an Energy Star Partner, APPA supports and strongly encourages energy efficiency programs. Through APPA's Energy Efficiency Resource Central: Public Power's Initiative for Energy Efficiency, APPA offers a wide variety of education, policy and advocacy resources and services to help utilities promote energy efficiency. Many APPA members are already making great strides in the area of energy efficiency. APPA currently has 31 "Energy Efficiency Partners," which are state and regional public power associations and joint action agencies that are disseminating information on the energy efficiency programs they offer to their member public power utilities. In addition, a new group has formed recently, the Clean and Efficient Energy Program (CEEP), which is a collaborative effort between public power and the Alliance to Save Energy to provide educational materials and training on energy efficiency for public power managers.

We are concerned that our members, who are already aggressively implementing energy efficient measures, would be greatly disadvantaged under this provision. Utilities are rated on their progress based on the average annual electricity delivered to retail customers during the two previous calendar years. Utilities that have already implemented energy efficiency programs would have to find new ways to save additional energy or face steep penalties, while other utilities would be able to take advantage of "low-hanging fruit" efficiency measures to meet the requirements under an EERS.

As mentioned above, instead of creating a separate "one-size-fits-all" federal standard for energy efficiency, APPA supports allowing a significant portion of a renewable electricity standard (RES) to be met using energy efficiency. This will be especially important for our members in regions lacking traditional sources of renewable energy. Providing this kind of flexibility in an RES would help utilities meet the goals of both an RES and an EERS in one standard and help them actually reduce carbon emissions and comply with standards instead of just paying civil penalties when they are unable to meet various benchmarks.

Public Institutions. APPA supports this provision which increases the authorization for the amount available for grants for energy efficiency improvement and energy sustainability for public institutions including municipal utilities.

Title III – Safe Climate Act

APPA supports congressional action on legislation to reduce greenhouse gas (GHG) emissions. However, as mentioned above, any credible program must include cost containment provisions that protect consumers. The program must also maintain the reliability of electricity to consumers by including a transition period that provides time for the development and commercialization of low-carbon generation technologies. The Discussion Draft does not meet these two important goals.

The Discussion Draft relies on three provisions to control costs of its GHG cap-and-trade program: banking and borrowing of allowances; a strategic reserve of allowances; and offsets. These are inadequate to protect electricity consumers from potentially high and volatile prices.

APPA supports the draft's banking and borrowing provisions because they give utilities some flexibility in complying with annual requirements to submit allowances. Since utilities cannot accurately predict how many allowances will be needed in any given year, the flexibility to bank allowances or borrow from the next year without penalty is a very practical tool. However, the provision permitting borrowing with interest from allowance vintages of up to five years in the future will do little to contain allowance costs. Since the emissions cap declines each year, it is likely that allowances for future years will cost more than current-year allowances.

APPA supports the draft's provisions that limit the strategic reserve auction to covered entities and limit the amount any entity can purchase. However, APPA believes that strategic reserve allowances will be of little use to covered entities because the minimum price requirements are so high: 100 percent above a rolling 36-month average market price. This price could only be attractive if the current market prices were exceptionally high compared to their 36-month average. In other words, the strategic reserve would only help when the allowance price more than doubled in a short period of time.

APPA supports the draft's provisions allowing the use of alternative compliance mechanisms – such as domestic and international offsets and international emissions allowances – but believes

that the provisions governing the establishment and use of offsets are inadequate for cost containment purposes. The draft allows EPA up to two years to promulgate regulations governing which type of offset projects can be used. Investment in offset projects will be delayed until EPA has completed its regulations, and consequently, there will be few offset projects available when the 2012 compliance period begins. This is just the opposite of what is needed to control costs in the early compliance years. The use of offsets is crucial for cost containment in the transition period when technological solutions, like carbon capture and storage, are not yet generally available.

In addition, the draft sets detailed requirements for EPA's processes to regulate and enforce the establishment and use of offsets. This will significantly increase EPA's workload, raising the question of whether EPA can realistically meet the time limits established in the bill for approving offset project requests and issuing offset credits. Instead of requiring EPA to specifically approve and verify each project, consideration should be given to building on the work accomplished by existing offset regimes. For example, legislation could establish a list of types of offset projects that would be presumed eligible, subject to meeting verification requirements, and require EPA to accept verification protocols used on major offset trading exchanges, such as the Chicago Climate Exchange.

Given the draft's stringent requirements for the approval and verification of offsets, APPA can see no reason for the discount applied to offsets: five offsets equal four emission allowances. The discount will only impede investment in offset projects by reducing their value.

APPA believes that a credible cap-and-trade program for GHG emissions must include either a safety valve that sets a maximum allowance price or other equally stringent cost control mechanisms that mitigate price volatility and protect consumers. The Discussion Draft does not meet this standard. This is of particular concern because a GHG cap-and-trade program covers more sectors and potentially will have a much broader economic effect than previous emissions trading programs (such as the U.S. program for SO_2 emissions). Thus, high allowance prices and allowance price volatility can affect the entire economy by significantly increasing consumer prices, substantially adding to the cost of doing business, and impeding business investments – including investments in technology and infrastructure that can reduce GHG emissions. A safety valve setting a price ceiling for allowances would provide businesses with some certainty on future costs and keep consumer price increases to a reasonable level.

Electric utilities will have difficulty complying with greenhouse gas emissions caps in the transition years before technological solutions are commercially available. Therefore, caps in the early years of the program should be high enough to give utilities time to implement changes in their power supply portfolios, where prudent, and to get significant benefits from energy efficiency and demand reduction programs. APPA supports the approach taken in the Dingell-Boucher 2008 Discussion Draft, which provides higher caps than the Discussion Draft in the first 10 to 15 years of the program, but still ends up with essentially the same cap by the year 2029.

The Waxman-Markey Discussion Draft does not yet include provisions covering how allowances will be distributed, that is, by allocation or by auction. APPA supports a program that provides electric utilities with allowances sufficient to maintain reliability and to allow time to adapt. Allocating allowances to the utility sector during a transition period will give utilities time to make investments to reduce emissions without unduly burdening end-use customers with exorbitant rate increases. As discussed above, APPA's position does allow for a no more than 5 percent auction at the outset of any cap and trade GHG reduction program, but that is conditioned

on the inclusion of a safety valve or equally stringent cost containment mechanism. Since such a cost containment mechanism is not included in the Discussion Draft, we therefore support allocating all of the allowances with no auction.

In the early years of a cap-and-trade program, the electric utility sector should receive an allowance allocation proportionate to its share of emissions. Allowances should go to load-serving entities because they are in the best position to ensure that allowance revenues are used to reduce costs to electric consumers. In addition, one of the rationales for relying heavily on auctions rather than allocating allowances is to avoid giving industry a "windfall profit" at the expense of consumers. This concern arose from experience with the European cap-and-trade system where many generators included the market cost of allowances in their electricity prices even though they were allocated allowances and did not pay for them. Allocating allowances to load-serving entities, rather than fossil fuel-fired generators, eliminates this concern.

This is particularly important in regions of the country where wholesale electricity markets are run by a Regional Transmission Organization or Independent System Operator (RTO-run markets). Allocating allowances to independent generators selling into RTO-run markets will simply further increase the already artificially high wholesale power prices these markets are producing. That is because fossil fuel-fired generating units set the "clearing price" in most hours of the day in these markets. In the mid-Atlantic region served by PJM, for example, coal-fired units set the clearing price 70 percent of the time. These coal generators will naturally add the value of any carbon allowances to their bids (and most probably an additional premium since these markets do not require generator bids to be cost-based). Then, when these coal units do set the clearing price, all other generators dispatched in that hour (including much lower cost nuclear and other sources) will receive the same price. That price, including the windfall profits accruing to the non-coal generators that were also paid for the coal unit's carbon allowances, will be paid by all electricity consumers in the region.

As a result, two related problems will emerge: 1) the cost to consumers will be far in excess of what is needed for the actual reduction of carbon emissions, and 2) the program will not provide clear price incentives for a shift to cleaner sources of energy. The attached fact sheet provides more information on this issue. The best way to protect consumers and the environment from these adverse results is for the Federal Energy Regulatory Commission to address the serious flaws in the design and operation of the RTO/ISO markets. Trying to address these problems through provisions in a cap and trade program will be unsuccessful.

The annual emissions cap will ensure reductions in emissions regardless of whether allowances are auctioned or allocated. Some parties are concerned that customers will not alter their behavior to reduce consumption unless their cost of energy increases substantially (through the addition of allowance prices). However, utilities and their regulators can agree to substantial investments in energy-efficiency programs to achieve the same goal of reduced electricity consumption.

Given the electric industry's experiences with certain auctions, including those in electricity markets run by a Regional Transmission Organization or Independent System Operator, APPA has serious concerns about auctioning allowances. Any auction (if one is implemented) should proceed cautiously and prevent unintended harm. Thus, APPA strongly supports minimizing the initial auction amount to no more than five percent of total allowances. This will allow time for efficient allowance markets to develop, provide some protection to consumers from the risks of unpredictable cost increases, and ensure continuing reliable operation of the electric system.

An auction disadvantages small, not-for-profit entities like public power systems and favors large, for-profit national and multi-national corporations. Large companies will generally have enough financial clout to purchase the amount of allowances that they want – either for compliance purposes or simply on speculation. Since the amount of available allowances decreases each year, a prudent company that needs allowances will buy more allowances in the early years when the price is expected to be lower. Thus small entities – such as many public power utilities – that need allowances, but do not have access to large financial resources could have difficulty competing for the pool of available allowances. Provisions that limit participation in auctions to covered entities and set purchase limits – for example, limiting purchases to a 110% of an entity's compliance obligation – should be considered. (There would be no restrictions on participation in allowance trading markets.)

The Discussion Draft also does not yet include provisions for the use of revenues generated by allowance auctions. APPA believes that all net proceeds from auctions should be used only for targeted research and development, energy efficiency, and mitigation of cost impacts on consumers.

Any GHG cap-and-trade program must provide for effective market oversight, including strong enforcement and penalties. Oversight is needed to prevent market manipulation so that costs to consumers are minimized, market participants retain confidence in the market, and the market produces the desired environmental benefits in the most efficient and cost-effective manner. APPA supports many of the Discussion Draft's provisions on carbon market oversight. These include setting substantial civil and felony penalties for market manipulation and fraud; requiring position limits and margin requirements for each class of allowances; and ensuring market transparency.

APPA believes that effective market oversight of allowances in futures and other derivatives markets must include measures to identify and address excessive speculation. There is already significant interest in carbon markets, and the potential size of the market, combined with the likely price volatility, should make it attractive to investors. While some argue that promoting commodities as an investment provides market liquidity, the run-up – and subsequent collapse – in natural gas and oil prices in 2008 illustrates the potential for investors with large speculative positions to drive market prices. This 2008 experience resulted in calls for serious reform of the Commodity Futures Trading Commission (CFTC) regulatory authority, but any effective reform would have to include not just the CFTC-regulated exchanges but also unregulated over-the-counter (OTC) markets, which typically are much larger than the exchanges. Regulation of the derivatives markets for emissions allowances must ensure that all trading activities are subject to meaningful oversight.

Finally, APPA notes that for most sectors subject to the cap-and-trade program, the Discussion Draft provides an exemption for small emitters. APPA recommends that the electricity sector be granted the same 25,000 tons or less exemption available to most other sectors covered by the program. In addition, the draft requires entities to report GHG emissions and compliance data to the EPA Administrator as part of a GHG registry. The definition of "reporting entity" includes "a covered entity," and the definition of "covered entity" includes "any electricity source." Thus, a utility that generates power only from non-emitting sources, such as nuclear or hydro generating facilities, would be required to submit reports. In order to eliminate an unnecessary administrative burden, the definitions should be modified so that only electricity sources that produce emissions are required to report.

Title IV – Transitioning to a Clean Energy Economy

Resolution 09-02

Sponsors: Heartland Consumers Power District, JEA

In Support of a Workable Federal Renewable Electricity Standard

The public policy question of whether or not Congress should enact a federal mandatory renewable electricity standard (RES) is extremely challenging. While the American Public Power Association (APPA) strongly supports the development of energy from renewable sources, we have not supported a federal mandate in the past because we have argued that this is an issue that should be handled at the state and local levels. Furthermore, states and localities have been aggressively developing more renewable energy based on their unique circumstances and resource availability. Unfortunately, Congress has been unwilling to provide public power utilities with federal support for development of renewable resources that is comparable to the incentives provided to private companies. However, recognizing that a federal renewable electricity standard (RES) is highly likely to be approved by Congress and signed into law in the near future, APPA has determined that it is best to support the concept, but to at the same time urge Congress to pass the most workable, efficient and least-cost framework for the federal standard.

APPA's concerns about a federal renewable electricity standard should not be interpreted as lack of support for maximizing the development of our nation's renewable resources. We fully understand and appreciate the benefits that would be so achieved. Evidence of public power's commitment to renewable energy resources is apparent from the fact that in 2005 public power utilities were among the highest ranked utilities of all types offering

green power programs nationally, according to the Department of Energy's National Renewable Energy Laboratory. In addition, in the states that have adopted RES requirements, public power electric utilities have in some cases pledged to meet or exceed those standards, even when they are not directly subject to the state RES laws.

APPA also believes the possible consequences of a national RES on reliability and consumer costs should be considered carefully, and that Congress should be open to adjustments of the targets and timelines of the RES if the costs of compliance become excessive or the reliable operation of the grid is jeopardized. Wind and solar are inherently intermittent resources while our economy demands that electricity be available with near 100% reliability on a 24/7 basis to protect public health and safety. To deal with this, additional generation resources must be available to meet electric load requirements or utilities must be prepared to purchase credits from renewable generators or (possibly) the federal government.

In addition, a federal RES mandate is clearly related to the issue of climate change and has been viewed as a way to significantly reduce greenhouse gas (GHG) emissions. Therefore, a national RES program adopted today in an effort to reduce GHG emissions may well be redundant when Congress also enacts a mandatory program to achieve the same purpose at some point in the future. Requiring utilities to meet both the RES requirement and mandatory reductions in GHG emissions could in effect amount to a "double whammy," placing a significantly greater burden on electric utilities relative to other sectors of the economy. Additionally, future compliance with potential greenhouse

gas emissions regulation may involve actions that are more cost-effective than an RES. If we are to address the problem of climate change, and APPA believes that we should, we should do so in a way that those who contribute to the problem will be responsible for a proportionate contribution to the solution.

Finally, as mentioned above, while private companies may be able to absorb some of the additional costs likely from the RES mandate by reducing dividends paid to their stockholders, not-for-profit public power systems have no choice but to pass increased costs on to their customers in the form of higher rates. It is therefore extremely critical for us to be able to take advantage of fully comparable incentives, like those provided in the Clean Renewable Energy Bond (CREB) and Renewable Energy Production Incentive (REPI) programs, and others, to use these more expensive renewable resources.

NOW, THEREFORE BE IT RESOLVED: that the American Public Power Association (APPA) supports the establishment of federal requirements for the production of electricity from renewable energy sources, as long as such requirements adhere to the following principles and criteria:

- The requirement is: 1) based on retail sales of electricity; 2) applicable only to large retail sellers of electricity; and 3) set at a level that does not exceed 15% and does not require full compliance before 2020;
- Federal support for the development of renewable energy, such as Clean Renewable Energy Bonds, the Renewable Energy Production Incentive, fully

tradable tax credits, and other programs, is provided to public power utilities at a level that is comparable to the support provided to private developers of renewable energy through programs such as the production tax credit and others;

- The legislation allows as eligible for compliance the broadest range of renewable energy resources, including those allowed under state renewable energy requirements such as animal waste biomass, incremental hydropower, and new hydropower added at existing hydro and non-hydro dams;
- The legislation allows a significant portion of the requirement to be met through energy efficiency measures, both utility system efficiencies and customer-based programs, including any such measures allowed under similar state requirements;
- The legislation permits banking of excess credits to meet future year requirements;
- At a minimum, existing hydropower and municipal solid waste resources, including those owned by the federal government are excluded from the calculation of the baseline against which the renewable energy requirement is applied;
- The legislation ensures that any credits that accrue to federally-owned generation marketed by the power marketing administrations (PMAs), including both existing generation and additions, either are provided directly to the PMA customers affected by federal or state RES standards commensurate with their allocations of federally-generated power or sold with

proceeds going to repayment of affected projects as determined by federal power costumers in such marketing areas;

- Provisions are included allowing for alternative compliance in the form of reasonable cash payments on a per-kilowatt hour basis that corresponds to the value of the renewable energy production tax credit, and requiring such funds to be returned to the retail electricity suppliers subject to the federal standard ;
- Existing state programs are integrated with the federal RES to the fullest extent possible so that affected utilities have only one standard to meet -- the federal compliance obligation should not be additive. States, however, would be allowed to establish additional requirements beyond the federal requirements if they chose to do so;
- The legislation allows all existing qualifying renewable energy facilities and energy efficiency programs to be used to meet a utility's compliance obligation;
- The Secretary of Energy is authorized to provide waivers of compliance or penalties on a case-by-case basis based on criteria to be established, including, but not limited to, the effects of natural disasters, the recognition of utilities in "negative load growth" circumstances and other economic, operational and contractual impacts, and delays in relevant federal permitting approvals, among others;
- Existing contracts for renewable energy certificates are fully protected and not abrogated, diminished, or impaired;

- Provisions are included that make clear the oversight and regulation of any related renewable energy credit market;
- The legislation must require periodic, multi-agency reports to Congress -- with the first one due no later than three years after enactment -- on the implementation of the RES with respect to various factors such as the impact on the reliable operation of the electric grid, the ability of the grid to accommodate such an increase in intermittent resources, and the costs to consumers; and
- The legislation must acknowledge the link between a federal electricity standard and any subsequent adoption of federal legislation to address climate change through reduction of greenhouse gas (GHG) emissions by requiring Congress to re-examine the renewable electricity requirement's continuing necessity in light of the new GHG emission reduction scheme.

Resolution 09-01

Sponsor: APPA Transmission Working Group

Improving the Bulk Electric Transmission System

Congressional efforts are expected in 2009 to address issues involving the bulk electric transmission system. The last time major changes were made to the Federal Power Act (FPA), the law governing the bulk transmission system, was in the Energy Policy Act of 2005 (EPAct05), and the results have been mixed. Since 2005, there has been increasing emphasis on getting transmission facilities built to interconnect remotely-located renewable generation and deliver it to loads. Addressing this new challenge will layer additional complications on an already complex policy situation.

The American Public Power Association (APPA) believes that in many regions of the country, transmission siting constraints and cost allocation issues continue to pose significant challenges to getting new transmission facilities built. There are also a number of other areas that Congress can and should review that, if addressed, could improve the ability of the bulk electric transmission system to meet current and future needs. Including siting and cost allocation, these other areas are:

Siting: While the federal government has had limited back-stop transmission siting authority since 2005, states still play a major role. Public opposition to the siting of new lines is a significant hurdle to getting transmission built. In addition, a better definition of the respective roles of the different siting authorities (the Federal Energy Regulatory

Commission (FERC) and state public service commissions (PSCs), for example), needs to be established.

Cost Allocation: The issue of who pays for major new transmission facilities that provide regional benefits is a difficult one as such facilities can provide present and future system benefits that extend well beyond the specific entities for whom the facilities are constructed.

Joint Ownership: Some of the problems involved in regional transmission planning and cost allocation could be resolved if new or upgraded transmission facilities were jointly owned by those utilities using those facilities to serve load. While there are parts of the country in which joint ownership is common, it is the exception rather than the rule in other regions. A number of APPA members that have been willing and able to finance and own their share of needed new transmission have been turned down by investor-owned utilities (IOUs) to form such partnerships while at the same these IOU transmission owners have sought equity return incentives from regulators in order to build.

Regional Transmission Planning: Because of the variety of stakeholders involved in the electric utility industry, the "not in my backyard" syndrome, and the interconnected nature of transmission systems, regional planning for major transmission lines is essential. Despite the regional planning process, state PSCs significantly influence the outcome as to which regional priority projects get implemented. The Federal Energy

Regulatory Commission (FERC) has attempted to use its legal authorities under the FPA to promote regional transmission planning, but it is not yet clear whether its efforts are bearing fruit.

Transmission for Renewable Energy Resources and other Needs: New transmission is needed to provide access to remote renewable resources, and also for reliability and adequacy of supply, including ensuring that long-term transmission rights are available to load-serving entities for new resources and to ensure that adequate capacity continues to be available for existing power supply resources. Renewable generation sites are often located remotely from load centers, making new and longer transmission lines necessary to access that generation. However, because the "wind doesn't always blow and the sun doesn't always shine," other types of generation that can be called upon to run 24 hours a day and seven days a week must be available to "firm up" intermittent resources. This need must be taken into account in planning a reliable bulk power system.

NOW, THEREFORE, BE IT RESOLVED: That APPA believes one of the most significant impediments to getting new transmission facilities built continues to be siting and that the EPAct05 federal backstop siting authorities should be improved, supported and protected from repeal;

BE IT FURTHER RESOLVED: That as new electric generation resources, especially renewable resources, are developed to meet increasing demand and to address climate change, substantial new transmission facilities will be required. APPA therefore urges

the public, states and Congress to balance the concerns of specific states, landowners and other groups opposing specific transmission projects against the larger public good of an entire region;

BE IT FURTHER RESOLVED: That APPA supports inclusive, transparent planning processes to meet the needs of all load-serving entities;

BE IT FURTHER RESOLVED: That one of the best ways to decrease financial burdens and overcome opposition to significant new transmission facilities is to broaden the transmission ownership base, by expanding ownership opportunities to entities with different business models (including not-for-profit utilities). APPA therefore urges Congress to encourage and support joint ownership of transmission by load-serving utilities, including public power systems, and to eliminate financial barriers to public power system ownership, such as the private use restrictions for tax-exempt financing; and

BE IT FURTHER RESOLVED: That APPA urges FERC to provide greater guidance on cost allocation for major new transmission facilities that afford regional benefits. The costs of such facilities should be recovered through cost-based rates that are just and reasonable, and not unduly discriminatory, consistent with cost-of-service ratemaking principles. APPA does not support allocation of the costs of such facilities to regions, sub-regions or entities that will receive little or no benefit from the facilities, and

88 therefore opposes a federal statutory requirement to allocate such costs on an

89 interconnection-wide basis.

American Public Power Association

ISSUE BRIEF March 2009

Problems with Implementation of a Carbon Cap-and-Trade Mechanism in RTO-Run Wholesale Markets

A cap-and-trade system has emerged as the leading model for federal legislation to regulate carbon dioxide. APPA supports comprehensive federal legislation to address climate change and has developed a set of principles for such legislation to follow for it to be workable for not-for-profit public power electric utilities. In addition, APPA has adopted principles for a cap-and-trade regime. These principles center on achieving the greenhouse gas reduction goals at the least cost to consumers and with lowest possible adverse economic impact.[1]

This fact sheet describes how cap-and-trade will not be an efficient means of reducing CO_2 emissions when implemented in the deregulated wholesale markets operated by regional transmission organizations (RTOs)/independent system operators (ISOs).[2]

Background on RTO Markets

In the Northeast, Mid-Atlantic, Midwest and California, RTOs operate wholesale spot markets under almost no regulation of prices. These markets use a "single-clearing-price auction" where all sellers submit offers to sell electricity, with lowest offers accepted first. When the total quantity offered equals the amount of electricity required in that time period, the highest price of the final offer is paid to all sellers whose offers were accepted. These markets do not require that such offers be based on cost. Sellers can offer at any price they choose, regardless of the actual costs of the generating unit. Information on what the sellers bid and how such prices are set is extremely limited.

These markets have contributed to significantly higher prices within RTO regions, most notably in the deregulated states where utilities no longer own power and must purchase power from these wholesale markets.

Difficulties with Implementation of Cap-and-Trade

Two general and related types of difficulties are likely to emerge: 1) the cost to consumers will be far in excess of what is needed for the actual reduction of carbon emissions; and 2) the program will not provide clear price incentives for a shift to cleaner sources of electricity.

Higher Prices than Needed for Policy Objective

It is inevitable that greenhouse gas emissions mitigation will increase electricity costs. Given the already high prices paid by consumers in RTO regions, it is important that the needed carbon reductions be achieved at the least cost. In the deregulated wholesale markets this is unlikely to occur.

Regardless of whether carbon emission allowances are allocated directly or auctioned, consumers in RTO markets will pay for the allowances. Generators that hold allowances will likely add to their offers to sell electricity the opportunity cost of free allowances, equal to the lost market value of not selling the allowance. This is what occurred in cap-and-trade programs in Europe.[3]

Exacerbating the allowance cost is the single-clearing price structure. The natural gas or coal-fired generating units most frequently set the clearing price, with variation by region. Nuclear units, the only major source of base load power that does not emit carbon dioxide, do not set the clearing price. These power

[1] Climate Change Issue Brief, American Public Power Association, February 2009, p. 3-4, https://www.appanet.org/files/PDFs/23%20Climate%20Change.pdf

[2] ISOs operate, but do not own, transmission lines within a geographic region. RTOs are those ISOs that meet certain criteria and perform certain specified by FERC, including congestion management, market monitoring, and transmission planning. RTOs also operate FERC-approved centralized wholesale electricity markets.

[3] Trade-Offs in Allocating Allowances for CO_2 Emissions, Congressional Budget Office, April 25, 2007 http://www.cbo.gov/ftpdocs/80xx/doc8027/04-25-Cap_Trade.pdf

plants submit lower offers and are run continuously at full capacity unless shut down for refueling or maintenance. Because nuclear power's offers to sell are always below the clearing price, these units always receive a price greater than they have offered. Nuclear power will therefore automatically receive the full increase in the clearing price resulting from the additional cost of CO_2 allowances without any change in the dispatch of these units.

In the PJM Interconnection RTO, nuclear power generates one-third of the electricity, meaning one-third of the increase in electricity costs would be a direct windfall to owners of nuclear power plants that are already in operation and do not emit carbon dioxide. These extra payments therefore would have no effect on reducing carbon dioxide.[4]

Lack of Clear Incentives

A primary means by which CO_2 would be reduced under a cap-and-trade system is by a reduction in the dispatch of coal-fired plants and a corresponding increase in natural gas generation. Such a change would occur when the additional cost of purchasing CO_2 allowances by a coal plant exceeds the cost differential between coal and natural gas. Natural gas plants are more expensive to operate than coal plants, but produce about half the CO_2 emissions. But the additional cost of the CO_2 allowance could increase the price offer of the coal plant above the natural gas plant offer, and the lower offer from the natural gas plant would mean that it was moved up in the dispatch order.

The underlying premise of this scenario depends on a direct relationship between actual costs and offers to sell power—a relationship that does not exist in today's RTO-run markets. Studies have shown that the offers to sell power in the wholesale spot markets can vary from day to day[5] and often exceed the actual costs.[6] Without a predictable relationship between actual costs and offers to sell, it is unclear to what extent the shift in dispatch away from coal and toward natural gas would actually occur.

The lack of a direct relationship between costs and price offers means that natural gas plants, despite their lower CO_2 allowance cost, could increase their offers to sell power by a greater degree than coal offers, resulting in less of a shift away from coal than is needed to achieve greenhouse gas reductions. One reason this could happen is if prices offered into the market increase to a greater degree than the actual cost of CO_2 allowances. Data from the PJM Interconnection's market monitor shows that such an outcome could occur.

PJM's market monitor reports each year on the "markup" or the amount by which the offer setting the clearing price exceeds the actual cost of operating the unit. This markup increases in both dollar and percentage terms as costs increase, meaning that the natural gas plants have a higher markup.

In the most recent State of the Market (SOM) report from the PJM market monitor, the reported markup for a generating plant whose costs are between $140 and $160 per megawatt-hour ranges from seven to nine percent or about $13, while plants with costs ranging from $60 to $80 per megawatt-hour only had a markup of three to four percent, or about $2.[7] Although not reported in the 2008 SOM, the prior year's SOM shows that natural gas plants have a higher markup than coal—four percent for a combustion turbine and eight percent for a combined cycle, compared to three percent for coal.[8] And these are just average amounts—markups for individual units and at specific times can be greater. The SOM reports do not explain why the markups are greater for higher cost marginal units, but one reason might be that as sellers observe and learn patterns of price offers they may attempt to increase their offers to drive up the clearing price.

In conclusion, at a time when consumers are facing extreme hardships from increasing energy costs and shut-offs from utilities are at record levels, implementation of a carbon mitigation policy must be done in a manner that achieves needed emissions reductions at least cost to consumers. Achievement of this policy goal will be greatly hindered by the RTO-run markets as currently structured. For that reason, APPA has advocated that reforms be implemented to these markets that will both prevent additional harms to consumers and promote cleaner energy.

[4] Testimony of Sonny Popowsky, Consumer Advocate of Pennsylvania, before the United States House of Representatives, Committee on Energy and Commerce, Subcommittee on Energy and Environment, Regarding Consumer Protection Policies for Climate Legislation, Washington, DC, March 12, 2009

[5] LMP Electricity Markets: Market Operations, Market Power, and Value for Consumers prepared by Ezra Hausman, Robert Fagan, David White, Kenji Takahashi, and Alice Napoleon, Synapse Energy Economics. http://appanet.org/files/PDFs/SynapseLMPElectricityMarkets013107.pdf

[6] A Comparative Analysis of Actual Locational Marginal Prices in the PJM Market and Estimated Short-Run Marginal Costs: 2003-2006 prepared by Serkan Bahceci, Julia Frayer, Amr Ibrahim, and Sanela Pecenkovic, London Economics International. February 2007, http://appanet.org/files/PDFs/LEIReport2012007.pdf

[7] State of the Market Report for PJM, 2008, p. 89 http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2008/2008-som-pjm-volume2-sec2.pdf

[8] PJM State of the Market 2007, p. 35, http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2007/2007-som-volume2-sec2.pdf

Mr. MARKEY. Let me now recognize the gentleman from Georgia, Mr. Barrow, to introduce our next witness.

Mr. BARROW. I thank the Chair for the courtesy of allowing me to introduce our next witness.

I want to welcome Mr. John Somerhalder here to the committee today. Mr. Somerhalder is the chairman of the board, president and CEO of AGL Resources down in Atlanta. He is a chemical engineer, has been in the natural gas businesses for 30 years. And I think you will find, as he speaks for the American Gas Association today, that the folks in natural gas are already doing a lot of the things we want them to do, already early starters in the area of efficiency and trying to reduce our carbon footprint.

So it is a privilege for me to welcome you. Thank you, Mr. Somerhalder, for being here today.

STATEMENT OF JOHN SOMERHALDER, II

Mr. SOMERHALDER. Thank you, Congressman. And thank you, Mr. Chairman, and thank you to the committee.

My company has utilities in addition to, in Georgia and Florida, Tennessee, Virginia, Maryland, and New Jersey, and natural gas storage facilities in Texas and Louisiana. I am pleased today to testify on behalf of the American Gas Association, of which I am vice chair and chair of the Climate Change Task Force.

The AGA's 202 members deliver natural gas to more than 171 million Americans. In terms of helping in the fight to reduce greenhouse gas emissions, natural gas utilities have two great resources: our fuel and our customers. Our fuel is a clean, efficient, abundant, and a domestic energy source, with 98 percent of America's natural gas being produced in the United States or in Canada. It is the dominant source of energy for residential and commercial heat, hot water, and cooking. Yet it produces only about 6 percent of the total U.S. greenhouse gas emissions. Upon combustion, natural gas creates 43 percent less carbon dioxide than coal and 28 percent less than petroleum.

In terms of our customers, they lead the Nation in energy efficiency. Since 1970, the number of residential natural gas customers has increased from 38 million to 65 million, but the energy consumption and carbon emissions have remained flat in that time period. This results from a trend of declining use per customer. This dramatic reduction is attributable to tighter homes, more efficient appliances, and energy efficiency measures, many of which were implemented by natural gas utilities.

Clearly, natural gas is part of the climate change solution. It offers an immediate answer with technology that is available today. The most efficient and effective way to use natural gas is directly in our homes and businesses. More than 90 percent of the energy that leaves the wellhead gets to the customer, rather than indirectly to produce electricity where two-thirds of the energy can be lost.

In light of the above factors, we maintain that a national, programmatic, focused effort rather than a cap-and-trade effort for these customers is the best way to ensure equity while not subjecting customers to unpredictable allowance cost. We do not want to see our customers competing with electricity generators and

large industrials for the allowances necessary to heat their homes and cook their food.

We believe, and history proves, that programmatic measures uniformly applied can accomplish what we want without the undue cost and complexities of the cap-and-trade system. However, if programmatic measures are not acceptable, AGA supports including natural gas residential and commercial sectors—excluding them from the scope of the cap-and-trade system until 2016, as proposed in the discussion draft bill. AGA believes that most allowances required for residential and commercial gas customers should be allocated rather than auctioned, as allocating allowances is the best way to ensure that price impacts on our customers will be minimized. Local natural gas utilities, as regulated by State public utility commissions, make no profit on natural gas prices when they rise. Similarly, they would not make any profit on allocated allowances. The natural gas utilities will need the ability to pass on the cost of these allowances, and the climate change bill should provide for this rate-making treatment.

We support the proposed carbon footprint labeling in the draft bill. Giving customers this carbon output information will provide them with the essential information that they need to play a role in reducing our carbon output. The discussion draft bill proposes to establish an Energy Efficiency Resource Standard for both electric utilities and natural gas utilities.

While the end result is a laudable one, the lack of clarity in the language addressing EERS causes concerns. First, the legislation could have the unintended consequence of limiting carbon-driven fuel switching, and could even increase the Nation's dependence on foreign oil by preventing conversion to high efficiency gas applications from less efficient fuels.

Second, the imposition of these penalties could be a barrier to economic growth and development by raising the cost of energy to both new and existing customers.

And, third, the focus is on large after-tax penalties rather than incentives, and it is tied to consumer behavior which the utility cannot directly control.

Mr. Chairman and committee members, there are many other issues, including research and development, natural gas vehicles, and renewable gas that we don't have time to address now but are included in my written testimony.

That concludes my remarks, and I will be happy to address your questions.

Mr. MARKEY. Thank you very much.

[The prepared statement of Mr. Somerhalder II follows:]

Testimony of

John W. Somerhalder II
Chairman, Chief Executive Officer, and President
AGL Resources, Inc.
Atlanta, Georgia

On Behalf of the
American Gas Association

U.S. House Committee on Energy and Commerce
Subcommittee on Energy and Environment

Hearing on
American Clean Energy and Security Act of 2009

April 23, 2009

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House Committee on Energy and Commerce
Subcommittee on Energy and Environment
April 23, 2009

Statement of John W. Somerhalder II
On Behalf of
The American Gas Association

Executive Summary

- Natural gas is America's clean, secure, efficient, and abundant fossil fuel
- Residential natural gas consumers, who use the fuel for essential human needs, have a 30-year record of reducing consumption and greenhouse gas emissions
- History demonstrates that programmatic measures, such as appliance efficiency standards and building codes and standards, will lead to more certain emissions reductions than a cap-and-trade system
- If subjected to cap and trade, natural gas utilities should be allocated adequate allowances
- Congress should assure natural gas utilities of cost pass-through for allowances
- A climate change program should consider the unique benefits of renewable natural gas
- Natural gas, because it has the smallest carbon footprint of any fossil fuel is part of the climate change solution
- AGA endorses carbon footprint labeling for appliances
- AGA suggests requiring carbon labeling for buildings
- DOE should be required to consider carbon emissions in its appliance standards
- EERS seeks to reach a laudable goal, but the mechanism is less than perfect
- Utilities do not control their customers' consumption
- EERS does not take into account economic growth
- EERS does not take into account carbon-driven fuel switching
- The mechanism of EERS is potentially troublesome

Introduction

Thank you for the opportunity to testify before the subcommittee. My name is John W. Somerhalder II, and I am the Chairman, Chief Executive Officer, and President of AGL Resources, Inc., located in Atlanta, Georgia. AGL provides natural gas service through six natural gas utilities to more than 2.2 million households, commercial, industrial, and power generation customers in Georgia, New Jersey, Virginia, Florida, Tennessee, and Maryland.

I am testifying today on behalf of the American Gas Association (AGA), which represents 202 local energy utility companies that deliver natural gas to more than 65 million homes, small businesses, and industries throughout the United States. AGA member companies deliver gas to approximately 170 million Americans in all fifty states.

Natural gas meets one-fourth of the United States' energy needs. I am the 2009 Vice-Chairman of AGA.

Natural Gas is America's Clean, Secure, Efficient, and Abundant Fossil Fuel

Natural gas is America's cleanest and most secure fossil fuel. Natural gas is essentially methane, a naturally-occurring substance that contains only one carbon atom. When burned, natural gas is the most environmentally-friendly fuel because it produces low levels of unwanted byproducts (SO_x, particulate matter, and NO_x) and less carbon dioxide (CO_2) than other fuels. Upon combustion natural gas produces 43% less CO_2 than coal and 28% less than fuel oil. Moreover, almost all of the natural gas that is consumed in America is produced in North America, either in the United States or Canada, with the vast majority of that being produced in the United States. Only a small portion—1 to 2%— is imported from abroad as liquefied natural gas.

Natural gas is also the most efficient of the fossil fuels. Approximately 90% of the energy value of natural gas is delivered to consumers. In contrast less than 30% of the primary energy involved in producing electricity reaches the consumer. Additionally, natural gas is an abundant fuel. Recent prodigious discoveries of shale gas have significantly added to this abundant resource base. Changes in economics and technology will continue to increase our resource base estimates in the future, as they have consistently done in the past.

Natural gas is an essential fuel for America. The natural gas delivered by AGA members to residential customers is consumed almost entirely to meet essential human needs—space heating, water heating, and cooking.

AGA and its members would like to highlight two important facts about natural gas that are little known and often overlooked:

- **America's residential natural gas customers have led the nation in reducing the emission of greenhouse gases over the last 30 years and can continue, with appropriate policies, to reduce those emissions. It takes less natural gas to serve 65 million homes today than it took to serve about half that number in 1970.**

- **Natural gas is not part of the climate change problem; rather, it is part of the climate change solution because it offers an immediate answer with existing technology and has the smallest carbon footprint of all fossil fuels.**

We hope that the subcommittee will be mindful of these two critical pieces of information as it crafts climate change legislation. They are important facts that bear upon formulating the best policies for achieving the nation's carbon-regulation goals.

Residential Gas Consumers Have an Unrivaled Record in Reducing Greenhouse Gases

Residential natural gas customers have consistently reduced their per-household consumption of this fuel—and the carbon emissions resulting from its use—for more than 30 years. On a national basis, residential customers have reduced their average natural gas consumption by approximately 30% over these years. Both research and anecdotal evidence make clear that there are proven drivers for reducing natural gas consumption and the carbon emissions associated with natural gas consumption—increased appliance efficiency and increased building efficiency, supplemented by a variety of education and incentive programs.

AGA believes that pursuing appliance efficiency and building efficiency policies is the preferable, indeed optimal, means to achieve further carbon reduction in this sector. AGA remains of the view that it would be counter-productive to make natural gas residential and commercial customers subject to cap-and-trade regulation. Instead, we believe that this sector can continue its admirable record of reducing carbon emissions by continuing an intensive focus upon energy efficiency and building codes and standards measures, which for three decades have led to dramatically reduced natural gas consumption (and emissions).

The costs, direct or indirect, of a cap-and-trade system will simply add to already high energy costs and will have only a modest impact in achieving the desired end result—reducing carbon emissions. Unlike electricity, where there are a number of options for reducing consumption in the relatively near term, almost all natural gas in the home is consumed by furnaces, water heaters, and stoves—durable appliances with relatively long lives. In addition, electricity generators can alter their generating sources, which is not an option for natural gas. While "dialing down" is certainly an option, it has its limits, and consumers have already dialed down dramatically with the natural gas price increases of this decade.

AGA and its members believe, of course, that both natural gas utilities and their customers should contribute to reducing greenhouse gas emissions in order to meet the nation's goals. Our collective experience with energy efficiency, however, informs our view that natural gas residential and commercial customers should not be included under the cap-and-trade aspects of a climate-change program. Instead, there are other ways, which are almost certain to be more productive, that can, and should, be applied to these sectors. Further, a cap-and-trade program can penalize those who have previously and most aggressively pursued efficiency gains and carbon reductions.

The success of residential and commercial natural gas consumers is illustrated by the fact that they have reduced their per-household consumption so dramatically that there has been virtually no growth in sectoral emissions in nearly four decades despite an increase in natural gas households of over 70%. An allowance program based on 2005 emission levels penalizes those consumers and natural gas utilities that implemented early programmatic actions—from appliance and building standards to consumer education and rebate programs.

In light of the above factors, we maintain that a national programmatic-focused effort, rather than a cap-and-trade effort for these customers, is the best way to ensure equity while not subjecting consumers to unnecessary and unpredictable allowance costs. We do not want to see our customers competing with electricity generators and large industrials for the allowances necessary to heat their homes and cook their food. We believe, and history proves, that programmatic measures uniformly applied can accomplish what we want without the undue costs and complexities of a cap-and-trade system. This approach would not penalize those who acted early, and it is focused on the only things these residential and commercial customers can do—tighten their homes, install efficient appliances and use less wherever possible.

Treatment of Residential and Commercial Natural Gas Customers in a Cap-and-Trade Program

Although we believe programmatic measures are much more appropriate for our customers than cap-and-trade, the following comments are directed at the program proposed in the Waxman/Markey discussion draft.

AGA supports excluding the natural gas residential and commercial sectors from the scope of the cap-and-trade system until 2016 as proposed in the discussion draft bill released March 31, 2009 by Chairmen Waxman and Markey. Between 2012 and 2016 progress toward reducing carbon emissions will continue to be made through efficiency measures without subjecting these consumers to the costs associated with emissions credits for the natural gas that they consume. Such consumer costs would be unlikely to induce significant additional changes in behavior as some might hope.

AGA continues to believe that a sound policy balance on this issue was reflected in the Committee's October 7, 2008, discussion draft bill. Under that proposal residential and commercial natural gas customers would not have been subject to an emissions cap at the outset of the program. Rather, up to the year 2016 these sectors could be covered through aggressive promotion and implementation of various greenhouse gas reduction programs, including, but not limited to, state- or utility-sponsored conservation and efficiency programs, tightened building codes and standards, and appliance efficiency standards. If the residential and commercial natural gas sectors had continued with their historic downward trend in consumption and emissions, under the October discussion draft, they would have remained out of the cap-and-trade system until 2020.

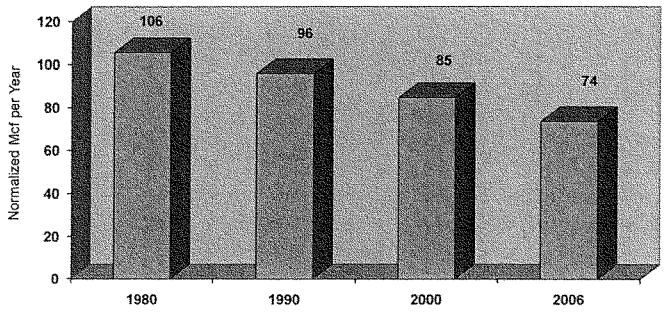
The specific attributes of residential and commercial natural gas customers that warrant this treatment in the context of a greenhouse gas regulation proposal, are enumerated below:

Natural gas is used to meet essential human needs for small-volume customers. The majority of the homes in this country use natural gas, and in this sector 98% of all gas is used for space heating, water heating and cooking, while the remaining 2% is used for clothes drying and other purposes. This fuel is, therefore, used for essential human needs rather than for luxuries.

Residential and commercial natural gas consumption accounts for less than 6% of total U.S. greenhouse gas emissions. Natural gas provides approximately 40% of all energy consumed in the residential and commercial sectors. As noted previously (and discussed more fully below), it is the most efficient and lowest carbon-emitting fossil fuel.

Carbon emissions from residential use of natural gas are already at 1970s levels. While the number of natural gas customers has grown substantially, greenhouse gas emissions have been reduced. In fact, total annual residential natural gas consumption is lower today than it was in the 1970s, despite the fact that the number of natural gas households has increased more than 70% from 38 million to more than 64 million. Customers of natural gas utilities continue to lead the nation in reducing energy consumption and the accompanying greenhouse gas emissions. AGA believes that few, if any, sectors of the economy can claim a comparable record of achievement. Consumption of natural gas in the residential sector, on a national average basis, is shown in the following graph:

NATURAL GAS USE PER RESIDENTIAL CUSTOMER IS DECLINING



The greenhouse gas emission reductions per household experienced during the past four decades are largely attributable to tighter homes and more efficient natural gas appliances. These factors will undoubtedly provide the foundation for continued future reductions in greenhouse gas emissions. Placing small-volume natural gas customers under a cap-and-trade system would make these homes, businesses, schools and hospitals compete (directly or indirectly) with electricity generators and industrial facilities for a limited number of allowances, thereby significantly increasing the energy costs of these consumers.

Natural gas utilities are aggressively promoting decoupled rate structures that allow them to promote conservation and efficiency consistent with shareholder interests. Nearly 40% of all residential natural gas customers are served by gas utilities that have decoupled rates or that are engaged in state proceedings that are presently considering decoupled rates. Rate decoupling is important to energy efficiency and greenhouse gas emissions because it breaks the link between utility revenue recovery and customers' energy consumption.

Natural Gas Utilities Should Receive Adequate Allowances if They are Subject To a Cap

Under the March 31, 2009, discussion draft bill, residential and commercial customers would be placed under cap and trade (with the point of regulation being natural distribution companies) in 2016. The discussion draft is silent for the moment as to the disposition of emissions allowances. AGA believes that most allowances required for residential and commercial natural gas customers should be allocated rather than auctioned, as allocating allowances is the best way to ensure that price impacts on our customers will be minimized. It should be pointed out that local natural gas utilities, as regulated by state public utility commissions, make no profit on natural gas prices when they rise. Similarly they would not make any profit on allocated allowances—allocated allowances would only serve to reduce the price of natural gas to our ultimate customers. The allocation of allowances to local gas utilities should be proportional to their base-year greenhouse gas emissions.

Natural Gas Utilities Should Receive Assurances of Cost Pass-through

Depending upon what Congress ultimately determines as to coverage of natural gas residential and commercial customers and an allocation of allowances for the benefit of these customers, natural gas utilities will at some point be required to purchase allowances for their customers. In functional terms, this will essentially amount to a specific federal charge for the right to consume natural gas, almost entirely for essential human needs as discussed above. AGA believes that the climate change bill should provide that natural gas utilities will be permitted ratemaking treatment to pass on the costs of these credits to their customers.

To the extent that carbon emissions from the use of natural gas by residential and commercial customers of gas distribution utilities are covered under a cap-and-trade program, gas utilities may be required to incur costs (e.g., purchase allowances) to comply with the legislation. Absent a specific directive in the federal legislation, natural gas utilities would only be able to recover from their customers the costs that their state commissions would allow as prudent. In order to ensure that customers bear the environmental compliance costs that were incurred on their behalf, Congress should exercise its authority over interstate commerce and provide in any legislation that costs incurred by a gas utility on behalf of retail customers to comply with this legislation are to be considered prudent and reasonable operating expenses of the gas utility for retail ratemaking purposes and recoverable on a full and current basis, and that state action refusing to permit the pass-through of those costs to retail customers would conflict with federal law.

Any Bill Should Treat Renewable Natural Gas Appropriately

One exciting development in the natural gas industry is the growing production of biogas, also known as renewable gas, which can be produced from landfill and livestock waste. Methane that would otherwise be released from these sources is more than 20 times as potent as CO_2 as a greenhouse gas. To the extent this methane is captured and burned, greenhouse gases are reduced by 95 percent. We are uncertain how the use of renewable gas is treated under the bill, and we do not believe it should be treated as other hydrocarbon fuels. (The same point applies with regard to the treatment of renewable natural gas under the Energy Efficiency Resource Standard, which is discussed below.)

Using Natural Gas in Homes and Businesses is Part of the Climate Change Solution

Many misguidedly believe that because natural gas is a fossil fuel it is one of the causes of greenhouse gas emissions and, as result, a contributing factor to climate change. In fact, however, natural gas is part of the climate change solution. As mentioned previously, natural gas is a fuel that emits low levels of traditional pollutants such as NO_x and SO_x. With regard to greenhouse gas emissions, natural gas, because it has only one carbon atom, emits less carbon when consumed than any other fossil fuel. As a result, natural gas has the potential to be a vehicle to move the nation toward its greenhouse gas reduction goals.

There are significant differences in emissions between natural gas and electricity that fundamentally result from vastly different levels of efficiency. Approximately 90 percent of the energy value in natural gas is delivered to the home. With electricity less than 30 percent of the primary energy value reaches the customer. The largest difference in efficiency for electricity is lost as waste heat at the generating station, as well as line losses in transmission and distribution. These radically different efficiencies produce the significant differences in carbon emissions between electric and natural gas appliances.

The full potential for natural gas efficiencies in the climate change arena is demonstrated most dramatically by the natural gas water heater. The average natural gas water heater emits approximately 1.7 tons of CO_2 per year. In contrast, the average electric water heater results in more than twice as much—3.8 tons per year. The difference between the two could not be more dramatic, and it becomes a multiple of three when the comparison is made between a high-efficiency natural gas water heater and a high-efficiency electric water heater. These numbers are based on national averages, and, as a result, actual differences will vary from area to area.

The same differences in efficiency and emissions follow when comparing an all-electric home with a natural gas home. A typical all-electric home on average produces 10.8 tons of CO_2 per year, while an all-natural gas home produces 7.2 tons of CO_2 per year. Again, these numbers reflect national averages, and actual experience will necessarily differ, but the order of magnitude of difference remains.

The plain consequence is that the nation can reduce its carbon footprint by opting for appliances that use natural gas in direct applications (*i.e.*, where the natural gas is used to heat air, water, or food). There is the opportunity, on a national basis, to reduce carbon emissions by millions upon millions of tons if we utilize more natural gas directly in homes and businesses as the fuel for the future.

Converting small-volume customers to high-efficiency natural gas applications is one of the best ways available today to reduce greenhouse gas emissions. As the example above demonstrates, converting electric resistance water heaters to natural gas can reduce greenhouse gas emissions by one-half to two-thirds. Doing so would have the added benefit of reducing overall energy consumption, costs, and the need to construct new electricity generating plants—a critical problem in a carbon-constrained environment—and electric transmission lines.

AGA Applauds the Inclusion of Carbon Footprint Labeling in Section 213(h)

AGA commends the committee for having recognized the carbon benefits of natural gas and having taken action on it in the discussion draft bill. Section 213(h) of the discussion draft (pages 247-251) would expand the existing Federal Trade Commission EnergyGuide labeling program for home appliances to include carbon footprint information. The current program displays on an appliance label the expected annual operating costs for the appliance (and the range of costs for comparable equipment). The discussion draft would expand this to include expected carbon output associated with use of the appliance.

AGA applauds the inclusion of this provision in the draft bill. As America heads down the path where drastic reductions in carbon output will be a top national priority, giving consumers this carbon output information will provide them with essential information for playing their part in achieving this national priority. Moreover, implementing this step is virtually cost free. The new program would apply to appliances covered by the existing program. The data for calculating carbon footprint is available. No additional manufacturing cost is involved. Labels are already required, so the additional labeling cost will be nominal for appliance manufacturers. Thus, this provision offers an opportunity to provide consumers with important information to factor into their purchasing decisions with virtually no additional cost for doing so.

A national requirement for carbon-footprint labeling would lead to a uniform standard for providing this information to consumers. It would also avert the possibility of individual manufacturers establishing their own methodologies for doing so, the result of which would be conflicting information and potentially misleading claims as to a carbon footprint.

Making carbon footprint information available to consumers will assist them in determining which appliance option has the lowest total environmental impact. The information currently included on the EnergyGuide label does not provide a means for finding the most carbon-efficient appliance. In particular, when consumers are empowered to make more efficient choices, manufacturers – and all energy industry actors – will feel increased pressure and competition to provide more efficient supply.

Section 213(h) Should Be Expanded To Include Carbon Labeling for Buildings

As mentioned above, energy efficiency in the residential and commercial sector has, over the last 30 years, been driven primarily by improvements in appliance efficiency and improvements in building envelopes. Further carbon reductions in this sector, at least over the next several decades, will continue to come principally from these types of activities. The carbon footprint labeling for appliances called for in Section 213(h) of the discussion draft bill is a step in the right direction as to appliances.

AGA believes that it would be appropriate and productive to expand the scope of Section 213(h) to include buildings as well. As noted, building efficiency is a principal driver in energy efficiency. Approximately 40 percent of all energy is consumed with regard to buildings. As we go forward, building efficiency will have a similar role with regard to reducing carbon. As with appliances, requiring carbon footprint labels with respect to buildings would be a very low-cost means to provide consumers with important information for making the choices that will ultimately determine whether the United States will reduce its carbon footprint to the degree scientists believe will be necessary to avert global warming.

AGA is presently crafting a legislative proposal to require carbon footprint labeling for buildings. We expect to be in contact in the very near future with committee staff to discuss this.

Appliance Minimum Efficiency Rules Should Include Carbon Information and Impacts

AGA believes that, as the nation tackles the goal of reducing carbon, additional changes to the way in which we have addressed energy efficiency are necessary. While the Department of Energy (DOE) acknowledges the carbon impact of its appliance efficiency standards, it should also be directly considering CO_2 emissions associated with appliances as a part of the rulemaking process in which it establishes minimum efficiency standards. Integrating CO_2 emissions into the decision making process would provide DOE with more complete information with which to consider the full range of appliance efficiency options. Current federal law covering appliance efficiency does not direct DOE to this end, mainly because the appliance efficiency rulemaking process is restricted, by statute, to consideration of a narrow set of energy measurements or "descriptors."

AGA is in the process of crafting a legislative proposal to this end—that would expand the currently used energy descriptors to include CO_2 emissions in the rating of appliance efficiency. The addition of CO_2 in the rating of appliances coupled with new standard levels would provide more direct consideration of carbon impacts in the analysis of appliance energy use. This additional authority given to the DOE could provide immediate benefits in assisting federal energy policies toward a lower carbon economy.

The Energy Efficiency Resource Standard Provision Seeks to Reach a Laudable Goal but by a Very Imperfect Route

AGA and its member companies are committed to continuing to press for energy efficiency, in order to save our customers money, to maximize the utility of our natural resources, and to reduce the carbon emissions of our nation. As noted above, there is a growing, and accelerating, trend toward decoupled natural gas utility rates. Such approaches, by breaking the link between customer energy consumption and utility revenues help utilities become full partners in the quest for energy efficiency. Moreover, most natural gas utilities today participate in, or even operate, energy efficiency programs. On a national scale they collectively deployed $500 million in 2007 for this purpose—an amount that we expect to double in the next several years.

Furthermore, as discussed above, natural gas residential and commercial customers have led the way in efficiency and carbon-reduction over the last thirty years. These customers have reduced their annual consumption by 1% or more annually from 1980 to 2000 and about 2% annually since 2000. AGA member companies will continue to work with their customers to ensure a continuation of this trend, although it will become increasingly difficult to do so as the least costly measures have, in many cases, already been taken. Again, the goals of this program, similar to the goals of the climate change program, would be best met through universally applied building codes and appliance standards, supplemented by a variety of education and incentive programs. This approach, as stated previously, would not unduly penalize the early actions of more aggressive companies.

In contrast to the preferred programmatic approach noted above, Section 231 of the discussion draft bill proposes to establish an "energy efficiency resource standard" (EERS) for both electric utilities and natural gas utilities. As it would apply to natural gas utilities, the EERS would, in the most essential terms, require the customers of a natural gas utility to reduce their consumption of natural gas by 10% between 2012 and 2020 or the utility will be require to pay a penalty of $5 per MMBtu for each MMBtu by which they fall short of the target.

While the end is a laudable one, the construct and means are fraught with problems. Unfortunately the conversation on this topic has, to this point, largely occurred among proponents of the idea. A serious and thorough vetting of such a dramatic proposal will be necessary by all parties interested in advancing energy efficiency. Such a program can only be workable, if at all, with significant input from the natural gas utilities involved. If adequate federal and state funding is available, local gas utilities are positioned to work with the states and their customers to develop and implement effective energy saving programs. However, for this approach to be successful, utilities must be allowed to earn a return for their contribution, not merely be subject to penalties.

AGA suggests that the proposed means outlined in Section 231 to the desired end is a minefield for both utilities and their customers. While we will not enumerate all the difficulties with Section 231, we will outline below a few that should suffice to illustrate that this concept still needs further in-depth analysis before becoming a policy pillar that can be relied upon in the quest to increase energy efficiency and reduce carbon

emissions. Additionally, the discussion above should make clear that, from 30 years of experience, we have a wealth of knowledge as to the programmatic measures that can be employed to reach the desired end of increased energy efficiency.

Utilities Can Influence, But Do Not Control, the Consumption of Their Customers

The fundamental scheme of the EERS is that customers must reduce their consumption, and natural gas utilities must pay the penalty if they do not. Without question there are many actions that natural gas utilities can take—and do take—to encourage energy efficiency. But they cannot adjust customers' thermostats, close open windows, or unilaterally install additional insulation or new appliances in their homes. While utilities can influence the conduct of their customers through education and publicity campaigns, appliance rebate and weatherization programs, incentives for efficient appliances, and the like, they cannot control the actions of their customers, which is what is ultimately measured by the EERS mechanism. AGA believes that sound policy argues instead for a program that provides carrots, not sticks, for the entities whose behavior is to be influenced. If the goal is to reduce energy consumption, the policy mechanisms to be employed should focus on the efficiency drivers that have proven successful in the past and are likely to be so in the future. This lack of control is further exacerbated in the industrial market, where most customers are sophisticated energy consumers who do not purchase their gas supplies from the utility and are thus transport-only customers.

The EERS Fails to Account for the Needs of Economic Growth and Development

One of our national goals is certainly to facilitate a growing and vibrant economy and the jobs that necessarily follow from that. A growing economy requires that America's energy industries expand to meet the needs of the growing economy—both businesses and citizens. Moreover, as a matter of national policy we should be seeking to attract new industry to the United States, both for the jobs it provides as well as for the stimulative effect on the economy as a whole. The concept of the EERS, as well as the construct used for it here, runs contrary to these overarching national goals.

As drafted, the EERS provision in the discussion draft calls for a 10% decrease in consumption by natural gas utility customers by the year 2020. The reduction is to be achieved by all customers taken as a group (although excluding electric generation customers). In a number of areas of the United States, population is growing and the economy has been expanding over the last decade or so. More importantly, new applications such as natural gas vehicles in commercial fleets, which provide a clean and domestic alternative to gasoline, would be much less likely to grow. As now framed, the EERS provision would appear to place these utilities in a very difficult position in terms of achieving the goal of the 10% reduction.

AGA recognizes that the EERS mechanism attempts to utilize some sort of comparative mechanism, analyzing a base case against actual experience. This is troublesome in its own right, but even if it were to be employed, the practical difficulty is that a utility will be faced with ensuring the accuracy of its base case as to projected

customer growth or face an *ex post facto* penalty. This hardly seems fair, and it is does not appear to be a wise grounding for what will ultimately be an important efficiency policy.

The EERS Fails to Account for Carbon-Driven Fuel Switching

One of the core issues with the EERS is that it is proposed to be overlaid on a cap-and-trade scheme. This is something of a two-fisted approach with a definite potential for conflict and unintended consequences. AGA urges the committee to give careful thought to whether an EERS together with a cap-and-trade scheme will result in conflicting goals.

One particular instance greatly concerns AGA. If we assume that the nation adopts a cap-and-trade (or some other) carbon regulation system in the near future, the result, when implemented, will be to place a price on carbon. When carbon markets are functioning efficiently, at least in the relatively near term, residential customers will begin to recognize that by shifting their water heating, space heating, and cooking to natural gas (where such service is available). They will save money and reduce CO_2 emissions. This will result from the fact that natural gas will have a lower carbon output and price than electricity in most areas. Moreover, we expect that states, for a variety of reasons (state carbon footprint, the job development aspects of reasonable energy prices, and the need to minimize new, expensive electric capacity), will encourage customers to migrate toward natural gas, direct application appliances. In any event, for whatever reason undertaken, we believe that these trends are likely and that the result will be a good one: lower overall energy consumption, energy costs, and carbon emissions for the United States.

Under the EERS, however, the natural gas utility would pay the $5 per MMBtu penalty because its customers will have increased their usage of natural gas instead of reducing it in order to achieve greater overall energy efficiency, lower energy bills, and reduced carbon emissions. This hardly seems like the outcome we should be seeking to achieve. It is, moreover, a plausible—indeed likely—that scenario where the goals of a cap-and-trade system and EERS overlap they will produce conflicting results. Given the complexity of the two regulatory schemes, we do not think that this is the only scenario in which the two systems may collide.

The Mechanics of the EERS are Problematic

The EERS seems to be grounded in a concept of energy savings that are the "result" of specific actions of one kind or another. This approach is problematic in that it is unduly vague and susceptible to widely differing interpretation and application. For example, assume a home owner reduces consumption of natural gas. Was this caused by a utility program for weatherization or the fact that children grew up and left home for school? These types of imponderables are numerous within the scheme of this provision. It must be understood and appreciated that natural gas utilities have limited knowledge about what goes on "behind the meter" – we do not have the ability or the right to obtain perfect information inside the home or business.

The provision has at its core a comparison between a "business-as-usual" projection and measures implemented after the bill becomes law that "cause" natural gas savings. Projecting a "business-as-usual scenario into the future, especially when a new scheme of carbon regulation has been implemented, could be dicey to say the least. Will DOE issue regulations providing detailed guidance as to how this should be done? How will projections of economic growth and development be factored into this "business-as-usual" scenario? How will natural gas utilities predict the degree of fuel switching to natural gas resulting from pricing the externality of carbon? What will be the factors to determine whether "savings" resulted from utility actions?

At its core, these aspects of this proposed mechanism are troublesome and, frankly, strike fear in the hearts of AGA member companies when the risk of error, misjudgment, or interpretation is a penalty (or stick) of $5 per MMBtu. In the end, predictions can only be correct as a matter of accident. Given this truism, it is fundamentally unfair to have the Damocles sword of this penalty provision hanging over head, perhaps with the penalty determination ultimately made, long after the fact, by an individual in the depths of a federal agency. Again, we think sounder policy is to identify the goal and provide incentives to reach it rather than *ex post facto* penalties for failing to achieve it.

For years after 2020 DOE may set future years standards that turn on "cost-effective energy efficiency potential." Yet "cost-effective" is defined so broadly as to be nearly meaningless.

We could go on in enumerating concerns with the EERS methodology employed in the bill. The examples given above, however, amply demonstrate that this is a thicket into which we should not wander. As AGA has stated in many forums, if the goal is to achieve greenhouse gas reductions—and surely it is—then we have an ample record on how to reach that end. And the end sought by the EERS provision is a laudable one and, with the correct complementary policies, in all likelihood an achievable one.

AGA undertakes to work with the committee to develop a suite of policies that can achieve the goals sought by this provision.

AGA and its members appreciate the opportunity to present their views on these important subjects. We look forward to working with the committee and its staff to be a constructive voice in this important national conversation.

Mr. MARKEY. Our next witness is Richard Morgan. He is a member of the Energy Resources and Environmental Committee of the National Association of Regulatory Utility Commissioners which represent State public service commissions that regulate utilities. Mr. Morgan also leads the NARUC Task Force on Climate Policy. And he is serving in his second term as commissioner on the District of Columbia Public Service Commission.

Please begin when you are ready, Mr. Morgan.

STATEMENT OF RICHARD MORGAN

Mr. MORGAN. Thank you, Mr. Chairman, and members of the subcommittee. My name is Richard Morgan, and I am a member of the District of Columbia Public Service Commission. I am testifying on behalf of the National Association of Regulatory Utility Commissioners. I am honored to have the opportunity to appear before you this morning regarding the American Clean Energy and Security Act.

NARUC is on record as supporting a well-designed, economy-wide Federal program to limit greenhouse gas emissions in order to remove existing uncertainties that are hampering critically needed investment in electricity transmission and generation.

In concept, NARUC supports the goal of auctioning emissions allowances under a cap-and-trade mechanism, but we believe it is appropriate to provide a transitional allocation of free allowances in order to minimize economic dislocations as we move toward a 100 percent auction. However, as OMB Director Peter Orszag correctly points out, when allowances were given away to European power generators, shareholders, not consumers, got most of the proceeds as windfall profits. It is precisely for this reason that NARUC opposes the allocation of no-cost allowances to electricity generators.

State regulators propose a different approach to ease the transition in the electric sector. Instead of giving away allowances to power generators, which are often unregulated, give them only to regulated local distribution companies which own the wires used to distribute electricity. These LDCs, as we call them, are always subject to rate-setting authority such as State public utility commissions or consumer-owned utilities, where they can ensure that consumers, not utility shareholders, receive the benefits of free allowances. In fact, State regulators already have in place mechanisms for flowing through to consumers the benefits of free emissions allowances from the existing acid rain program.

President Obama has stated that reducing carbon emissions must be done in a way that insulates consumers as much as possible from potentially dramatic rate increases. Giving allowances to LDCs as a proxy for their customers provides an efficient means of softening the impact on consumers and solves the windfall profits problem at the same time. Under this approach, revenues associated with pricing greenhouse gases would be returned to the very consumers who would be at risk for paying higher energy prices. Regulators could direct a portion of the proceeds toward mitigating the impacts of pricing carbon, such as through expenditures on energy efficiency or low-income energy assistance programs. Meanwhile, generation decisions would still be influenced by the full effect of pricing greenhouse gas emissions.

How the proceeds of a cap-and-trade mechanism are spent is every bit as important as putting a price on carbon in the first place. Assuming an allocation to LDCs, State regulators can direct the proceeds toward investments such as energy efficiency that reinforce the goals of limiting greenhouse gas emissions and thereby lower the overall costs of achieving emissions reductions. And you will hear more about this from our next witness, Mr. Cowart.

Mr. Chairman, you have surely noticed similarities between NARUC's proposal and those of some industry groups. In fact, EEI's testimony refers to NARUC's support for an allocation to LDCs, but that is really where the similarities end. There are some important distinctions that I want to bring to your attention. These industry groups, which have unregulated generators among their members, naturally seek an allocation of free allowances not just for LDCs but for merchant generators as well. NARUC objects to giving free allowances to electric generators under any circumstances, and I would like to explain why.

First, in many States generators are unregulated, and State commissions have no way to ensure that consumers would receive the benefits of these free allowances. There is no reason to expect an outcome any different from what happened in Europe.

These companies say that they need allowances to cover their so-called net compliance costs, an argument that we find curious since there is no commercial technology available to remove CO_2 emissions from an existing generator. These merchant generators are not trade exposed in the sense of competing in overseas markets; they are purely domestic.

Free allowances won't help to keep dirty generators operating even if that were desirable. If carbon prices are too high, the company could simply shut down its generator and keep the value of the allowance stream for its shareholders as sort of a golden parachute.

Under the formula proposed by EEIC, electric sector allowances would go first to merchant generators based on historic emissions; LDCs would then get only what is left. And the generators' share could grow if the utilities decide to spin off more generators into unregulated subsidiaries.

Finally, any electric sector allowances given to generators would not be available to help soften the impact of pricing carbon on consumers through their LDCs. Those who advocate an allocation to generators have not explained how this would help consumers in any way or why it would not produce a windfall for their shareholders just as it did in Europe.

Mr. Chairman and members of the subcommittee, NARUC believes that through a carefully designed cap-and-trade mechanism and appropriate distribution of emission allowances, carbon restrictions can be implemented without undue economic burden on consumers.

Thank you for your time and consideration this morning. I would be happy to answer any questions.

Mr. MARKEY. Thank you, Mr. Morgan, very much.

[The prepared statement of Mr. Morgan follows:]

BEFORE THE
UNITED STATES HOUSE OF REPRESENTATIVES

COMMITTEE ON ENERGY AND COMMERCE,
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT

TESTIMONY OF THE HONORABLE RICHARD E. MORGAN
COMMISSIONER, DISTRICT OF COLUMBIA PUBLIC SERVICE COMMISSION

ON BEHALF OF THE
NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS

ON

"Allocation Policies to Assist Consumers"

April 23, 2009

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Good morning Chairman Markey, Ranking Member Upton, and Members of the Subcommittee:

My name is Richard E. Morgan, and I am a member of the District of Columbia Public Service Commission. Today I am testifying on behalf of the National Association of Regulatory Utility Commissioners (NARUC). I serve as Leader of NARUC's Task Force on Climate Policy, and I sit on the Association's Board of Directors as well. I am honored to have the opportunity to appear before you this morning and to offer a State regulatory perspective on the crucial issue of consumer protections in the American Clean Energy and Security Act of 2009, particularly as they relate to carbon policies.

NARUC is a quasi-governmental, non-profit organization founded in 1889. Our membership includes the State public utility commissions serving all States and territories. NARUC's mission is to serve the public interest by improving the quality and effectiveness of public utility regulation. Our members regulate the retail rates and services of electric, gas, water, and telephone utilities. We are obligated under the laws of our respective States to ensure the establishment and maintenance of such utility services as may be required by the public convenience and necessity and to ensure that such services are provided under rates and subject to terms and conditions of service that are just, reasonable, and non-discriminatory. As economic regulators, we offer a unique perspective because of our understanding of how climate policy will impact utilities and the consumers we serve.

NARUC is on record as supporting a well-designed economy-wide federal program to limit greenhouse gas emissions[1]. We concluded in 2007 that such action is necessary in order to remove existing uncertainties that are hampering critically needed investment in electricity transmission and generation. NARUC believes that any climate legislation should be transparent, flexible, economy wide, and it should not adversely impact electric and natural gas system reliability or impose undue cost burdens on ratepayers. Furthermore, as the nation transitions to greater reliance upon lower-carbon resources for the generation of electric power, we must consider an expanded role for energy efficiency, alternative and renewable forms of energy, and new energy technologies. In order to keep electricity and natural gas affordable, NARUC believes that it is vitally important to minimize the cost of reducing GHG emissions and the resulting impacts on consumers – many of whom are already struggling to pay their utility bills. In this light, we offer our recommendations regarding the design of a cap-and-trade mechanism and, in particular, how allowances should be allocated within the electric sector.

The distribution of emissions allowances is perhaps the most crucial decision that will need to be resolved in the ACES legislation. Should all allowances be auctioned by the government or should some be given out to certain entities as a means of mitigating economic impacts during a transition period? And, in a related matter, how should the legislation provide for "consumer assistance?"

President Obama has indicated both in his proposed budget and in public statements his support for an immediate, 100% auction of emission allowances. In concept, NARUC supports an auction as the most economically efficient means of distributing allowances. However, we

[1] NARUC Issue Brief on Climate Policy, November 2007

believe that it may be necessary to provide a transitional allocation of free allowances in order to minimize potentially massive economic dislocations as we move toward a 100% auction.

The President and his Administration believe that allocation of allowances to industry at no cost could lead to windfall profits instead of public benefits. As Office of Management and Budget Director Peter Orszag correctly points out, when allowances were given away to European power generators, shareholders – not consumers -- got most the proceeds. It is for precisely this reason that NARUC opposes the allocation of no-cost allowances to electricity *generators*.

State regulators propose a different approach to ease the transition in the electric sector: instead of giving away allowances to power generators, which are often unregulated, give them only to *regulated* local distribution companies (LDCs). Those are the owners of the wires used to distribute electricity, entities that are subject to rate-setting authorities in traditional and restructured jurisdictions alike. State public utility commissions and other authorities (such as consumer-owned utilities), can then ensure that consumers, not utility shareholders, receive the benefits of the free allowances.[2]

Whether regulated utilities use the allowances internally or sell them to generators who need them for compliance, the benefits will go to utility customers. That is because regulators are obligated to account for the receipt of these valuable allowances as income when they set utility

[2] In this respect, NARUC's position differs from that of the Edison Electric Institute (EEI) and the U.S. Climate Action Partnership (US CAP), as each of those organizations advocates giving some electric sector allowances to unregulated generators.

rates. In fact, State regulators already have in place mechanisms for flowing through the benefits of free emissions allowances from the federal Acid Rain Program implemented in the 1990s.

As utility regulators, we take comfort in President Obama's statement that reducing carbon emissions through a cap-and-trade system must be done in a way that insulates consumers as much as possible from potentially dramatic rate increases that could result. Allocating emissions allowances to LDCs rather than to electricity generators solves the very problem that concerns President Obama and OMB Director Orszag and provides an efficient means of softening the impact on utility consumers.

In effect, the LDC would receive free allowances as a proxy for its customers. Revenues associated with pricing greenhouse gases would be returned to the very consumers who would be at risk for paying higher energy prices. Furthermore, regulators could direct a portion of the proceeds toward mitigating the impacts of pricing carbon, such as through expenditures on energy efficiency or low-income assistance programs. This approach could help to minimize potential economic dislocation for consumers during the transition to a 100% auction, while generation decisions would still be influenced by the full effect of pricing GHG emissions.[3]

How the proceeds of a cap-and-trade mechanism are spent is every bit as important as putting a price on carbon in the first place. By investing in energy efficiency and the development of cleaner energy technologies, we can leverage the funds raised from emitters of greenhouse gases to enhance the impact of pricing carbon. Indeed, some experts warn that

[3] An allocation to LDCs in the electric sector would not preclude allocating allowances to other entities as well, such as to State governments in support of energy programs.

pricing carbon alone is unlikely to achieve the necessary emission reductions.[4] Assuming an allocation to local distribution companies, State regulators can direct the proceeds toward investments that reinforce the goals of limiting GHG emissions and thereby lower the overall cost of achieving emission reductions.

In our view, allocating allowances to regulated LDCs is an elegant solution to the problem of distributing allowances in the electric sector and providing for consumer assistance at the same time

Other ACES provisions

Although this panel is explicitly focused on the question of allowance allocation, I would like to take this opportunity to comment on a few other items in the ACES bill. First, NARUC is pleased to see Rep. Rick Boucher's carbon sequestration proposal included in the ACES legislation. Last year, we worked with the utility industry to reach a compromise on rate-related and governance concerns, and we are happy to see the resulting language included in the discussion draft. As the nation moves closer to limits on GHG emissions, we believe it will be critically important to have generating plants that sequester carbon dioxide as an option in our portfolio of energy resources.

[4] See, for example, Carnegie-Mellon University, Department of Engineering and Public Policy, *Cap and Trade Is Not Enough: Improving U.S. Climate Policy*, March 2009 and Richard Cowart, "Carbon Caps and Energy Efficiency Resources: How Climate Legislation Can Mobilize Efficiency and Lower the Cost of Greenhouse Gas Emission Reduction," *33 Vermont Law Review*, 201-223 (2008).

With regard to energy efficiency, NARUC wishes to indicate its support for Rep. Peter Welch's building-retrofit program, which offers an innovative program for expanding State-based initiatives to rehabilitate buildings to improve efficiency. Rep. Welch's proposal is noteworthy because it provides States with sufficient flexibility to implement such programs, rather than relying upon a federal mandate. This approach recognizes the leadership that States have shown in developing efficiency initiatives that save energy and reduce air emissions. All across the country, from California to Texas to Oregon to Vermont, States are making significant strides in helping their consumers use energy more efficiently. Because each State faces its own individual challenges in implementing energy efficiency measures, NARUC believes that such a "bottoms-up" approach will generally be more effective than a "one-size-fits-all" federal solution.

In a related matter, NARUC raised objections to language in the American Recovery and Reinvestment Act (ARRA) that conditions certain stimulus funds for energy efficiency upon State actions to remove regulatory disincentives toward utility initiatives that boost efficiency. In fact, NARUC has encouraged State commissions to address these regulatory barriers, and an increasing number of States are implementing innovative ratemaking practices such as "decoupling" of utility profits from sales. NARUC nevertheless objected to the funding preconditions in the ARRA, which impose a single, top-down federal solution and fail to recognize the diversity in regulatory structures among the States. In developing the ACES legislation, we urge the committee to acknowledge the inherent diversity and complexity of utility ratemaking and recognize that State regulators are best suited to address such matters. In short, NARUC does not support federally mandated retail-rate design schemes or the

conditioning of allowances or auction proceeds upon State implementation of certain regulatory policies.

Another important aspect of any cap-and-trade market will be oversight of the market itself. It should be noted that after the financial sector's recent experience with complicated financial instruments, there is a public expectation for proper and appropriate market oversight.

At this time, NARUC has no position regarding the merits of adopting Renewable Energy Standards or Energy Efficiency Resources Standards at the federal level. We note that many of our member commissions oversee the implementation of such standards at the State level. It is important that federal RES or EERS standards not limit or hinder what States have already accomplished in this area. Design considerations are particularly important for the EERS, where performance is not easily measured. A poorly designed EERS mechanism could result in consumers paying for efficiency that is never delivered. We would welcome the opportunity to work with the Committee and staff regarding these and other provisions in this legislation.

NARUC welcomes the legislation's attention to development of a Smart Grid. We recommend that smart-grid development proceed deliberately and in stages so that the costs of rolling out the necessary infrastructure are borne by those who will benefit and that attention be paid to updating the transmission and distribution system. We view the peak-demand sections of the Smart Grid title as a promising approach to an important issue.

Mr. Chairman and Members of the Subcommittee, NARUC believes that pricing carbon and reducing greenhouse gas emissions are necessary to ensure future energy reliability for our utilities and their consumers. Through the careful design of a cap-and-trade mechanism and an appropriate process for distributing emissions allowances, carbon restrictions can be implemented without undue economic dislocation for consumers. We urge the Committee to recognize the important role that State regulators can play in facilitating the transition to a world of carbon constraints. Thank you for your time and consideration this morning. I would be happy to answer questions at the appropriate time.

Mr. MARKEY. Our next witness, Mr. Richard Cowart, director of the Regulatory Assistance Project, has served as commissioner and chair of the Vermont Public Service Board for 13 years. He was elected president of the New England Conference of Public Utility Commissioners, and was chair of the NARUC National Committee on Energy Resources and Environment.

Mr. Cowart, please begin when you are ready.

STATEMENT OF RICHARD COWART

Mr. COWART. Good morning, Chairman Markey, Ranking Member Upton, and members of the committee. I appreciate the opportunity to speak with you this morning about the critical role of end-use energy efficiency in reducing greenhouse gas emissions and containing the cost of climate change legislation.

Let me begin, Mr. Chairman, by congratulating you for the comprehensive approach you are taking to global warming pollution and the progress that Congress is making in addressing this critical issue.

Given the scale of this issue, it is no surprise that climate legislation raises concerns about prices and about impacts on consumers. I have been a State environmental commissioner, public utilities commissioner, and as an advisor to many governments. So, for about 25 years I have been working to protect consumers while promoting advanced utility services needed for a modern economy.

My testimony boils down fairly simply. I am focusing on the central role that carbon credit allocation can play in protecting consumers and containing the costs of climate legislation.

The good news is that a smart allocation policy linked to a smart investment strategy can greatly reduce the consumer cost of the proposed cap-and-trade program. My overall message is very simple: Congress should design the climate program to reduce emissions through greater energy efficiency, not just through higher carbon prices. For the power sector, the best way to do this is through a consumer allocation for efficiency; that is, by allocating the sectors' allowances to local distribution companies or other State-supervised entities acting as trustees for consumers. The trustees can then auction the allowances to emitters and recycle the revenue for the benefit of consumers.

Moreover, the best way to help consumers and to lower the cost of the entire climate program is to invest a large fraction of those funds in low carbon resources, especially cost-effective end-use efficiency.

My written testimony elaborates on four points, so I am just going to touch on them here.

First, as I just stated, it is essential to think of climate legislation as a combination of programs, including both regulatory and market measures to lower emissions. It is not just cap-and-trade, it is not just a renewable electricity standard, it is not just better building codes. It is really all of the above.

When California completed its exhaustive examination of this issue recently, the Air Resources Board came out with a scoping plan. At least 75 percent of the carbon reductions in the California plan are going to be accomplished through mechanisms that people call the complementary policies. That 75 percent I would view as

the foundation for the cap-and-trade program which is intended to deliver the other 25 percent.

My second point is that energy efficiency is the equivalent of a low-cost carbon scrubber for the power sector. And the good news is that utility-scale energy efficiency is relatively inexpensive at 3 cents a kilowatt hour. It is much less than the cost of supply and delivery, which is usually two to five times more expensive.

Efficiency opportunities exist in large quantities in all regions of the country, whether your system is a coal system, a gas system, a hydro system; any region of the country, energy efficiency resources can be tapped to benefit customers.

My third point is on price impacts and cost containment. Simply put, energy efficiency is the key to cost containment in the climate legislation. Adding a price signal to the cost of electricity is useful in trying to reduce carbon emissions. But trying to meet our goals through price alone will be much more costly than a cap-and-trade program that builds efficiency right into its architecture. And this realization has two sides, and I want to touch on both of them.

First, it is hard to get to where we want to go through carbon prices alone. People are often surprised to learn how hard it is to reduce power sector carbon through price signals. On the consumers' side, it takes a very high price because of low price elasticity to actually reduce carbon as much as we need. And, on the generator's side, it takes a very high price in order to significantly change the dispatch across our power grids.

This leads to my final point which concerns allocations. As I have said earlier, the best way to control costs in the power sector is not by giving allowances for freer generators, but by allocating them to local distribution companies or other consumers trustees supervised by state regulators. Those trustees can sell the allowances and apply the proceeds to benefit consumers. This will deliver much more low-cost efficiency than a purely price-driven approach to allowanced allocation.

Our studies show that for the same dollar cost in rates, efficiency programs will save five to seven times more carbon than would result from carbon taxes or credit markets alone. So, five to seven times greater savings on the environmental side for the same cost to consumers.

I will close by noting that there is a good model in the United States for the practice that I am describing here, and that is the RGGI, the Regional Greenhouse Gas Initiative. If you look at the experience of RGGI, all ten RGGI States considered this question and concluded that almost all the allowances should be auctioned, and that almost all, or 70 percent, of the revenues associated with the program should be recycled back for the benefit of consumers principally through low-cost energy efficiency.

Thank you very much. I look forward to your questions.

Mr. MARKEY. Thank you, Mr. Cowart, very much.

[The prepared statement of Mr. Cowart follows:]

Testimony of Richard Cowart
Director, Regulatory Assistance Project
Before the
Committee on Energy and Commerce
Subcommittee on Energy and Environment
U.S. House of Representatives
Allocation Policies to Assist and Benefit Consumers
April 23, 2009

The Consumer Allocation for Efficiency :
How Allowance Allocations Can Protect Consumers, Mobilize Efficiency, and Contain the Costs of GHG Reduction

INTRODUCTION

Chairman Markey, Ranking Member Upton and members of the subcommittee, I appreciate the opportunity to speak with you today about the importance of allocation decisions and energy efficiency investments in containing the costs of our nation's GHG reduction program.

I am Richard Cowart, a Director of the Regulatory Assistance Project, a non-profit organization that provides technical and policy research and assistance to governmental decision-makers on energy and environmental issues. RAP has worked in more than 40 US states and has trained government officials in 16 other nations. Prior to joining RAP I served for 13 years as Commissioner and Chair of the Vermont Public Service Board, and for five years as an Assistant Professor of Planning and Environmental Law and director of the Program in Planning and Law at the University of California, Berkeley. Over the past six years I have had the privilege to assist the state and regional initiatives working to design carbon cap-and-trade programs in the US, including the Regional Greenhouse Gas Initiative (RGGI) in the Northeast, and the California, Oregon, and Western Climate Initiatives in the West.

Summary:

This testimony focuses on two of the critical elements in the architecture of a cap and trade system for the US power sector: (1) *how allowances are allocated* within the sector, and (2) how those allocations can be managed *to benefit consumers, especially by accelerating investments in energy efficiency,* which would permit more rapid carbon reductions at lower cost to consumers and the American economy. These two issues are closely connected and should be considered together. The testimony advances four points:

- **Price is not enough.** While one of the essential purposes of cap-and-trade systems and carbon tax proposals is to deliver a price signal to producers and consumers of energy, **a climate program that attempts to reduce emissions through price alone will be much more costly** than a comprehensive program that includes proven techniques to deliver low-carbon resources, especially cost-effective efficiency resources. This is especially true in the power sector. At the consumer level, higher power prices alone will not reduce

demand nearly enough to meet our carbon goals. At the generator level, it requires a high carbon price to make a meaningful change in the dispatch of the generation fleet. In both cases, the prices required to produce deep reductions are high enough to raise practical political barriers to the reductions now called for by climate science.

- **Foundation policies are needed.** State policies and utility programs that deliver end use efficiency and renewable power are the key to cost containment for federal carbon legislation. These programs are not merely "complementary" to the cap-and-trade design, they are the **essential foundation stones** of a successful national program. In particular, **energy efficiency is the cornerstone resource**, the key to cost containment, and the equivalent of a "carbon scrubber" for the electric power sector. Analysis of the recently-adopted carbon management plan in California reveals that over 75% of the carbon savings in that plan will come from programs and policies, and only 25% will be delivered by the effect of the carbon cap itself. The national cap-and-trade program should acknowledge, build upon, and provide revenue for the state and utility programs that deliver low-carbon energy solutions. The ACES draft now under review in this Committee is commendable for its comprehensive attention to many of these issues.

- **Allocation choices will have a dramatic effect on the cost of a GHG program for consumers**. Free allocation to generators leads to two problems: First, by giving carbon allowances to emitters, these programs confer windfall gains on many generators and cost consumers more than needed to achieve a given level of reduction. In some power markets, the cost to consumers in rates could be many times higher than the actual cost of reduction. Second, free allocation to generators misses an important opportunity to enhance energy efficiency, which is the least expensive and most effective way to lower carbon output.

- **Allocate allowances for consumer benefit, especially for efficiency investments.** Fortunately, there are sound design alternatives. Cap-and-trade designs have been developed in the Northeast, in California, and elsewhere that would make efficiency an integral part of the carbon-reduction program. These designs lower the cost of GHG reductions by allocating allowances for consumer benefit, and where cost-effective, investing allowance values in programmatic efficiency measures. Congress should build on this state and regional experience by: (a) **allocating power sector allowances to states or local distribution utilities (LDCs)** under state PUC or other public review, acting as trustees for consumers, and (b) **ensuring that a sizable portion of allowance value is invested in efficiency measures** that will lower emissions, power prices, and energy bills for families and businesses.

STATEMENT

As the United States launches an economy-wide cap-and-trade program, there are compelling reasons to focus design work on the US power sector. The power sector is the largest single source of industrial pollution, accounting for 37% of U.S. global warming gasses.[1] Carbon

1. *See* U.S. ENVIRONMENTAL PROTECTION AGENCY, TABLE ES-6: U.S. GREENHOUSE GAS EMISSIONS

dioxide emissions from the U.S. power sector exceed the *total national* GHG emissions of every other nation except China.[2] The electric power sector is also traditionally regulated, is not vulnerable to international competition, and consists of a reasonably small number of known sources. It is not a surprise that major cap-and-trade efforts on both coasts have begun first with the power sector, as it is probably the easiest large sector to manage. The sector is also expected to supply a large fraction of total emissions reductions sought under national climate bills.

However, significantly reducing emissions from the power sector will not be easy. About half of the nation's electric power comes from coal generation, and coal use continues to grow. For a decade, natural gas combined cycle plants provided the large majority of new capacity additions. Gas prices and availability concerns are now driving renewed interest in coal for new generation. Although a number of planned coal plants have recently been cancelled, more than 26,000 MW of new coal generation are now under construction or fully permitted.[3] Load growth continues, renewable sources can cover only a part of the new demand, and nuclear power is unlikely to provide significant new capacity to regional grids.[4] Meanwhile, fossil fuel prices continue to rise, the economy is in recession, and cost containment is a critical policy objective.

Two lessons emerge from this mix of challenges. First, it makes sense to design a cap-and-trade system that works well for the power sector, even if that means treating the sector differently than other sectors are treated. Second, the climate program must focus on the best ways to contain costs to consumers by moderating windfall transfer payments to generators, and delivering low-cost, low-carbon resources, especially end use energy efficiency.[5]

I. Cap and Market Realities: Why Carbon Prices Alone Will Not Deliver Needed GHG Reductions in the Power Sector

Economists and policy-makers often assume that a carbon tax or its equivalent, such as an auction of pollution credits,[6] will significantly reduce the electric power sector's carbon footprint if set at a realistic level. Those reductions are expected to come chiefly from two sources: demand reductions by consumers, and changes in the generation mix. In reality, it is

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ALLOCATED TO ECONOMIC SECTORS (2006).

2. INTERNATIONAL ENERGY AGENCY, CARBON DIOXIDE EMISSIONS BY ECONOMIC SECTOR 2005, 1–2 (2005), *available at* http://earthtrends.wri.org/pdf_library/data_tables/cli2_2005.pdf.

3. National Energy Technology Laboratory January 2009.

4. ENERGY INFORMATION ADMINISTRATION, ANNUAL ENERGY OUTLOOK 2008 WITH PROJECTIONS TO 2030 67–68 (2008), *available at* http://www.eia.doe.gov/oiaf/aeo/chapters.html. *See also* PAUL L. JOSKOW, THE FUTURE OF NUCLEAR POWER IN THE UNITED STATES: ECONOMIC AND REGULATORY CHALLENGES 2 (2006), *available at* http://tisiphone.mit.edu/RePEc/mee/wpaper/2006-019.pdf (predicting that the supply of electricity from nuclear power will reach zero in about 2030 if investment in new plants is not forthcoming).

5 R. Cowart, *Carbon Caps and Efficiency Resources* 33 Vermont Law Review 201-223 (2008) explores many of the issues touched on in this testimony. While the essential arguments are unchanged, the text has been modified and updated here.

6. Power cost increases will occur whether tradable allowances are sold at auction or distributed to emitters for free. Most economists agree that once credits are made tradable through a cap and trade system, they represent an opportunity cost to emitters and will put upward pressure on power prices in wholesale markets regardless of whether they were initially sold to emitters or distributed for free. CONG. BUDGET OFFICE, SHIFTING THE COST BURDEN OF A CARBON CAP-AND-TRADE PROGRAM 17 (2003), *available at* http://www.cbo.gov/doc.cfm?index=4401. *See also* DALLAS BURTRAW ET AL., THE EFFECT OF ALLOWANCE ALLOCATION ON THE COST OF CARBON EMISSION TRADING 15–25 (2001), *available at* http://www.cba.ufl.edu/purc/docs/presentation_2004Palmer_Effect.pdf (analyzing three different approaches for distributing carbon emission allowances under an emission-trading program in the electricity sector).

very difficult to produce significant reductions in either location at carbon prices that governments in the United States can realistically expect to impose.

A. Carbon Prices Alone Will Not Deliver an Adequate Consumer Conservation Response

On the demand side, it is difficult through price signals alone to inspire a conservation response among consumers that will deliver an adequate level of investment in end-use efficiency. Cap-and-trade architects know that lowering carbon emissions from power plants will raise the cost of electricity, and they assume that those price increases will reduce consumption. Influenced by standard economic theory on internalized external costs, they often view increased power prices as desirable, and any resulting demand reductions as merely a consequence of the program. A better approach is to view avoidable increased costs as undesirable, and efficiency as an integral component of the cap-and-trade program.

There are two related reasons for this approach. To begin with, there are numerous, well-documented market barriers to cost-effective efficiency investments. [7] For example, builders do not pay the energy bills in the offices and homes they build. Consumers are confused by energy choices and apply very high discount rates to incremental costs for energy efficiency. Many homeowners do not expect to live in a home long enough to recover the savings from efficiency improvements, even though the investment may be cost-effective over the life of the structure. A new American Council for an Energy-Efficient Economy (ACEEE) study reports that up to 50% of residential energy use in the U.S. is affected by such barriers. Even large industrial customers tend to under-invest in efficiency and need further technical and financial incentives to apply energy-saving solutions.

Those market barriers are not removed by carbon prices being applied to power generators They will continue to block needed improvements, despite any rate increases that could possibly be expected to flow from a politically-acceptable carbon cap-and-trade program.

Moreover, whether due to market barriers or not, there is solid evidence extending over several decades that demand for electricity in our modern economy is relatively inelastic. Demand does respond somewhat to price, but the long-term reduction due to price increases is relatively small.[8] Over twenty years, a 10% increase in power prices will reduce demand by just 2.5% to 3%. This would only offset the normally expected load growth in less than two of those twenty years. It would take a much larger rate increase just to offset expected load growth, much less to produce reductions in demand that could permit absolute reductions in emissions from the nation's huge generation fleet.

B. Carbon Prices Delivered to Generators Must be Quite High to Significantly Alter

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7. There is extensive literature detailing these market barriers, including access to information, high first-cost problems, consumers' high discount rates, unpriced externalities, the landlord-tenant problem, and others. *See, e.g.*, AM. COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY, QUANTIFYING THE EFFECTS OF MARKET FAILURES IN THE END-USE OF ENERGY iii-vi (2007), *available at* http://www.aceee.org/energy/IEAmarketbarriers.pdf (detailing the various types of market barriers to end-use energy efficiency.)

8. The long-term price-elasticity of demand is approximately -0.25 to -.32. The U.S. DOE's National Energy Modeling System (NEMS) has price elasticity built into it. Their long run elasticity (assuming price effects remain for 20 years) are -0.31 for residential electric use and -0.25 for commercial electric use. Steven H. Wade, Price Responsiveness in the NEMS Buildings Sector Model (Sept. 9, 1999), *available at* http://www.eia.doe.gov/oiaf/issues/building_sector.html.

Generator Dispatch

The second problem with cap-and-trade designs that rely on carbon prices to alter power sector emissions results from the make-up of the U.S. generation fleet. It takes a high carbon price to materially alter the dispatch order and therefore emissions resulting from generation in the usual course of business. While this fact can be demonstrated through complex power models, the reasons are logical and straightforward:

- On a daily and hourly basis, power plants are dispatched largely in the order of their marginal operating costs. In competitive wholesale markets, they are dispatched in the order of their bid prices, which are logically based on those marginal costs.

- Because they do not burn fossil fuels, power plants with the lowest GHG emissions—such as hydro stations and wind farms—tend to have low marginal costs. Therefore, they are dispatched whenever they are available. Nuclear units are also dispatched whenever they are available. Thus, the existence of high carbon prices does little to cause these low-emitting units to run more often.

- Carbon prices will force modest improvements in the performance of fossil plants. Some relatively efficient plants will displace less efficient plants in the dispatch order. However, these impacts will be small in GHG terms. To greatly improve the emissions profile of the existing U.S. power fleet, it would be necessary for a large number of lower-emitting gas units to displace a large number of higher-emitting oil and coal units in the dispatch.

- Carbon taxes and allowance auction prices affect all fossil units to some degree. Therefore, carbon prices would drive up the cost of gas as well as coal. It will take a relatively high price to cause the marginal price of coal generation to exceed the marginal price of gas generation across many MWhs of operation.

C. Wholesale Power Markets Can Deliver Windfall Gains to Generators and Multiply the Cost of Carbon Reduction to Consumers

Applying high carbon prices to marginal generation units can greatly raise the cost of the carbon program to consumers, particularly if the total cost to consumers is measured on the cost-per-ton of avoided GHG emissions. This problem has been documented in a variety of studies.

One report from the Electric Power Research Institute modeled the effect of various levels of carbon taxes or allowance prices in the upper Midwest, which is highly dependent on coal, and in Texas, which relies heavily on gas.[9] That study found that in the upper Midwest, a carbon charge of $25/ton would raise wholesale power prices $21/MWh. This would almost double the wholesale price of electricity in that region, but have little impact on emissions. "[E]ven a CO_2 value of $50/ton would produce only a 4 percent reduction in regional emissions given the current generation mix."[10]

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9. Victor Niemeyer, *The Change in Profit Climate: How Will Carbon-Emissions Policies Affect the Generation Fleet?*, PUBLIC UTILITIES FORTNIGHTLY, May 2007, at 20, 24.
10. *Id.*

In Texas, the problem is different, but the result is similar. Because gas plants comprise a large fraction of the ERCOT mix, and are at the margin already, high carbon prices raise the price of power with very little impact on overall emissions: "When gas is selling for around $8/MMbtu, even a CO_2 value of $40/ton produces little emissions reduction" from the existing mix.[11]

Another recent study looked at the same question in the PJM Interconnection, the power pool covering the Mid-Atlantic region and much of the Midwest. The PJM study estimates the increased wholesale energy market prices, and cost to consumers, that would result from various cap and trade proposals in the year 2013. PJM estimates that, if the price of carbon dioxide emission allowances were $20 per ton, then the "impact on the PJM Energy Market could be power price increases as high as $15/MWh, and market-wide expenditures increase by as much as $12 billion, while providing emission reductions from PJM sources of approximately 14 million tons."[12] As Sonny Popowski, the Pennsylvania Consumer Advocate points out, the impact on consumers *in the power market* is far higher than the marginal cost of carbon *in carbon markets*. The PJM study suggests that PJM customers could pay $12 billion in higher energy prices in 2013 in order to reduce emissions by 14 million tons, which comes out to ***a cost of over $850 per ton*** of carbon dioxide reduction.[13]

It is important to note here that extreme price impacts are not inevitable. They are in fact avoidable through sound program design, employing three design elements. First, the climate program will need to rely substantially on programs and policies, not just carbon prices, to deliver low-carbon resources to the power mix. Policies such as renewable electricity standards, efficiency programs and standards and low-carbon R&D programs will add low-carbon resources to the power system without requiring across-the-board increases in power clearing prices to pull them into the mix. Second, allowances should be auctioned to emitters, and allowance value should be recycled for the benefit of consumers. And third, the majority of auction proceeds should be invested in low-cost energy efficiency, which will provide greater benefits to consumers over time than short-term cash payments or bill reductions.

D. Most Savings Will Come From Programs and Policies, Not Carbon Prices

One of the most important lessons of cap-and-trade analysis performed in the RGGI region and in California to implement AB32 is the growing understanding that most of the GHG reductions that will occur during the period of the planned cap-and-trade system will come about as a result of regulatory programs and policies, and not as a result of the price constraints imposed by the cap. These programs are not merely "complementary" to the cap-and-trade design, they are the **essential foundation stones** of a successful GHG reduction program. In particular, **energy**

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11. *Id.*

[12] *Potential Effects of Proposed Climate Change Policies on PJM's Energy Market*, PJM, January 23, 2009 (at page 25).

[13] The reductions in carbon emissions will occur through the displacement of some coal generation by natural gas generation, which typically has a higher fuel cost, but a lower carbon emission rate than coal. As noted above, the high consumer cost per ton of reduction is due to the carbon adder having raised the clearing price of power across the entire market, including prices paid to the legacy nuclear units whose costs and operations are largely unaffected by the GHG program. See Testimony of Sonny Popowski, Consumer Advocate of Pennsylvania, Subcommittee on Energy and Environment, US House Energy and Commerce Committee, March 12, 2009.

efficiency is the cornerstone resource, the key to cost containment, and the equivalent of a "carbon scrubber" for the electric power sector.

Analysis of the recently-adopted carbon management plan in California provides the clearest evidence of this reality. The Global Warming Solutions Act (AB 32) calls for California to reduce greenhouse gas emissions to 1990 levels by 2020 (i.e., 30 percent from business-as-usual emission levels projected for 2020), or about 15 percent from today's levels.

The AB 32 Scoping Plan developed by the California Air Resources Board in consultation with the California Energy Commission and Public Utilities Commission recognizes the need for policies and programs that complement and strengthen cap-and-trade to achieve these aggressive reductions, in both capped (i.e., covered by cap-and-trade) and uncapped sectors. [14] These policies include: (1) expanding and strengthening existing energy efficiency programs as well as building and appliance standards; (2) achieving a statewide renewables energy mix of 33 percent; (3) implementing the Pavley fuel efficiency standards and low carbon fuel standard and (4) creating targeted fees, including a public goods charge on water use.

While termed "complementary policies," these initiatives are in fact the principal means of GHG reductions in California, **accounting for more than 75% of the emission reductions that California expects to achieve in the capped sectors**—i.e., for transportation fuels, energy sector, industrial sources and natural gas use.[15] **The role of these foundation policies for the electricity sector alone is even more striking.** By 2020, increases in energy efficiency and renewables through standards, regulatory reforms and expanded program incentives are expected to reduce greenhouse gas emissions to a level 6 MMT ***below*** baseline emission levels for this sector. That is, ***complementary policies in the electricity sector will account for more than 100% of this sector's proportional emission reductions by 2020***, and will be providing net reductions that will be of value in other sectors of the economy. [16]

The California AB 32 experience provides two crucial lessons for federal legislation: First, low-carbon policies can play a powerful role in reducing GHG emissions, and in reducing the cost of delivering GHG reductions. Second, since many low-carbon programs and policies (e.g., building codes, utility efficiency programs) are in fact delivered by state, local, and utility administrators across the nation, national climate legislation will need to recognize and support those mechanisms to deliver needed national GHG reductions.

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[14] The sectors covered by cap-and-trade under the Scoping Plan are energy sector, transportation fuels, industrial sources and natural gas use.

[15] AB 32 Scoping Plan October 2008 at p.21. (77% of the reductions in capped sectors are attributable to these foundation policies).

[16] AB 32 Scoping Plan, Appendix F, Table 44: California GHG Inventory by Category as Defined in the Scoping Plan. This table shows that the 2020 forecast of "business as usual" emissions for the electricity sector (both in-state generation and imported electricity) at 139.2 MMT, and 2002-2004 average numbers (as close to the 1990 baseline available for electricity emissions in the report) at 109 MMT. From Table 2 of the Scoping Plan, electricity end-use energy efficiency measures account for 15.2 MMT. Subtracting expected energy efficiency and RPS savings due to complementary policies in the electricity sector (15.2 and 21.3 MMT, respectively) from 139.2 MMT "business as usual" emissions in 2020 from that sector yields 102.70 MMT—or about 6 MMT below the 2002-2004 baseline level of emissions for the electricity sector.

The ACES bill under discussion today is notable in its recognition of these issues by the inclusion of important sections to create a Renewable Electricity Standard, an Energy Efficiency Resource Standard, Congressman Welch's proposal to support greater energy efficiency in buildings, among other provisions. These mechanisms, and many other policies and programs delivered by states and local governments will create the foundation of lower-cost emission reductions to support an effective carbon cap-and-trade program.

II. Energy Efficiency is the Cornerstone of a Successful Climate Program

A. The Efficiency Reservoir is Large and Still Largely Untapped

To many knowledgeable observers, the highest-priority solution to reduce power system emissions is aggressive, accelerated investment in energy efficiency. Several well-documented studies demonstrate that the cost-effective reservoir of efficiency opportunities is large enough to meet 50% to 100% or more of all new electric demand.[17]

The efficiency reservoir can be tapped at low cost. End-use efficiency is the least costly means to significantly reduce carbon emissions from the power sector. Cost-effective efficiency provides "avoided tons" of carbon at negative cost. By any measure, this approach is less expensive than low-emission generation alternatives. In electricity markets, the efficiency savings potential has been shown to be on the order of 25% of total electricity usage at a levelized cost of about three cents per kilowatt-hour (kWh).[18] This is much less than the average national retail price of electricity, currently more than 8 cents per kWh.[19] This is also less than the marginal generation cost of new power plants, estimated, depending on the technology, to cost 5 to 10 cents per kWh, and sometimes much more.[20] Energy efficiency is the equivalent of a low-cost "carbon scrubber" for the power sector.

The scale of the efficiency-based emissions reduction potential is also significant. Intergovernmental Panel on Climate Change (IPCC) studies reveal that across many sectors, the efficiency potential is quite large; the buildings sector provides one of the largest sources of

17. *See, e.g.*, INTERLABORATORY WORKING GROUP ET AL., SCENARIOS OF U.S. CARBON REDUCTIONS: POTENTIAL IMPACTS OF ENERGY TECHNOLOGIES BY 2010 AND BEYOND 1.5, tbl.1.1 (1997), *available at* http://enduse.lbl.gov/projects/5lab.html (follow "Chapter 1 - Analysis Results" hyperlink under "Publications") (comparing the country's projected energy usage in both "business-as-usual" and "efficiency" scenarios between 1997 and 2010). More recent studies in the western and northeastern U.S. have reached similar conclusions. *See* THE SOUTHWEST ENERGY EFFICIENCY PROJECT, THE NEW MOTHER LODE at 1-6 (2002), *available at* http://www.swenergy.org/nml/New_Mother_Lode.pdf (stating that "there is large potential for increasing the efficiency of electricity use and reducing load growth in the southwest region"); OPTIMAL ENERGY, INC., ECONOMICALLY ACHIEVABLE ENERGY EFFICIENCY POTENTIAL IN NEW ENGLAND 5 (2005), *available at* http://www.neep.org/files/Updated_Achievable_Potential_2005.pdf (explaining that there are numerous opportunities to obtain energy savings in the residential, commercial, and industrial sectors).

18. *See* MARTIN KUSHLER ET AL., FIVE YEARS IN: AN EXAMINATION OF THE FIRST HALF-DECADE OF PUBLIC BENEFITS ENERGY EFFICIENCY POLICIES, 29, 30 tbl.5 (2004), *available at* http://www.aceee.org/pubs/u041.htm (stating that the efficiency programs in the aggregate are very cost-effective, with savings ranging from $0.023 to $0.044/kWh).

19. Energy Information Administration, Total Electric Power Summary Statistics (Aug. 25, 2008), http://www.eia.doe.gov/cneaf/electricity/epm/tablees1a.html.

20. LAZARD, LEVELIZED COST OF ENERGY ANALYSIS – VERSION 2.0 at 2 (2008), *available at* http://www.narucmeetings.org/Presentations/2008%20EMP%20Levelized%20Cost%20of%20Energy%20-%20Master%20June%202008%20(2).pdf.

GHG emission reductions occurring through efficiency actions.[21] Another recent study conducted by the McKinsey consulting firm for the Natural Resources Defense Council (NRDC) found that by 2050 energy efficiency could reduce U.S. carbon dioxide emissions by 40%: 16% from buildings; 13% from transportation and smart growth communities; and 11% from industrial efficiency.[22] The results of this analysis through 2030 are shown in figure 1 below.

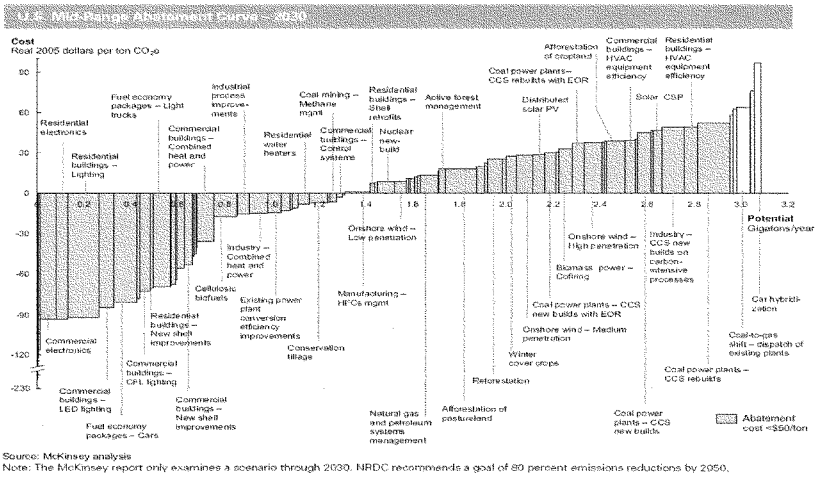

Figure 1: Cost of Energy Efficiency Measures and Scale of Potential in U.S. Through 2030

Figure 1 ranks GHG reduction potential by cost from left (greatest savings to implement) to right (most expensive to implement). The width of the bars represents the magnitude of potential GHG reductions in each category of actions. The carbon reduction options on the left end of the graph are almost all energy efficiency technologies. These efficiency options show a negative net cost of CO_2 abatement and account for almost half of the total emission reductions on the graph. Importantly, the net financial savings from the efficiency options offset the costs of the emission reductions on the right side of the graph—those with net positive costs. These efficiency technologies are therefore essential to achieving an entire package of emissions reductions at a low net cost to the economy.

Analyses in the U.S., as in most countries, "have shown that the efficiency potential has been tapped only in small measure."[23] These analyses, coupled with the IPCC and McKinsey studies,

21. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (WORKING GROUP III TO THE FOURTH ASSESSMENT REPORT OF THE IPCC), CLIMATE CHANGE 2007: MITIGATION 9, 10 tbl.SPM.3 (Bert Metz et al. eds. 2007), *available at* http://www.ipcc.ch/ipccreports/ar4-wg3.htm (follow "Chapter 11: Mitigation from a cross-sectoral perspective") [hereinafter MITIGATION]. This is partly attributable to the fact that the IPCC's methodology includes electricity generation related GHG emissions in the end-use sectors rather than in the energy supply sector. *Id.* at 10.

22. NATURAL RESOURCES DEFENSE COUNCIL, THE NEW ENERGY ECONOMY: PUTTING AMERICA ON THE PATH TO SOLVING GLOBAL WARMING 6 fig.1 (2008),

23. STEVEN R. SCHILLER ET AL., ENERGY EFFICIENCY AND CLIMATE CHANGE MITIGATION

confirm that efficiency presents a major opportunity for addressing climate change.[24] Furthermore, these studies show that with policy commitments, aggressive efficiency investments can meet most of the expected growth in U.S. energy demand. "Accelerated energy efficiency technology development can arrest the growth in GHG emissions that would otherwise occur with continuing demand growth, especially in the power sector."[25]

The most detailed analysis of the efficiency potential in a US carbon program was recently completed for the California GHG reduction plan mandated by AB32, and confirms the general point. The analysis of greenhouse gas emissions reductions in California demonstrates that complementary programs to increase energy efficiency could save up to 14 million metric tonnes of CO2 per year at a net savings between $80 and $100 per tonne of CO2 reduction. This includes all the costs associated with installing energy efficiency measures in homes and businesses—including financial incentives, customers' out-of-pocket expenditures and program administration. To put this amount of CO2 reduction in perspective, California's electric sector emits on the order of 100 million tonnes per year. This means that energy efficiency alone could reduce those annual emissions by an impressive 14% and save consumers money in the process.[26]

B. Cap-and-Trade Basics: Why Cap-and-Trade Must Be Designed to Support Efficiency

One of the principal aims of cap-and-trade programs is to lower the overall societal cost of environmental improvement. Since it will cost far less to avoid carbon emissions through energy efficiency than by adding or substituting expensive low-emissions generation on the grid it is entirely consistent with the overall goals of cap-and-trade to design a trading system that builds directly on efficiency as a resource. Simply stated, a carbon program that directly mobilizes end-use efficiency will cost less and achieve more than one that focuses only on generators. However, realizing these opportunities will take policy actions, including improvements in the allocation of carbon credits in any national cap-and-trade program.

There is pretty broad agreement among air experts that the U.S. Acid Rain Program and similar programs modeled on it—including the NO_x trading program—have successfully lowered emissions at a lower cost than historic command and control systems. The success of this model has led many decision makers to conclude that carbon cap-and-trade programs should be built on the same basic structure. However, this does not mean that we should extend this model directly to carbon cap-and-trade systems. There are several crucial differences.

- First, carbon reduction programs are going to involve a lot more dollars including much

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POLICY 3 (2008), *available at* http://www.schiller.com/images/Schiller_et_all_energy_efficiency_climate_paper.pdf (providing policy recommendations for reducing greenhouse gas emissions through increased energy efficiency); *see also* INTERLABORATORY WORKING GROUP ON ENERGY-EFFICIENT AND CLEAN ENERGY TECHNOLOGIES, SCENARIOS FOR A CLEAN ENERGY FUTURE 7.1 (2000), *available at* http://www.ornl.gov/sci/eere/cef/index.htm (follow "Chapter 7 — Electricity Sector" hyperlink under "Main Report") (noting that "significant opportunities exist to reduce the demand for electricity"); STEVEN NADEL ET AL., THE TECHNICAL, ECONOMIC AND ACHIEVABLE POTENTIAL FOR ENERGY-EFFICIENCY IN THE U.S. 1 (2004), *available at* http://aceee.org/conf/04ss/rnemeta.pdf (explaining that "a very substantial, technical, economic and achievable energy efficiency potential remains in the U.S.").

24. SCHILLER, note 24, at 3.

25. *Id.*

26. Analysis performed by Ethree, for the California Air Resources Board, Scoping Plan for AB 32 (2008).

larger economic transfer payments over time. Any flaws in architecture will have a much greater impact on both efficiency and equity goals.

- Second, energy markets are profoundly different today. When the Acid Rain Program was designed, almost all generators were part of vertically-integrated, rate-regulated companies. Generators compliant with their emissions allotment did not need to purchase additional allowances. Generators needing to purchase allowances could pass through their direct costs in rate cases on a cost-of-service basis. In either case, vertically-integrated utilities, regulated on a cost-of-service basis, could charge consumers only their direct compliance costs. Today, U.S. power markets are much more complex, and about half of the power sold passes through wholesale markets that are not rate-regulated. In those markets, carbon policy can raise the price of all power sold in the market, including power from plants that have no carbon costs. As a result of these market effects, cap-and-trade designs that might work well in about half the nation would confer windfall gains on generators and inequitable results for consumers in the other half.[27]

- Third, control options for carbon and conventional pollutants are quite different. SO_x and NO_x reductions can usually be attained by generators at power stations through changes in fuel inputs—switching to low-sulfur coal, for example—or plant modifications, such as scrubbers. In contrast, there is today no practical way to add a carbon scrubber to a conventional power plant.[28] Real reductions in carbon intensity will come primarily from actions taken mostly by power buyers. Such actions include substituting gas or renewables in the resource mix of a load-serving entity (LSE) or adding more efficiency and reducing consumption generally. Consumers—not fossil generators—will need to take and pay for these actions. It is widely understood that the Acid Rain Program did almost nothing to promote end-use efficiency, while a climate change program will have inspire substantial end-use efficiency improvements in order to be effective.

C. The Good News: Efficiency Programs are More Powerful than Price Increases or Supply-side Carbon Prices

The existence of market barriers and inelastic demand does not means that efficiency resources must be tapped through proven techniques that surmount those obstacles. More than two decades of experience with utility DSM programs has demonstrated in practice that well-managed efficiency programs can deliver significant savings to the power grid, and thus can lower carbon emissions at a low cost to the nation.

The power system will realize about five to seven times more savings from each dollar spent in a well-managed efficiency program—in MWh and resulting GHG emissions—than it will through a generalized, across-the-board price increase. The following example illustrates this reality. The example calculates the reductions in GHG emissions likely to result from two

27. Using the single-price auction rules now governing organized wholesale markets, all generators get the benefit of higher clearing prices, and all consumers have to pay (some immediately, some later when long-term contracts turn over). If fossil units setting the clearing price raise their bids due to the value of allowances they must use, costs will rise for consumers across all MWh sold in that market. These costs to consumers can be much higher than the actual cost of allowances to generators, especially if the allowances were awarded to emitters for free.

28. Burning low-sulfur coal or scrubbing emissions of conventional pollutants do not materially alter the carbon content of the emission stream, while carbon capture and storage options are at present too costly to be realistic as add-on options for existing power plants.

cases using the generation, rates, and sales characteristics of a large U.S. Midwestern state:

(a) Adding a 3% increase in prices, such as might result from a rate increase or a small increase in fuel prices due to an upstream carbon tax or auction price; and
(b) Taking the same 3% rate increase or carbon cost, but assuming that the revenue is invested in utility-sponsored or third-party energy efficiency programs at a cost of 3 cents/kWh.[29]

Due to the low price-elasticity of demand for electricity, the rate increase itself would result in a small decrease in demand and a corresponding reduction in emissions. If the proceeds from a system benefit charge or carbon credit auction are invested in programmatic energy efficiency, however, the savings are much greater—in both MWhs and in GHG emission reductions.[30] Figure 2 illustrates that investing the proceeds of a carbon charge in energy efficiency in this manner will in fact increase the savings by a factor of five in the first decade.[31] Extended over a longer time frame, the GHG savings will grow to seven times larger through intentional efficiency programs than through the price increase alone.[32]

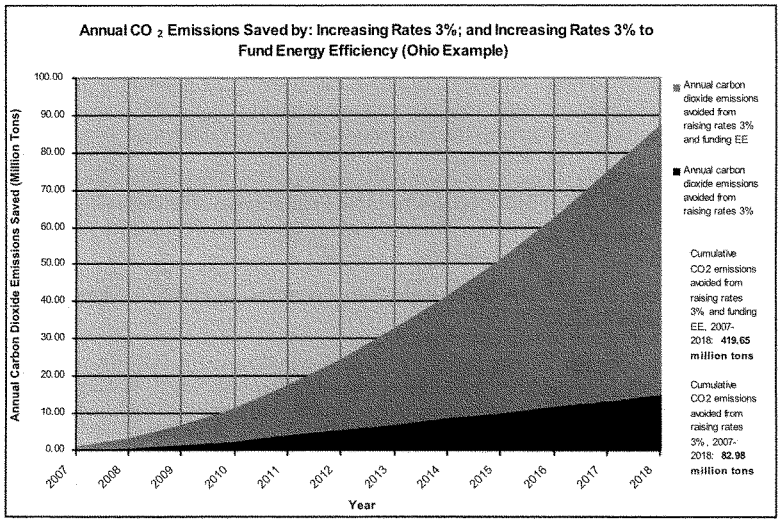

Figure 2: Efficiency programs save 5 to 7 times more carbon than carbon taxes or auction prices (for the same consumer cost)

29. Many successful efficiency programs deliver significant savings at an average cost of roughly 3 cents per kWh saved. MARTIN KUSHLER ET AL., *supra* note 18, at 30 table.5.

30. A system benefit charge is a charge on consumers' bills from an electric distribution company to pay for the costs of certain public benefits such as low-income assistance and energy efficiency.

31. Given Ohio's consumption levels and power mix, raising rates without adding programmatic energy efficiency investments would save about 83 million tons of CO_2 between 2007 and 2018; raising rates along with energy efficiency investment would save nearly 420 million tons over the same period.

32. Over a twenty-year period the ratio stabilizes at about 7:1. This is because some of the early efficiency measures are retired, and program funds are used to replace the savings they were delivering.

Pollution programs that focus only on the supply side raise the price of electricity but only incidentally reduce demand. For a given cost to consumers, society can reduce much more carbon pollution through energy efficiency programs than it can through cap-and-trade programs that focus only on the supply side, raise the price of electricity, but only incidentally reduce demand.

III. Cap-and-Trade Design Choices for Efficiency and Cost Containment

How can cap-and-trade architecture mobilize efficiency for carbon reduction?

A. Lessons from RGGI and the Northeast States: The Consumer Allocation

The Regional Greenhouse Gas Initiative (RGGI) is the leading effort in the United States to cap GHG emissions from the power sector. The RGGI region now extends to ten states, stretching from Maine to Delaware.[33] The RGGI Memorandum of Understanding sets out the essential elements of a proposed Model Rule, which are being adopted by each participating state.[34] Rulemakings have been completed across the region, and with cap-and-trade implementation is beginning in 2009.[35]

One of the key achievements of the RGGI process has been the creation of a formal consumer allocation of carbon credits, rather than the automatic allocation of all credits to generators on the basis of their historic emissions.[36] This is a significant departure from previous cap-and-trade regimes. Depending on how states implement this objective and the market price of allowances, it will substantially advance investments in energy efficiency in the RGGI region. A recent analysis by the RGGI state staff found that if 100% of RGGI allowances were auctioned in each state, per capita energy efficiency program spending could increase by 10% to 443% for each state if allowances sell for $2 per ton; or by 15% to 664% if allowances sell for $3 per ton.[37]

Both experience and economic studies show that there can be very large generator windfalls from the wrong type of carbon allocation. Several studies on the free allocation of carbon allowances to generators have found the likelihood of substantial windfall gains to generators. One study prepared for RGGI estimated that total generator windfalls from 100% historic free allocation could total $1 billion or more annually.[38] More generally, the Congressional Budget Office found that for the nation as a whole, "[p]roducers would have to receive only a modest portion of the allowances to offset their costs from a cap on carbon emissions."[39] European

33. Six states in New England, plus New York, New Jersey, Delaware, and Maryland have enacted implementing regulations. Pennsylvania is officially an observer state.

34. REGIONAL GREENHOUSE GAS INITIATIVE MEMORANDUM OF UNDERSTANDING, 6–7 (2005), *available at* http://www.rggi.org/docs/mou_12_20_05.pdf . While styled as a "regional" effort, there is no regional governmental body with regulatory authority to implement RGGI. Individual states must enact their own regulations, simply agreeing to recognize carbon credit trading with credits from other states on a reciprocal basis. *Id.* at 7.

35. Press Release, Reg'l Greenhouse Gas Initiative, RGGI States Announce Preliminary Release of Auction Application Materials (July 11, 2008), http://www.rggi.org/docs/20080711news_release.pdf.

36. MEMORANDUM OF UNDERSTANDING, *supra* note 34, at 6.

37. REG'L. GREENHOUSE GAS INITIATIVE (RGGI), POTENTIAL EMISSIONS LEAKAGE AND THE REGIONAL GREENHOUSE GAS INITIATIVE 19 (2008), *available at* http://www.rggi.org/docs/20080331leakage.pdf.

38. DALLAS BURTRAW ET AL., ALLOCATION OF CO_2 EMISSIONS ALLOWANCES IN THE REGIONAL GREENHOUSE GAS CAP-AND-TRADE PROGRAM 52 tbl.19 (2005), *available at* http:/www.rff.org/documents/RFF-DP-05-25.pdf.

39. CONG. BUDGET OFFICE, ISSUES IN THE DESIGN OF A CAP-AND-TRADE PROGRAM FOR CARBON EMISSIONS 4 (2003), *available at* http://www.cbo.gov/doc.cfm?index=4861&type=0. Others have found that generators would

governments that initially allocated allowances to generators on a free, historic basis are now reversing course and moving to an auction-based system.[40]

Broad Support for Efficiency and the Consumer Allocation

In December 2005, the governors of seven of the RGGI states signed the RGGI Memorandum of Understanding, which includes a provision requiring each state to assign at least 25% of its carbon allowances to a consumer allocation.[41] Shortly thereafter, Vermont enacted legislation confirming Vermont's participation in RGGI and creating a 100% consumer allocation of carbon credits to be applied entirely to energy efficiency.[42] The legislation stated:

> In order to provide the maximum long-term benefit to Vermont electric consumers, *particularly benefits that will result from accelerated and sustained investments in energy efficiency* and other low-cost, low-carbon power system investments, the public service board . . . *shall establish a process to allocate 100 percent* of the Vermont statewide budget of tradable power sector carbon credits and the proceeds from the sale of those credits through allocation to one or more *trustees acting on behalf of consumers*. . . .[43]

Vermont thus became the first jurisdiction to create a substantial consumer allocation of power sector carbon credits and the first to use those credits to finance expanded investments in energy efficiency.[44]

Other states in the RGGI region are also allocating a significant percentage of allowance proceeds to energy efficiency. For example, in New York, the largest RGGI state, up to 97% of allowances will be auctioned, with up to 100% of auction proceeds dedicated to improving energy efficiency.[45] In Connecticut at least 70% of allowance proceeds will be invested in energy efficiency and conservation programs.[46] In Maine, most allowance proceeds will be transferred to a consumer benefit account, with a portion targeted at manufacturing facilities' combined usage of heat and power.[47] Massachusetts Department of Energy Resources

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require as little as 11% of allowances to recover their compliance costs in a cap-and-trade program. DALLAS BURTRAW & KAREN PALMER, RESOURCES FOR THE FUTURE, COMPENSATION RULES FOR CLIMATE POLICY IN THE ELECTRICITY SECTOR 41 (2007), *available at* http://www.rff.org/rff/Documents/RFF-DP-07-41.pdf.

40. *See, e.g.*, ENVIRONMENTAL AUDIT COMMITTEE, THE INTERNATIONAL CHALLENGE OF CLIMATE CHANGE: UK LEADERSHIP IN THE G8 & EU, 2004-5, H.C. 105, at 17, *available at* http://www.publications.parliament.uk/pa/cm200405/cmselect/cmenvaud/105/105.pdf (stating that "[w]e also noted that the use of grandfathering as a means to allocate emissions permits is likely to result in substantial windfall profits for power generators throughout the EU").

41. *See* MEMORANDUM OF UNDERSTANDING, *supra* note 34, at 6. In 2007, Massachusetts, Rhode Island and Maryland signed the Memorandum of Understanding and joined the initiative. Regional Greenhouse Gas Initiative History, http://www.rggi.org/about/history (last visited Sept. 21, 2008).

42. 2006-123 VT. ADV. LEGIS. SERV. 1 (LexisNexis) (codified at VT. STAT. ANN. tit. 30 § 255(c)(2) (2007).

43. *Id.* (emphasis added).

44. In 2008, the Vermont legislature revisited this issue, confirmed the consumer allocation for efficiency, and directed that the credit value be used to support efficiency in buildings across all fuels on a "whole buildings" basis. *See* Vermont Energy Efficiency and Affordability Act, 2008-92 Vt. Adv. Legis. Serv. 11, 15 (LexisNexis) (to be codified at VT. STAT. ANN. tit. 30 § 235) (stating that "programs, measures, and compensation mechanisms shall include fuel efficiency services that . . . produce whole building and process heat efficiency").

45. ENVIRONMENT NORTHEAST, STATE POLICY STATUS (2008), *available at* http://www.env-ne.org/public/resources/pdf/ENE_RGGI_StatePolicyStatusTable_082908.pdf.

46. Id.

47. Press Release, State of Maine, Dep't of Envtl. Prot., DEP Issue Profile: Regional Greenhouse Gas

regulations express an intention to use the proceeds for energy efficiency, and additional legislation is pending.[48] Currently, most states are in the process of codifying how allowances are used through proposed legislation and rulemaking proceedings. Between 90% and 100% of allowances currently are expected to be auctioned in each state. Some of the states are directing a percentage of allowances for certain set-asides or direct allocations, but these are transitional and are expected to phase out over time. In every state that is in the more advanced stages of its decision-making, energy efficiency is the primary activity for RGGI allowance proceeds. **Across the ten-state RGGI region, approximately 90% of total allowances will be auctioned, with as much as 80% of auction revenues (roughly 70% of total allowance value) dedicated to investments in end-use energy efficiency.**

This history is persuasive evidence of the importance of efficiency in carbon management: in a region of the country that has deep experience with efficiency programs and benefits, all ten RGGI states have adopted policies to auction emission allowances to generators and to apply the large majority of auction proceeds to deeper efficiency attainment. Governors, legislators, and regulators across the region are convinced that the RGGI consumer allocation for efficiency will lower power costs, lower carbon costs, and the cost of the RGGI program generally.

B. Creating the Consumer Allocation in National Legislation

The simplest way to mitigate generator windfalls, and reduce the unnecessary rate impacts of a generator-based cap, is to **award almost all of the power sector's allowances in each compliance period to consumers, represented by their local distribution companies (LDCs) or other supervised trustees** acting on their behalf.[49] By selling these allowances in the allowance market to emitters, consumers' agents can recover some of the generator windfall that flows from the structure of today's wholesale power market. This revenue-recapture mechanism is essentially a market-based means of doing through program design a part of what regulators historically would have done through cost-of-service ratemaking.

A consumer allocation focused mainly on local distribution companies has the additional advantage of treating consumers in all parts of the country on an even basis. As noted earlier, about half of the power sold today is sold by generators in wholesale markets with "single clearing price" rules, while generation in other states and regions remains under the historic vertically-integrated, rate-regulated system. Because of these differences, awarding free allocations to generators would produce greatly different results for shareholders and for consumers in different states. But in all regions of the nation, there is a common denominator in the local distribution company, which remains a regulated wires monopoly. The National Association of Regulatory Utility Commissioners (NARUC) has concluded that to protect consumers and to provide even treatment across the nation, allowances should be allocated to the LDCs, supervised on behalf of consumers (or given to other consumer trustees created and supervised by the states). The NARUC Resolution on point, adopted in 2007, states:

Initiative (July 23, 2008), http://maine.gov/dep/air/greenhouse/pdf/RGGI%20issue%20profile%20(2).pdf.

48. Massachusetts Department of Environmental Protection, Frequently Asked Questions: Regional Greenhouse Gas Initiative (RGGI), http://www.mass.gov/dep/air/climate/rggifaq.htm (last visited Oct. 9, 2008).

[49] Depending on how large various "off the top" allocations are, the consumer allocation should comprise about 35% to 40% of total allowances.

> "Any emissions allowance allocation program *should assign all allocated allowances available to the electricity sector to local distribution companies* providing a regulated local distribution function for end-user customers (including vertically-integrated utilities, distribution utilities, rural-electric cooperatives, municipal distribution systems, and all other entities providing distribution service directly to end-user customers subject to State regulation or its equivalent). This approach will allow State PUCs or other authorities to ensure that the value of these no-cost allowances will inure to the benefit of end-use consumers. Alternatively, States should be able to adopt other methods for distributing benefits to end-use consumers."[50]

The Consumer Allocation is not simply a matter of accommodating the states. Under well-established principles of ratemaking, LDCs will have to account for the receipt of allowance value as utility income, and will need to recycle the revenue to advance consumer welfare. As NARUC more recently pointed out, "such an allocation ensures that allowance value will be used for public purposes rather than to enhance the profits of private investors. Under State regulation, this value would be passed along to the utility's consumers in the form of lower prices or through additional expenditures for energy efficiency or low-income assistance programs."[51]

C. Using the Consumer Allocation to Support Efficiency and Lower the Cost of Carbon Management

Recapturing and recycling generator price increases to consumers will lower the consumer cost of a carbon capture program. But in what form should those benefits be returned to consumers? Some consumer advocates will naturally propose that revenues from the sale of carbon credits should be returned to consumers in the form of rate rebates. However, this will not produce the best long-term results for consumers.

The best outcome for consumers as a whole, and the best way to lower the societal cost of carbon reduction, is to invest carbon credit revenues in low-carbon resources—especially low-cost energy efficiency measures. There is good evidence for this conclusion. For example, modeling runs conducted by ACEEE for RGGI revealed that increasing the region's spending on energy efficiency was the key to lowering the overall cost of RGGI's planned carbon reductions to the economy. That study found that doubling investments in energy efficiency throughout the RGGI region would lower projected load growth by two-thirds by 2024.[52] Efficiency also reduces carbon emissions, holding them roughly constant during the same period—compared to a 15% rise in the base case—and greatly reduces the cost of meeting RGGI's overall carbon objectives. The ACEEE study also concluded that doubling efficiency could avoid around 8,000 MW of new capacity additions, and by 2021 would reduce the average annual household power bill by over $100.

While the nation's supply of low-cost efficiency investment opportunities is not infinite, the

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[50] Resolution on Federal Climate Legislation and Cap-and-Trade Design Principles (Adopted by NARUC November 2007).(emphasis added).

[51] Letter from Frederick Butler, President of NARUC , and Commissioner Rick Morgan to OMB Director Peter Orszag March 17 2009.

52. WILLIAM PRINDLE, ET AL., ENERGY EFFICIENCY'S ROLE IN A CARBON CAP-AND-TRADE SYSTEM: MODELING RESULTS FROM THE REGIONAL GREENHOUSE GAS INITIATIVE iii (2006), *available at* http://aceee.org/pubs/e064.pdf?CFID=1812522&CFTOKEN=798299427.

untapped efficiency reservoir is quite large. Additional investments in cost-effective efficiency measures will provide a large initial block of carbon reduction at the lowest cost to consumers and the economy. Governments can provide a greater long-term benefit to consumers by selling carbon credits to emitters and investing the revenues in low-cost efficiency rather than using the funds to provide short-term consumer rebates. Recycling the credit revenues through efficiency services can lower the cost of carbon reduction to consumers and the economy. It can also advance other goals, including lower power bills, avoiding expensive transmission and distribution upgrades, and greater power system reliability.[53]

A comprehensive set of recommendations along these lines has been developed by a broad coalition of business, environmental, and efficiency groups, which concluded that "It is important to capture as much cost-effective energy efficiency as possible in order to meet climate goals and reduce the cost of a cap-and-trade program."[54] Their report concludes that investment is needed rising to about $15-20 billion each year for energy efficiency deployment programs and policies, with most of that revenue coming from the allocation or auction of carbon allowances. Proceeds from the consumer allocation recommended here would provide the revenue needed at the state and local levels to develop and implement those efficiency programs and carbon reductions.

D. Adding a *Performance Incentive to the Consumer Allocation*

This testimony has set out the reasons for allocating power sector emission allowances to local distribution utilities or other state-supervised trustees on behalf of consumers. It has also demonstrated the reasons that a large fraction of that allowance value, to total $15 billion to $20 billion per year, should be dedicated to consumer benefits via energy efficiency investments.

We now turn to the question of how allowances should be allocated among the states and LDCs. While many different formulas are possible, they will need to balance a variety of factors, including:

- Recognizing the baseline emission rates and MWh sales levels in each state or service territory;
- Ensuring that the formula does not reward increased per capita consumption or penalize effective efficiency efforts in the states;
- Accounting for appropriate load growth associated with underlying population growth;
- Smoothing out volatility in demand and consumption due to short-term weather conditions;
- Providing adequate incentives to state and local governments and utilities to help customers reach greater levels of end-use efficiency; and
- Ensuring that all states and regions of the nation are treated equally and fairly.

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53. Reduced consumption will lower power market clearing prices, producing an anti-windfall effect benefiting all consumers; it will lower power bills for consumers who install efficiency measures; and it will lower demands on transmission facilities and improve reliability. For an overview of the multiple benefits of power sector end-use efficiency, see RICHARD COWART, EFFICIENT RELIABILITY: THE CRITICAL ROLE OF DEMAND-SIDE RESOURCES IN POWER SYSTEMS AND MARKETS (2001), *available at* http://www.raponline.org/Pubs/General/EffReli.pdf.

54 *Reducing the Cost of Addressing Climate Change Through Energy Efficiency,* Consensus Recommendations for Future Federal Climate Legislation in 2009. Signatories include the Alliance to Save Energy and ACEEE, along with the American Institute of Architects, the Real Estate Roundtable, the National Association of Energy Service Companies, the Sierra Club and the Natural Resources Defense Council.

While the initial distribution of allowances can be based entirely on a formula that weighs such factors as historic emissions, historic consumption, and population, in later years, performance in the delivery of energy efficiency should also become a factor. The inescapable point is that increased cost-effective efficiency in any state will provide benefits to consumers, the environment, the nation's energy security, regional power reliability, and to the economy. It is thus in the nation's interest to provide support and incentives to states, local governments, and utilities to improve end-use efficiency. At the same time, we should recognize that many of the public programs and policies that deliver end-use efficiency do not necessarily require significant spending to be successful (e.g., codes and standards, education programs, market transformation activities).

The national program should not focus exclusively on *spending for efficiency*, but also on *measured improvements in efficiency* – regardless of spending levels. Over time, a growing fraction of the overall consumer allocation should be distributed to states and utilities on a performance basis. One advantage of this approach is that this part of the national program would not need to mandate spending levels, or dictate methods or means of achieving efficiency goals. States, local governments, utilities, and third parties should be free to use a variety of techniques and to experiment. Building codes, standards, incentives, utility programs, ratemaking, smart growth policies, competitive acquisition, and other techniques could all be supported without the need for national rules or standards. Here are some of the key features of the performance allocation:

- At first, allowances could be allocated to every state based on its historic emissions and energy consumption.
- After an initial ramp-up period of four to five years, the national program administrator should establish standard measures for the distribution of allowances to states to reflect their rate of improvement in efficiency.
- Each state's annual allocation would be based on demonstrated improvement *against that state's own historic baseline*, providing an even-handed way to encourage greater efficiency in each jurisdiction. This approach would not favor today's most active states on efficiency, nor those where the opportunities are greater. The administrator should take recent state efficiency initiatives into account by setting the baseline years prior to their implementation.
- The metrics used to assess efficiency attainment should be *broad-based and top-down*. There are many ways to deliver efficiency improvements, and many debates over claiming responsibility for them. A top-down measurement, such as the per-capita consumption of residential and commercial energy measured in source BTUs, would provide a broad assessment of a state's success in delivering energy efficiency without the need to measure and evaluate individual policies, programs, or installations.

A performance-based allocation of carbon allowances, within the national consumer allocation program, would promote and reward the multitude of state and local actions that are necessary to deliver greater energy efficiency in millions of customer locations and communities across the nation

IV. Conclusions

National climate change legislation faces the daunting challenge of setting a path to achieve deep reductions in GHG emissions while moderating both societal economic costs and consumer costs from the program. Greatly enhanced end-use energy efficiency is critical to achieving all of these goals, and national climate legislation should be designed to capture efficiency resources. It could do so both through direct federal actions and by providing incentives to states, utilities, and other service providers. In particular:

- Portfolio management policies such as renewable standards, environmental dispatch, loading orders giving priority to efficiency investments, and efficiency resource standards will provide the most carbon savings and lower the cost of any power sector cap-and-trade system. Merely increasing the price of fossil power through carbon taxes or credit auctions will not significantly shift generation or reduce demand and will therefore be an expensive path to GHG reductions.

- To reduce generator windfalls and contain consumer costs, allowances should be allocated to local distribution companies or other consumer trustees supervised by government regulators. Free allocation of carbon credits to generators based on historic emissions can lead to substantial windfall gains to generators, especially in today's organized wholesale markets.

- A carbon program that directly mobilizes end-use efficiency will cost less and achieve more than one that focuses only on generators. Thus, an auction of emissions allowances with revenues devoted to energy efficiency is a positive way to use the "polluter pays" principle and to fund low-cost GHG reductions at the same time.

- Over time, a growing fraction of power sector allowances should be awarded to states and local utilities on a performance basis to recognize and fund success in advancing energy efficiency within the states.

Thank you for your time and consideration this morning. I would be happy to answer questions when appropriate..

Mr. MARKEY. Our next witness is Mr. Robert Greenstein, founder and executive director of the Center on Budget and Policy Priorities. He has had a long and distinguished career, but it included winning a MacArthur fellowship. And he was appointed by President Clinton to serve on the Bipartisan Commission on Entitlement and Tax Reform. We welcome you back, sir. Whenever you are ready, please begin.

STATEMENT OF ROBERT GREENSTEIN

Mr. GREENSTEIN. Thank you very much, Mr. Chairman. As you know, the work of our center in this area has focused on developing proposals to protect the budgets of low- and middle-income consumers in a way that is effective in reaching them, efficient, and consistent with energy conservation goals. With these goals in mind, we have designed an energy refund or rebate to offset the increases in households' overall energy expenses that would result from an emissions cap, not just their increases in utilities bills, which will account for less than half the overall hit to consumers' budgets.

We recommend that consumer relief be provided through the tax system and existing benefit delivery systems. Under the proposal we have developed, 95 percent of households in the bottom fifth of the income distribution and over 98 percent of those in the middle fifth and the fifth in between would be reached automatically, without new bureaucratic structures, no new applications required, and low administrative costs.

Here is how it would work. Most households qualifying for an energy refund would get it through the form of a refundable income tax credit that would be provided in paychecks through adjustments to employer withholding, as is being done with the tax credit that you enacted in the recovery legislation in February.

For seniors, veterans, and people with disabilities, they would get their refund as a direct payment from the Social Security Administration or the Department of Veterans Affairs, again, as being done under the recovery legislation. And, finally, very poor households participating in programs like food stamps would receive monthly energy refunds through the debit card systems that every State human service agency in the country operates to provide other low-income benefits. Those systems have proved to be efficient and highly effective.

Now, some, including other of my fellow panelists here, have proposed instead routing funds for consumer relief through local utility distribution companies. While that may seem reasonable at first blush, our analysis indicates that such an approach would be unwise for several reasons.

First, the utility company approach is aimed at electricity and natural gas bills. It doesn't address the full impact of an emissions cap on consumers' budgets. Over half of the impact would be in other areas, gasoline, increased prices for a whole array of goods and services that use energy in their manufacture or transportation to market. Consumer relief that only focuses on home or even business electricity and gas bills leaves consumers with a large, uncompensated hole in their budgets.

Secondly, this approach would cause prices for other forms of energy and energy products other than electricity and gas to rise even more, and it would increase the overall cost to the economy of meeting the cap. This is not just our conclusion. This is in the EPA study of your draft bill released this week, and it is in the study of Resources for the Future, the premier environmental think tank.

The issue is that keeping the utility bills low would blunt the price signal an emissions cap is supposed to send and, as a result, you get less reduction in electricity and natural gas use.

Now, if the cap is a given amount of tons of carbon emissions and you get less reduction from electricity and natural gas, you must get greater reduction from all other forms of energy. In order to do that, the price of other forms of energy has to rise more. In the Resources for the Future study, they estimated that this kind of an approach would cause the overall allowance price to be 15 percent higher than it otherwise would be. In the EPA study released earlier this week, and I am quoting, "Returning the allowance value of consumers of electricity via local distribution companies prevents electricity prices from rising, but makes the cap-and-trade policy more costly overall. This form of redistribution makes cap-and-trade more costly since greater emissions reductions have to be achieved by other sectors of the economy."

A third and final problem here is that while the LDCs are regulated utilities, the quality of State utility regulation is uneven across the country. And the fact that they are regulated is no guarantee that in every area of the country, free distribution of allowances to the LDCs will produce well-targeted and effective consumer relief. This is an issue some consumer organizations have expressed concerns about.

So, to wrap up, a refundable energy tax credit delivered through paychecks coupled with electronic benefits transfers and payments from Social Security and Veterans Affairs would be the most effective way to provide relief to low- and middle-income consumers. Other mechanisms would provide less consumer relief per dollar of cost. And this is why the newly formed Climate Equity Alliance has, as a basic principle, providing the consumer relief directly through the kind of mechanism I have described rather than through utility companies. This is an alliance that includes leading civil rights groups like the NAACP and the National Hispanic Environmental Council, leading religious organizations like the U.S. Conference of Catholic Bishops, SCIU, and the Center for American Progress.

Having said this, we all know that deadlock serves no one. We all know that agreement needs to be reached to move this legislation. So, in the spirit of compromise, let me swallow hard and suggest a possible middle ground from what you are hearing on this panel.

Mr. MARKEY. We will give you extra time right now. That is a very important sentence you just said. Thank you.

Mr. GREENSTEIN. While I believe providing consumer relief through the local distribution companies is unwise for all the reasons I have mentioned, it seems that that would need to be a component of something that would move particularly in this committee.

So the suggestion would be, rather than, as some have suggested, combining a very large LDC piece and a small low-income consumer piece to supplement it, to have a somewhat more moderate LDC piece combined with an energy tax credit designed such that the sum of the LDC relief and the tax piece together fully offset the hit to the budgets of the typical middle-income household.

The Social Security, Veterans, and debit card pieces obviously would still be a part of it for those groups. And then, over time, as energy efficiency and other matters kicked in over time the free distribution of allowances to LDCs would phase down, the direct relief, the tax piece would phase up and would stay at the level based on what was happening with energy prices that you needed to provide the consumer relief to make the typical consumer whole.

Mr. MARKEY. Thank you.

[The prepared statement of Mr. Greenstein follows:]

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TESTIMONY OF ROBERT GREENSTEIN,

EXECUTIVE DIRECTOR, CENTER ON BUDGET AND POLICY PRIORITIES

HOUSE COMMITTEE ON ENERGY AND COMMERCE

April 23, 2009

Thank you for the opportunity to testify today. The main message of my testimony is that climate change legislation can fight global warming effectively while protecting consumers if it is designed appropriately.

Fighting global warming requires policies that significantly restrict greenhouse gas emissions, and an emission cap can serve this purpose. Under a cap, the price of fossil-fuel energy products — from home energy and gasoline to food and other goods and services with significant energy inputs — will rise. Those higher prices will create incentives, sometimes referred to as a "price signal," for energy efficiency and conservation measures and for the development and increased use of clean energy sources. But they will also put a squeeze on consumers' budgets, and low- and moderate-income consumers will feel the squeeze most acutely.

Fortunately, climate change policies can be designed in a way that preserves the incentives from higher prices to change the way that we produce and consume energy, while also offsetting the effect of those higher prices on consumers' budgets. Well-designed climate policies will generate substantial revenue that can be used for consumer relief, as well as to meet other critical needs related to climate change.

To capture this revenue under a cap-and-trade system, it is essential that most or all of the allowances or permits used to limit emissions be auctioned rather than given away free to emitters. Giving away, or "grandfathering," allowances is sometimes portrayed as a way to keep down costs for consumers, but that argument does not withstand scrutiny. If allowances are given away free to firms that are responsible for emissions, the firms and their shareholders will reap unwarranted benefits. The Congressional Budget Office has explained that these firms would receive "windfall profits:" they would be able to charge higher prices for their products due to the effects of the emissions cap but would not have to pay for their emissions allowances. Greg Mankiw, former chair of the Council of Economic Advisers for President George W. Bush, has written in a similar vein that consumer prices will rise regardless of whether allowances are given free to emitters and that grandfathering the allowances would constitute "corporate welfare." There is little disagreement among economists about this effect.

Protecting low- and moderate-income consumers should be the top priority of consumer relief provisions included in climate change legislation. These consumers are the most vulnerable because they spend a larger share of their budgets on necessities like energy than do better-off consumers and already face challenges making ends meet. They also are the people least able to afford purchases of new, more energy-efficient automobiles, heating systems, and appliances. Middle-income consumers also will feel the squeeze from higher energy-related prices, and they should receive consumer relief as well.

Much of the Center on Budget and Policy Priorities' work on climate change policy has focused on developing concrete proposals to protect the budgets of low- and middle-income consumers in a way that is *effective* in reaching these households, *efficient* (with low administrative costs), and *consistent with energy conservation goals.* With these goals in mind, we have designed a "climate" or "energy" rebate, that would offset the impact of higher energy-related prices on low-income households — who are most vulnerable to these price increases — and middle-income households, who also will feel the squeeze. Such consumer assistance should offset the increases in households' energy-related expenses for an array of items, not just the increases in their utility bills, which will account for less than half of the overall impact on their budgets.

As explained below, we recommend that consumer relief be provided through the tax system and existing benefit delivery systems.[1] Under the proposal we have developed, approximately 95 percent of households in the bottom fifth of the income distribution and more than 98 percent of households in the next two income quintiles would be reached automatically. (With outreach, these figures would go still higher.) Because the rebates would build on existing tax and benefit delivery mechanisms, this approach would not require new bureaucratic structures, and the administrative costs would be low, compared with alternative delivery mechanisms. The size of the energy rebate, and how far up the income scale it would extend, would depend on the amount of funding (i.e., the share of the allowance value) that Congress decided to make available for consumer relief.

This is decidedly preferable to an alternative approach — providing funds to utility companies to artificially suppress price increases in electric bills that otherwise would occur under an emissions cap. Artificially keeping electric bills down would undercut the incentives the emissions cap is supposed to create to reduce electricity use. As a result, this approach would lead to *larger increases in prices for other energy products than would otherwise occur — since the use of other forms of energy would have to decline more to meet the emissions cap.* The resulting inefficiency would place some burden on the economy. This approach also would fail to offset increases in energy-related costs other than home utilities, which as noted above, account for the majority of the impact on consumers.

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[1] The design for an energy rebate laid out here follows the same principles as earlier work on climate change policy by the Center on Budget and Policy Priorities and incorporates the Center's latest thinking on how to reach as large a percentage of the target population as possible operating through existing, proven delivery mechanisms. For further discussion, see Sharon Parrott, Dottie Rosenbaum, and Chad Stone, "How to Use Existing Tax and Benefit Systems to Offset Consumers' Higher Energy Costs Under an Emissions Cap," Center on Budget and Policy Priorities, April 20, 2009, http://www.cbpp.org/files/4-20-09climate.pdf; Chad Stone and Hannah Shaw, "Extending 'Climate Rebates' to Include Middle-Income Consumers," Center on Budget and Policy Priorities, February 19, 2009, http://www.cbpp.org/cms/index.cfm?fa=view&id=2650; and Chad Stone and Robert Greenstein, "Why Utilities Are Not Well-Suited to Deliver Relief to Low- and Moderate-Income Consumers in a Climate Bill," Center on Budget and Policy Priorities, February 19, 2009, http://www.cbpp.org/cms/index.cfm?fa=view&id=2649.

This testimony provides principles for crafting consumer relief and then describes our proposal for efficiently providing relief to low- and middle-income families.

Guiding Principles for Consumer Relief

In offsetting higher costs for low- and middle-income consumers, we recommend that policymakers follow five basic principles.

1. ***Protect the most vulnerable households.*** Climate change legislation should not make poor families poorer or push more people into poverty. To avoid that outcome, energy rebates should be designed to fully offset higher energy-related costs for low-income families.

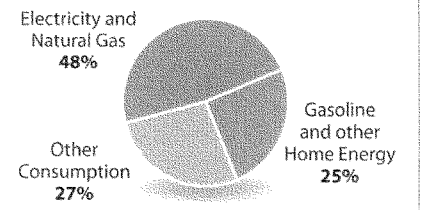
2. ***Use mechanisms that reach all or nearly all eligible households.*** Eligible working households could receive an energy rebate through the tax code, via a refundable tax credit. Many other households are elderly, unemployed (especially during recessions), or have serious disabilities and are not in the tax system; energy rebates need to reach these households as well.

3. ***Minimize red tape.*** Funds set aside for consumer relief should go to intended beneficiaries, not to administrative costs (or profits). Accordingly, policymakers should provide assistance to the greatest degree possible through existing, proven delivery mechanisms rather than new public or private bureaucracies.

4. ***Do not focus solely on utility bills.*** For low- and middle-income households, higher electricity and natural gas prices will account for less than half of the total hit on their budgets from a cap-and-trade system. This is because goods and services across the economy use energy as an input or for transportation to market. Furthermore, about 20 percent of the households in the bottom quintile of the income spectrum — and many in the middle of the income spectrum as well — have their utility costs reflected in their rent, rather than paying utilities directly. Policymakers should structure energy rebates so they can help such families with the rent increases they will face as a result of climate policies, as well as with the higher prices that households will incur for gasoline and other products and services that are sensitive to energy costs.

5. ***Preserve economic incentives to reduce energy use efficiently.*** Broad-based consumer relief should provide benefits to consumers to offset higher costs while still ensuring that consumers face the right price incentives in the marketplace and reduce consumption accordingly. A consumer relief policy that suppresses price increases in one sector, such as electricity, would be

FIGURE 1:
Shares of Cost Increase for Poorest 20 Percent of Population by Product Category



Source: CBPP calculations based on Consumer Expenditure Survey data and CBO methodology

inefficient, because it would blunt incentives to reduce fossil fuel use in that sector. That would keep electricity demand elevated relative to what it would be if consumers saw electricity prices rise and would place a greater burden on other sectors and energy sources to provide the emissions reductions required under the cap. The result would be that emissions reductions would be more costly to achieve overall and allowance prices would be higher. Consumers might pay less for electricity, but prices would rise more for other items.

Providing Consumer Relief Efficiently and Effectively

To compensate for the effects that climate change legislation has on their purchasing power, we recommend that households be eligible for an energy rebate. The rebate would be based on an estimate of the increased costs that households would face as a result of the reduction in carbon emissions and would vary by household size. (Families with several children generally consume more energy and thus would face larger burdens from increased energy costs than single individuals or couples without children.)

We recommend that the rebate be delivered through three existing mechanisms, with appropriate coordination to ensure that people who both participate in a benefit program and file a tax return — and thus might qualify for a rebate through more than one delivery mechanism — receive the appropriate amount and are not overcompensated.

- **Most households qualifying for a rebate would receive it through the tax system.** For most households, a refundable income tax credit is the most efficient way to deliver an energy rebate. The credit should be provided in paychecks, if possible, through adjustments to employer tax withholding.

  A tax-based system alone, however, would leave out a large share of households, particularly the lowest income households. According to the Urban Institute-Brookings Tax Policy Center, 15 percent of U.S. households do not file an income tax return, in most cases because they are not required to. Non-filers include seniors and people with disabilities who do not work and households headed by working-age adults who are jobless for some or all of the year, including some of the nation's poorest families with children.

- **Seniors, veterans, and people with disabilities who receive Social Security, Supplemental Security Income, or veterans' benefits would receive their rebate as a direct payment from the federal agency that provides their benefits.** This is similar to the policy of direct payments to these individuals that was included in the economic recovery legislation enacted in February.

- **State human service agencies would deliver rebates to low-income families.** Households participating in state human service programs such as food stamps, and other low-income households that choose to apply, would receive their monthly energy rebates through the debit-card systems operated by the state human service agencies that administer food stamps and other assistance. Every state in the nation operates such a system, and these systems have proved to be highly effective.

Setting the Rebate Amount

The amount of the rebate would be based on the average dollar impact on the budgets for the group of consumers that policymakers decide should be fully compensated. If policymakers decide that families in the middle of the income scale should be fully compensated for their loss in purchasing power, the rebates could be set at the average purchasing power loss of households in the middle fifth of the income distribution (varied by household size). If policymakers decide to use a somewhat smaller share of the auction proceeds for consumer relief, they could set the rebate amounts at somewhat lower levels, such as the average loss to consumers in the next-to-the-bottom fifth of the income distribution.

The Energy Information Administration would be tasked with determining the annual rebate amounts. That could be done using an approach similar to the one followed by the Congressional Budget Office in estimating how the costs reflected in the total value of the emissions allowances would fall on families in different parts of the income distribution.[2]

For example, if the rebate were set at the average estimated loss in purchasing power to households in the middle quintile and the emissions cap were set to achieve a 15 percent emission reduction relative to what emission levels would be without a cap, then we estimate that the annual rebates (in 2009 dollars) would be $700 for a household of one and $1,300 for a household of three.[3] (Due to economies-of-scale factors, rebates for larger households need not equal the rebate for a one-person household multiplied by the number of people in a household.)

I'll now discuss in more detail each of the rebate components.

The Tax Component

Most households receiving an energy rebate would receive it as a refundable tax credit, which would be broadly available to low- and middle-income households. The credit would be available to anyone who files a federal tax return and whose income is below the eligibility limit set for the rebate; tax filers would simply look up the size of their credit in a tax table similar to the one used now for the Earned Income Tax Credit. Like other refundable tax credits, the energy rebate would phase in as income increased over some income range and then would phase out as income rose above a specified income level. The tax credit preferably would be provided throughout the year as an adjustment to employer tax withholding.[4]

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[2] Congressional Budget Office, "The Distributional Consequences of a Cap-and-Trade Program for CO2 Emissions," testimony before the Subcommittee on Income Security and Family Support, Committee on Ways and Means, U.S. House of Representatives, March 12, 2009.

[3] These are CBPP projections following a methodology similar to that used by CBO to estimate the distributional impact of an emissions reduction of this size. These estimates are based in part on past work by CBO and may be revised when CBO updates that work.

[4] If the tax credit is provided throughout the year via an adjustment to employer tax withholding, some other elements of the rebate proposal described would be modified accordingly. For example, low-income working families that also receive food stamps would not receive a rebate through the human service agency if their employer were adjusting their tax withholding and providing the rebate through their paycheck.

Direct Payments to Federal Beneficiaries

Among those most likely to be missed under the tax-credit mechanism are lower-income seniors and people with disabilities who rely primarily on Social Security or other benefits and are not required to file income tax returns. To reach this group, the most effective policy would be for the Social Security Administration, the Department of Veterans Affairs, and the administrator of the Railroad Retirement program to provide energy rebates directly to people receiving Social Security, Supplemental Security Income (SSI), veterans', or Railroad Retirement benefits. Married beneficiaries would receive the energy rebate for a household of two; individual beneficiaries would receive the energy rebate for a household of one. The recently enacted economic recovery legislation calls for a similar payment to be made to these beneficiaries in coming months. We recommend that the payments to these beneficiaries be made quarterly.[5]

Rebates through the State Human Service Delivery Mechanism

The group that would not be reached through either a tax credit or direct payments from federal agencies such as the Social Security Administration would be very low-income households (primarily families with children) that have very low or no earnings over the year and do not receive Social Security or other similar federal benefits. The best mechanism to reach this group is to provide energy rebates through state human service agencies that already provide food stamp assistance, Medicaid, and other benefits to a broad array of low-income households. States could readily "piggy back" the climate credit onto the existing Electronic Benefit Transfer (debit card) systems that all states use to deliver food stamps and, in most states, other forms of assistance, including cash aid.

State human service agencies already have the infrastructure in place to gather information about families' incomes, evaluate eligibility, and issue payments through their existing EBT systems (which they use for food stamps) or another electronic payment mechanism. Delivering an energy rebate through existing state eligibility systems and delivery mechanisms would be far less costly to set up and administer than virtually any alternative. This mechanism also would ensure that the lowest-income families — the group that would be in the greatest danger of utility shut-offs and that generally has the most difficulty managing money — would receive their rebates on a monthly basis throughout the year.

The Food Stamp Program does especially well in reaching low-income families with children — 83 percent of eligible families with children participate. Poor households that do *not* receive food stamps but that meet the eligibility criteria for food stamps (income below 130 percent of the poverty line and limited assets) and wished to receive the energy rebate could apply for the rebate through their state human services agency.

Coordination Mechanisms

The three-pronged delivery mechanism described here could result in some people qualifying for an energy rebate from more than one source because they participate in one or more of the relevant

[5] Payments made more frequently than quarterly might be difficult to administer, since these agencies would need to match beneficiary data so they do not provide more than one rebate to individuals who are beneficiaries of more than one program.

programs and/or also file an income tax return. Coordination mechanisms, described in the appendix to this testimony, would be employed to avoid overcompensation.

Rebate Mechanisms Would Reach Nearly All Low- and Middle-Income Families

Approximately 95 percent of households in the bottom quintile of the income distribution would be reached automatically under this proposal, because they already receive SSI, Social Security, VA benefits, or Railroad Retirement, already participate in the Food Stamp Program, or already file an income tax return and have earnings. More than 98 percent of households in the next two quintiles also would be reached automatically.[6]

Why Rebates Are Superior to Other Forms of Consumer Relief

As the foregoing discussion indicates, rebates can be an effective way to deliver consumer relief. They can be provided easily through the federal tax system, agencies like the Social Security Administration, and state human service electronic benefit delivery systems, with no need for new agencies or bureaucracy at the state or federal level. Also, rebates protect households against the loss of purchasing power from higher energy-related prices without blunting consumers' incentives to respond to those higher prices by conserving energy and investing in energy efficiency improvements. Because energy-related products will cost more, households with the flexibility to conserve energy or invest more in energy efficiency will get more value for their budget dollar by taking these steps than by using their rebate to maintain their old ways of consumption. At the same time, rebates help households that can't easily reduce their energy consumption to avoid a reduction in their standard of living.

Other proposals for consumer relief generally lack one or more of these advantages and, in some cases, also pose other serious problems.

Payroll or Income Tax Cuts

Some have proposed using climate change revenues to cut payroll tax rates or individual or corporate income tax rates. Such options would be far less effective than a refundable tax credit in preserving the purchasing power of low- and middle-income consumers.

In its analysis of trade-offs in the design of cap-and-trade legislation, CBO found that if all the revenue from auctioning emissions allowances were used to reduce payroll tax rates, households in the bottom 60 percent of the distribution would get a smaller benefit from the tax cut, on average, than they would lose from higher energy prices.[7] Those in the next 20 percent would come out even

[6] These estimates use Census Current Population Survey data for 2005 augmented by the Urban Institute's TRIM data, which account for underreporting of certain benefits. A modest fraction of low-income households might not receive the full amount of the rebate for which they qualify. This would happen if a household received a rebate through the human service agency for only part of the year and did not qualify for an additional amount through the tax rebate mechanism. Our analyses show that only 7-8 percent of low-income households would receive less than half of the full rebate amount.

[7] Congressional Budget Office, "Tradeoffs in Allocating Allowances for CO2 Emissions," April 25, 2007, http://cbo.gov/ftpdocs/89xx/doc8946/04-25-Cap_Trade.pdf; and "Options for Offsetting the Economic Impact on Low-and Moderate-Income Households of a Cap-and-Trade Program for Carbon Dioxide Emissions," letter to the

and the top 20 percent of the population would get a tax cut that *exceeded* their increase in energy costs. Using all the auction revenues to cut corporate taxes would be even more regressive. In contrast, using auction revenues to provide households rebates that vary by family size but do not increase as income climbs would not have these regressive effects.

The main argument for using climate change revenues to cut tax rates rests on the concept of economic efficiency. Economic analysis suggests that charging firms for emitting pollutants (as under a cap-and-trade system) could dampen economic activity. By cutting tax rates at the same time, policymakers could reduce these economic efficiency losses. But, the economic efficiency gains CBO identifies are modest, and the effect of the tax rate cuts that produce those modest gains would almost surely be to leave low- and middle-income consumers worse off, despite the economic gains, and to cause inequality in the United States to widen further.[8]

A recent study by Resources for the Future reinforces the CBO analysis.[9] The study finds that the benefits of cutting marginal tax rates would mainly go to upper-income individuals. In contrast, providing rebates to low- and middle-income consumers would result in the best outcome for those consumers.

A reduction in payroll tax rates does not fare as well as a flat rebate on distributional grounds: the size of the benefit from a payroll tax cut is higher for those with higher earnings, and seniors and others without earnings would receive no rebate. The first concern can be partially addressed by switching from a cut in payroll tax rates to a rebate of payroll taxes paid up to a fixed cap. Workers above a certain modest level of earnings would all receive the same size rebate. Workers with very low earnings, however, would receive only a partial rebate, and people with no earnings would still be left out.

Those problems can partly addressed by switching to a refundable income tax credit based on the amount of payroll taxes paid (up to a maximum amount) and making seniors and people receiving federal disability benefits eligible for a similar size tax credit.[10] At that point, the modified payroll tax proposal would look a lot like our proposed low- and-middle-income rebate, although it still would leave out people who lack earnings and are not elderly or have disabilities, such as people who are

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Honorable Jeff Bingaman, Chairman, Committee on Energy and Natural Resources, United States Senate, June 17, 2008, http://www.cbo.gov/ftpdocs/93xx/doc9319/06-17-ClimateChangeCosts.pdf.

[8] For low- and moderate-income consumers not to be worse off under a proposal that uses all of the auction proceeds to lower tax rates, the additional economic activity generated by the tax cut would have to be so great that it raised workers' incomes by enough to increase their after-tax income by more than what they lose due to higher energy prices. Credible estimates of the economic efficiency gains from using climate change revenues for tax-rate reductions show those gains to be very small, however, compared with what would be needed to produce such a result. For example, in the analysis that CBO has relied upon to estimate the efficiency gains under an approach that uses all of the auction proceeds to cut tax rates, the efficiency gains would be equal to only 0.3 percent of GDP. That is far too small to offset the net loss that low- and middle-income consumers would bear as a result of losing more from higher energy prices than they would gain from the reduction in tax rates.

[9] Dallas Burtraw, Rich Sweeney, and Margaret Walls, "The Incidence of U.S. Climate Change Policy: Where You Stand Depends on Where You Sit," Resources for the Future, September 2008, http://www.rff.org/News/Features/Pages/ClimatePolicyOptions.aspx.

[10] Gilbert E. Metcalf, "A Proposal for a U.S. Carbon Tax Swap: An Equitable Tax Reform to Address Global Climate Change," The Brookings Institution (Hamilton Project), October 2007.

unemployed during a recession and single mothers with very young children who are temporarily out of the work force. That could be addressed by including our low-income EBT proposal and by making direct payments to people receiving Social Security, SSI, VA, or Railroad Retirement.

Energy Efficiency Programs

Measures to encourage or require investments in economic efficiency are important — they can reduce the overall demand for energy, thereby limiting the size of the hit to consumers' pocketbooks from increased energy-related prices under an emissions cap. Energy efficiency programs are not, however, a credible *substitute* for rebates as a means of addressing the impact of climate change legislation on consumers' budgets.

There are two main reasons for this. First, existing weatherization and other energy efficiency programs currently operate on a small scale and would likely take years to scale up to reach a substantial portion of the population. Until now, the Weatherization Assistance Program, which helps low-income households make their homes more energy efficient through measures such as better insulation and newer appliances, has served only about 100,000 homes a year.[11] Even if the program is expanded to the point that it reaches 1 million households a year, which would require a huge buildup in effort, it would take decades just to reach the 38 million low-income households that are eligible for weatherization assistance. Rebates, in contrast, can reach tens of millions of low- and middle-income people immediately.

Second, the commonly discussed energy efficiency programs generally focus on home energy efficiency. As noted, higher home energy costs account for less than half of the loss in household purchasing power that would be caused by an emissions cap. To provide full relief to households, the energy efficiency measures would have to be so effective as to compensate not only for the increased costs in home energy but also for the increase in the cost of gasoline and other products. That is far beyond what is realistic.

Using Utility Companies to Provide Consumer Relief

Some have proposed routing funds for consumer relief through local utility distribution companies (LDCs). While relying on LDCs may seem reasonable at first blush in light of concerns about increased utility bills, this approach is unwise for several reasons.[12]

First, utility companies do not routinely collect information on their customers' incomes. To target assistance at customers within a particular income range, utility companies would therefore have to set up new bureaucracies to collect and audit income information. Covering the large costs of building an infrastructure at each utility company to gather and verify income information for millions of customers would require substantial government subsidies. Such subsidies would pay for an infrastructure that essentially duplicates what public agencies already do. Making households of *all* income levels eligible for utility company assistance would avoid this particular difficulty. But

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[11] See the LIHEAP Annual Report to Congress for Federal Fiscal Year 2005.

[12] See Chad Stone and Robert Greenstein, "Why Utilities Are Not Well-Suited to Deliver Relief to Low- and Moderate-Income Consumers in a Climate Bill," Center on Budget and Policy Priorities, February 18, 2008.

that approach would spread the funds much more thinly across the population and make it far less likely that low- and moderate-income consumers would be adequately protected from higher prices.

Second, past experience suggests that utility company programs will miss large numbers of consumers. The only existing federal program that delivers assistance to low-income households through utility companies is the "Lifeline" telephone discount program, administered through local phone companies. That program reaches just *one-third* of eligible low-income households.[13] In addition, the households whose utilities are built into their rents might not receive adequate compensation.

Third, a utility company approach is aimed at electricity and natural gas bills, and hence fails to address the full impact of climate legislation on consumer budgets. With *over half* of the impact of climate change legislation on consumer budgets coming as a result of higher prices for a range of other goods and services, including gasoline and food, relying on utilities to deliver consumer relief would leave many low- and middle-income consumers with a large uncompensated hole in their budgets.

Fourth, routing consumer assistance through utility companies artificially lowers households' utility bills and blunts the "price signal." People who do not realize that energy costs are going up will be much less likely to take steps to conserve energy or seek out energy efficiency improvements. A rebate, in contrast, protects consumers' purchasing power without blunting the incentives created by higher energy prices.

Fifth, establishing a formula for allocating emissions allowances equitably among utilities would pose problems. There are roughly 3,300 LDCs in the electricity sector (plus additional natural gas retail distributors not affiliated with electric utilities), making it extremely difficult to design an appropriate formula. For example, basing the allocations to LDCs on each utility's share of total electricity delivered or its share of total emissions — the approaches often taken by legislative proposals that rely on LDCs to provide consumer relief — would shortchange utilities that serve a disproportionate number of low- and moderate- income consumers, because their consumers' per-capita energy consumption is likely to be lower than the per-capita energy consumption of more affluent households.

Sixth, a major obstacle to relying on utilities to deliver consumer relief, either through reductions in consumers' bills or through energy efficiency measures, is the uneven quality of regulation and enforcement of utilities across the states. Most utility customers are served by investor-owned utilities whose rates and practices are regulated by state public utilities commissions. Regulators have to work closely with the industry they oversee, and states vary considerably in the degree to which the regulators have successfully avoided being "captured" by the industry. In such a heterogeneous regulatory regime, it would be difficult to provide the federal oversight necessary to make sure that the federal revenues from auctioning emissions allowances are used appropriately to protect consumers and invest in cost-effective energy efficiency improvements, rather than being siphoned off in part to overhead and profits.

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[13] Matt Fiedler, "Lessons from The Telephone Lifeline Program," Center on Budget and Policy Priorities, July 18, 2008. Available at http://www.cbpp.org/7-18-08climate.pdf.

Finally — and perhaps most important — this approach would fail to protect consumers effectively and would be inefficient and wasteful. Policies that suppress consumer price increases in the electricity sector, as the utility company approach would do, blunt incentives to reduce fossil fuel use in that sector. That keeps home energy demand for electricity and natural gas elevated and puts a greater burden on other sectors to provide the emissions reductions required to meet the cap. The result is that emissions reductions would be more costly to achieve, allowance prices consequently would be higher, and costs for other energy sources and energy-related products would rise even more. As a result, the overall hit to consumers' budgets would be mitigated only partially by the tens of billions of dollars of allowance value devoted to this rather inefficient approach.

Conclusion

Climate change legislation that limits greenhouse gas emissions need not squeeze the budgets of low- and middle-income families. Well-designed consumer relief can restore to these families the purchasing power they would lose as a result of higher prices for energy-related products. Such consumer relief can be financed with a portion of the revenues from the auctioning of emissions allowances under a cap-and-trade system, leaving significant auction revenues available for other climate-related priorities.

A new refundable energy tax credit, coupled with Electronic Benefit Transfers for the lowest-income households and payments to seniors and veterans from the Social Security Administration and Department of Veterans Affairs, would be the most effective way to provide consumer relief to low- and middle-income households. Other proposed mechanisms suffer from significant flaws and would produce considerably less consumer relief per dollar of cost.

Appendix
Coordination Mechanisms

Under the energy-rebate proposal outlined here, three mechanisms would be employed to coordinate the delivery of rebates through the tax code, the Social Security Administration and Department of Veterans Affairs, and state human services agencies.

1. State human service agencies would not provide climate rebates to individuals who receive Social Security, SSI, veterans' benefits, and Railroad Retirement benefits. The state agencies collect and capture detailed information on the sources of income for each household member for benefit eligibility purposes, so they could readily adjust the rebates provided to these households through the Electronic Benefit Transfer system to adjust for those household members who are receiving their rebates through these other programs.

2. At the end of the year, SSA, the Department of Veterans Affairs, and the Railroad Retirement agency would provide a 1099-type tax form to individuals to whom these agencies had made rebate payments and also would provide this information to the IRS. Payments received through the federal benefit programs would, on a dollar-for-dollar basis, offset the energy tax credit for which such individuals otherwise would qualify as part of a tax filing unit for that year.

3. Finally, at the end of the year, state human service agencies would provide information to adults who had received energy rebates through their state EBT system during the year. The information would show the number of months during the year that these individuals received energy rebates. (The same information would be provided to the IRS.) Households that file a tax return would be asked if they had received energy rebates through this mechanism, and if so, the number of months the rebates were received. Any energy tax rebate for which the household otherwise qualified through the tax system would be reduced proportionally, based on the number of months that the filer and/or the spouse had received rebates through the EBT mechanism. For example, if the household head received energy rebates through EBT for six months, the tax unit's energy tax credit would be reduced by 50 percent.

As noted, if the tax rebate is provided throughout the year through an adjustment to employer tax withholding, some modifications to these coordination mechanisms would be made. For example, the system would be designed so food stamp recipients who were employed would not receive a rebate through the human service agency if their employer were providing the rebate through the paycheck mechanism.

Under either scenario, these coordination mechanisms would require some new activities by state and federal agencies. Since the cap-and-trade policies would not become effective immediately and the emissions cap likely would be modest in the first years, there would be lead-time to implement the coordination mechanisms effectively in the period between enactment of the climate legislation and actual implementation of the rebates.

Mr. MARKEY. Our next witness, Dr. Robert Michaels, is a professor of economics at California State University, Fullerton. Mr. Michaels is also an adjunct scholar at the Cato Institute. We welcome you, Dr. Michaels. Whenever you are ready, please begin.

STATEMENT OF ROBERT MICHAELS

Mr. MICHAELS. Thank you, Chairman Markey. I am honored to be here.

I come from California, where we supposedly set a lot of trends. And the first thing I want to do is summarize a few problems California has that may be quite important for the content of the legislation we are talking about here because your legislation depends, among other things, on a national renewable portfolio standard.

The thing that is clear now is that California's utilities are far out of compliance with their standard. It appears that it is going to be impossible for them to move on to tighter standards. And there are a variety of reasons, including regulatory uncertainty and citing problems with transmission.

Second, the supposed effect of energy efficiency policies in California needs to be reconsidered. It has been highly touted that California's per capita electricity consumption is staying constant instead of rising like the rest of the country. What this really reflects, we can look at the statistics, it is a departure of industrial customers.

Studies that show for the Air Resources Board that it is going to be a painless transition that creates jobs to California's cap-and-trade system, these have been thoroughly discredited by peer reviewers from places that even include the Pew Foundation.

The smart grid, cost-benefit figures for the smart grid have gone in every which way in the applications for California. They have gone from negative to positive largely on the basis of assumptions that the utility will be able to control people's power in their homes.

Those are important, but there is a more important thing about this bill that I think really matters at the base. This bill is a tax bill. This bill is very anti-consumer. It has one acknowledged policy: It is to raise energy prices to Americans; and, when it does so, it is going to make America less competitive in an ever more competitive world.

For reasons they can best explain, some people are on record as favoring higher prices. As important as those prices are, are the policies that will increase them. Every major provision of this bill is at base a tax, and every one of them is called something else.

The renewable electricity standard is a cleverly disguised tax. None of it is ever going to appear on the Federal books. Instead, the bill will simply force utilities to purchase renewable energy, leave State regulators with no choice but to fold the costs into households bills. Another tax turns up in the proposed auction of allowances. The official term is "auction," again, the real term is "tax." An easy way to see this: Look at the plans for spending the revenue. Details aren't firm, but it is possible to code to consumer rebates, deficit paydown, health care financing. There are only two possible sources, debt and taxes. And this is a tax.

Like all other taxes, allowance charges compel business owners to divert funds they could otherwise have used to operate their firms and employ people. Those who believe that the respending of revenue from auctions will create jobs have been conspicuously silent about the jobs that are going to be destroyed in the initial allocation process.

The bill's effects start with scarcer energy. They hardly end there. They will be increasing the prices of all other goods and services that use energy in their production. If that is so, we are talking lower standards of living for Americans, not higher, and talking about making American goods less desirable to foreign purchasers, not more.

This bill's thrust is to make energy needlessly scarce, and then somehow we reach a conclusion that this action is good for the economy.

Think of it simply: If workers work with more talented workers, they are going to be more productive than workers who labor alone. Workers with more advanced equipment to work with, and more of it, are going to be more productive than workers who are without it. Workers with better and more abundant energy are going to be more productive than workers who do not have access to it.

This bill's logic seems to reverse all of that, and tell us that less energy is going to somehow do the exact opposite of all these other things that workers work with. There is no economics in it.

Scarce energy creates jobs by making workers less productive, so that it takes more of them to get something done. This bill does not create prosperity. This bill is going to produce a less competitive, less productive economy that has lower incomes, less opportunity, and less wealth to hand down to future generations. Thank you.

Mr. MARKEY. Thank you, Mr. Michaels, very much.

[The prepared statement of Mr. Michaels follows:]

BEFORE THE COMMITTEE ON ENERGY AND COMMERCE,

SUBCOMMITTEE ON ENERGY AND ENVIRONMENT

HEARINGS ON THE AMERICAN CLEAN ENERGY SECURITY ACT (ACESA) OF 2009

APRIL 23, 2009

TESTIMONY OF ROBERT J. MICHAELS, PhD

My name is Robert J. Michaels. I am Professor of Economics at California State University, Fullerton and an independent consultant. I am also Senior Fellow at the Institute for Energy Research and Adjunct Scholar at the Cato Institute. None of today's remarks are the official positions of any of my affiliations or clients.

I hold an A.B. from the University of Chicago and a Ph.D from the University of California, Los Angeles, both in economics. I have performed research, published and spoken on developments in the electricity and gas industries since the 1980s. I have analyzed retail and wholesale competition in a restructured electricity industry, relevant markets and market power in electricity generation, gas pipelines and electric utility mergers, issues in the governance of Regional Transmission Operators, the Federal Energy Regulatory Commission's (FERC) policies on monitoring of regional energy markets, the changing economics of vertically integrated utilities and policy proposals on a national Renewable Portfolio Standard (RPS). I have most recently undertaken research on the economics of a "Smart Grid." My work has appeared in peer-reviewed journals, industry publications including *Public Utilities Fortnightly* and legal publications including *Energy Law Journal*. I have testified before, among others, the FERC, the California Public Utilities Commission, and this Subcommittee's predecessor in 1996. A full biography is attached to this testimony.

I will begin with a discussion of California energy policy, with which I am quite familiar, because California has already begun its own implementations of laws and regulations that resemble those of the American Clean Energy and Security Act. Its experience does not bring optimism about what the bill will produce nationally:

1. California's 2001 RPS law, calls for 20 percent of 2010 power deliveries from renewables. Regulatory uncertainty and opposition to new generation and transmission have left the state with the same percentage of its 2007 power supply coming from renewables as it had in 2001.

2. Per capita power consumption in California has been roughly constant since the mid-1990s, unlike other states where it has risen. Advocates who have credited this achievement to efficiency measures like those in the draft bill have an untenable case. Two major facts explain California's constancy: its buisiness climate has induced massive outmigration of industrial electricity users (whose use is included in the per capita figures), and its restrictive land use policies have substantially increased the number of persons in a typical dwelling unit.

3. Advocates of the bill's and cap-and-trade climate policies frequently cite studies made for the California Air Resources Board (ARB) which purport to show that they will bring the state a net economic stimulus. None was peer reviewed before being made public, and after seeing them all five reviewers were worse than critical. One from the Pew Center on Global Climate Change said that the studies give "the appearance of justifying the chosen package of regulatory measures rather than evaluating it or looking at policy options." Another from Harvard's Kennedy School of Government said that "the economic analysis is terribly deficient in critical ways and should not be used by the state government or the public for the purpose of assessing the likely costs of ARB's plans."

4. California utilities have filed a series of cost-benefit analyses of their "Smart Grid" plans with the state Public Utilities Commission. Southern California Edison's original study of smart meters and electronic operations produced a present value net *negative* cash flow of nearly $500 million. Its filing a year afterward found a small positive cost-benefit figure. The difference came from changed assumptions about demand response and an assumption that the company would be able to remotely control air conditioning and appliances in homes and businesses.

Building on the California experience I move on to this panel's subject, "Allocation Policies to Assist Consumers." It is an odd choice of topic because the draft legislation is virtually silent on both allocation and assistance. The breadth of the bill's subject matter and the financial scope of its programs ensure that it will have massive effects on both households and small businesses. There are important uncertainties about its consequences because critical policy details remain unspecified, most importantly

the allocation of emissions allowances. Nevertheless we can infer some consequences, and they are disturbing. Put simply, this is the most profoundly anti-consumer legislation ever brought before a Congress. Its acknowledged purpose is to raise energy prices to all Americans, and in doing so it will make America less competitive in an ever more competitive world. For reasons they can best explain, administration officials including the Secretary of Energy are on record as favoring higher prices.

As important as the higher prices are the proposed policies that will increase them. Every major provision of the bill is at base a tax, and every one of them is called something else. The renewable electricity standard (RES) for utilities is a tax on conventionally produced electricity. The nation is still within reach of competitive power markets that comply with environmental regulations. But a nationwide RES would replace the competition to reduce power costs with a requirement that more be generated from costly "renewable" sources. The most important of these, wind power, remains uncompetitive after decades of subsidies, and produces only when the wind blows. The tax aspect of the RES is cleverly concealed – none of it will appear on the federal books. Instead this bill will force utilities to purchase renewables, leaving state regulators no choice but to fold their costs into the bills of households and businesses who will have no choice about the resources producing their power.

Another tax turns up in the bill's proposed auction of permits (allowances) to emit carbon, after possibly giving some away to politically favored businesses. The official term is auction, but the real term is tax. The easy way to see this is to look at plans for spending the revenue. Details are not yet firm, but those under discussion include consumer rebates, paydown of the deficit, and financing of health policies. The only possible sources for these funds are debt and taxes, and this is a tax. Like other taxes, allowance charges compel business owners to divert funds that could have otherwise been used to operate their firms and employ people. Those who believe that respending of revenue from allowance auctions will create jobs have been conspicuously silent about jobs that will be destroyed in businesses that must purchase them.

The bill's effects start with scarcer and more expensive energy, but hardly stop there. What happens in energy markets will to varying degrees increase the prices of all other goods and services that use energy in their production. The higher prices mean lower standards of living for the American consumers who purchase them. They also mean that American goods become less attractive to foreign buyers than those from competitor nations that are attempting to develop their energy sectors rather than downgrade them.

This bill's entire thrust is to make energy needlessly scarce, and then somehow conclude that this action is good for the economy. Workers who work with more talented workers are more productive than those who labor alone, workers with more advanced equipment are more productive than those without it, and workers with better and more abundant energy sources are more productive than those without them. Workers forced to work with fewer and more costly energy resources produce less, not more. Scarce energy "creates jobs" by making workers less productive so that it takes more of them to get something done. What this bill really will create is not prosperity, but a less productive, less competitive economy with lower incomes, less opportunity, and less wealth to hand on to future generations.

Thank you for the opportunity to testify. I will be happy to answer any questions.

Mr. MARKEY. And our final witness before questions from the subcommittee members is Mr. Darryl Bassett, spokesman for the Empower Consumers Coalition. Mr. Bassett formerly served as ArkansasState Public Utility Commission. Mr. Bassett, please begin whenever you are ready.

STATEMENT OF DARRYL BASSETT

Mr. BASSETT. First of all, I want to thank you, Mr. Chairman, and members of the subcommittee. Having been familiar, Mr. Chairman, with your body of work while I was a commissioner, I have a great deal of respect for that body of work.

It is a privilege and an honor to be able to come to this committee and testify on what impacts we believe consumers may very well face if Congress does in fact adopt energy or climate policies without adequate cost containments. But I would be remiss if I went any further without recognizing the presence of one of Arkansas' favorite sons, Congressman Mike Ross, and certainly his diligence in representing the people back home. We are awful proud of him back there.

But it is an honor and it is a privilege to offer my perspective on how policies in the current draft might very well impact the poor, the elderly, the consumers on fixed incomes, those institutions of higher education, hospitals, and small businesses. These are people, members of the committee, whose story generally gets kind of lost in the wash anytime government, whether it be State or Federal, considers sweeping public policy changes. And as a former utility commissioner, I am acutely aware that the first question that consumers generally have when confronted with sweeping policy changes is, one, how much is that policy going to cost? And, two, who is going to have to pay it? And, personally and quite candidly, answering that second question is always easier to do than answering the first.

So, consequently, I want to certainly applaud the EPA for their recent analysis. I think, consider, it a great first step in answering that first question, which is, how much is the implementation of this proposed draft going to cost the American people.

However, that analysis that I have had a chance to peruse, while certainly well intentioned, doesn't go, in my opinion, far enough given the overlapping mandates in the draft.

The draft, as you know, considers mandates on renewables, energy efficiency, standards for new power plants, Federal gasoline standards. There are provisions there for cap-and-trade and issues involving greenhouse gas. So I think it is fair to say that the consumer is going to be concerned about what the total cost of the proposal is going to be, and will certainly be less than content if we only offer them an analysis that covers cap-and-trade, as the EPA analysis does.

There is little disagreement among consumers that the cap-and-trade program is going to cost them a lot of money. We are looking at studies that go anywhere from an EPA estimate of $983 billion by 2030 to one done by the American Council for Capital Formation that says it is upwards of $1 trillion. Consumers are also aware that renewables are going to be costly. What one Texas utility pays for wind recently more than doubled. And Dr. Michaels just gave

you some indication about what is going on in California. They are among the Nation's highest utility rates, but they also have one of the highest renewable mandates.

What concerns us quite frankly though is putting the two of them together, the cap and trade as well as the renewable portfolio. I believe that if we are not careful what we could pose is potentially devastating consequences on the most vulnerable in our country because what we were looking at when we look at that potentiality, we empower consumers, we then respectfully ask that the committee before it moves further consider an analysis that takes into consideration all of the proposals and what their simultaneous implementation would be before passing any type of climate change or any type of renewable legislation.

Our concern, quite frankly and honestly, is not with the draft. As I said initially, I am familiar with your body of work and certainly with your reputation for integrity. That goes without saying. But what we feel, while we feel the draft is well-intentioned, we are concerned about the unintended consequences of well-intentioned legislation. And so we feel that at this critical juncture in our Nation's history we can't afford to make sweeping decisions on far-reaching legislation without a full appreciation of the extent to which our people, your constituents, are going to prosper or are going to suffer.

Now the answer to that second question that I said the consumers are going to ask, who is going to pay, well, it is always the consumer. But the answer really, that doesn't address what they are really trying to ask because at the heart of this thing we know that some of those consumers are going to suffer more than others. We know that history tells us anytime we apply a one-size-fits-all approach nationally, there is going to be a disproportionate burden placed on some members across the country. And ultimately it falls on the consumers who are least able to afford it. That is communities of color, that is the elderly, that is those living in poverty, those living on fixed incomes. They are going to pay an inordinate amount of their monthly income on energy.

So I have to agree with the nonpartisan statement that came out of the Congressional Budget Office that characterized that particular effect as being regressive. It said, and I quote, price increases resulting from a carbon cap would be regressive; that is, they would place a relatively greater burden on low income households than on higher income ones. We know that in 2008 the average American family that had a disposable income of $52,500 a year last year spent 12 percent of that income on energy. We also know that those who were making less than $50,000, which essentially is 51 percent of all U.S. households, spent 24 percent on energy. And those making between $10,000 and $30,000 actually spent 26 percent of that income on energy.

We also know that in 2008 African American households as well as Hispanic households with incomes less than $50,000 spent over a quarter of that income on energy. So it is not surprising that consumers are going to be concerned about how much more they are going to be asked to bear from any type of legislation.

Mr. MARKEY. If you could summarize please, Mr. Bassett.

Mr. BASSETT. Well, in summary we are concerned that the bill should address in totality all of the costs that are going to be incurred. One, we would ask the legislation go through a rigorous cost analysis. Second, we would ask you that you would consider mechanisms that would establish some type of floor or ceiling with regard to carbon allowances so that you can mitigate any type of unintended consequences.

Mr. Chairman, I would like to thank you for the opportunity to testify, and Empower Consumers certainly looks forward to working with this committee as we go forward.

[The prepared statement of Mr. Bassett follows:]

Statement of Daryl Bassett
Director, Empower Consumers
Panel on Allocation Policies to Assist and Benefit Consumers
Subcommittee on Energy and the Environment
House Committee on Energy and Commerce
April 23, 2009

Chairman Markey, Vice Chair Butterfield, Ranking Member Upton and Subcommittee Members, thank you for this opportunity to testify on some of the impacts consumers might face if Congress adopts energy and climate policy without adequate cost containment. My name is Daryl Bassett and I head Empower Consumers, a membership organization established to address consumer interests in the context of energy and environmental legislation. I am a former Commissioner on the Arkansas Public Utility Commission, a former State Budget Director, and a former officer in the national and regional utility commissioner organizations.

[I would like to extend particular thanks to my friend, Congressman Mike Ross, who has worked closely with me over the years to protect consumers in Arkansas.]

Today I am here to offer the perspective of how the combination of policies in the current draft proposal might impact consumers – including the poor, the elderly, consumers on fixed incomes – and institutions like businesses, hospitals and schools. The story of these individuals and groups is often lost in the shuffle as we consider broad, sweeping public policy. The fact is that climate change and energy diversity are important issues of the day and deserve to be addressed, but our consumers deserve no less.

What are the costs?

Given the quick pace of the consideration of the bill, there are no hard and fast estimates of the cost associated with its potential adoption. We have to begin with the analysis conducted on past climate change legislation debated before the Congress. And the data is varied. Recent EPA

preliminary analyses of costs seem selective in the assumptions they make and fail to remedy modeling deficiencies or to account for the bill's overlapping mandates.

A. Cap and trade is expensive

When the Senate considered its legislation in 2008, EPA estimated that in 2030, the law would cost between $238 billion and $983 billion (1 percent to 4 percent) in gross domestic product (GDP) losses for that year. Another study from the American Council for Capital Formation (ACCF) and the National Association of Manufacturers (NAM), put GDP losses in 2030 at more than $600 billion. [1] Still others had longer term results topping out at or near $1 trillion.[2]

The question of direct impacts on energy prices also yield varied results. The previous EPA findings demonstrate that energy prices could rise as much as 44 percent by 2030 and gas prices about fifty cents a gallon in the same period. The ACCF/NAM found that gasoline could cost as much as two to three dollars more and household energy costs could rise as much as 129 percent by 2030. No matter what the number, and even using more conservative low-end projections, the proposal is likely to be one of the biggest regulatory programs in American history.[3]

B. So are renewable energy standards.

In particular, renewable mandates also come with substantial cost implications for consumers, if state experience is any guide. As last week's *USA Today* reported, a single new solar investment designed to meet state mandates forced one utility's ratepayers to sustain a 6% increase. What

[1] The studies are summarized in T. Johnson, Economic Challenges for Climate Change Policy, Council on Foreign Relations Backgrounder, Feb. 13, 2009, at http://www.cfr.org/publication/16009/economic_challenges_for_climate_change_policy.html.

[2] The Impact of America's Climate Security Act of 2007 (S. 2191) on the U.S. Economy and on Global Greenhouse Gas Emissions: Hearing Before the S. Comm. on the Environment and Public Works, 110th Cong. 6 (2008) (statement of Dr. Anne Smith) at 6.

[3] Johnson at 2.

one Texas utility pays for wind power recently more than doubled. And California has among the highest electric rates in the nation coupled with one of the highest renewable mandates.[4]

Consumer advocates have long noted that renewable energy standards (RES) can have profound impacts on consumers. Kansas Consumer Counsel David Springe, testified in January 2009 that his State organization "does not support a prescriptive mandate as to (1) the level of renewable resources required, or (2) the timing of adding renewable resources to a utility's system. Each utility system is different from a resource perspective and from a finance perspective. Arbitrarily dictating the level and timing of adding resources, regardless of cost or other considerations, is not in the interest of consumers." [5]

The District of Columbia's Peoples Counsel, Betty Noel, also advised her City Council against renewable mandates. Stating that it's "very easy to be cavalier with somebody else's money," Noel said the District's 20 percent standard would cost consumers approximately $26 million annually. She said asked the Council to "consider the immediate effect on residents who are struggling to pay rising bills."[6]

C. Putting them both together is even more expensive

We'd expect the potential costs to consumers to be even higher for this legislation than for previous proposals. Unlike previous climate change or renewable energy proposals, the bill combines traditional regulation with trading programs. The bill contains mandates for renewable energy and for energy efficiency. It has regulatory standards for new power plants. It has a new federal gasoline standard. And it has a cap and trade program to address greenhouse gases. I

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[4] Paul Davidson, Consumers start feeling higher costs of clean fuel, USA Today, April 19, 2009, at http://www.usatoday.com/money/industries/energy/environment/2009-04-19-higher-cost-clean-energy_N.htm.

[5] David Springe – Consumer Counsel, Testimony on Behalf of the Citizens' Utility Ratepayer Board, House Utilities Committee, State of Kansas, Jan. 21, 2009, at http://curb.kansas.gov/legislative/2009/HB_2013.pdf.

[6] Nikita Stewart, "Energy Act Backers, Foes Square Off," The Washington Post, Jan. 31, 2008.

think it is fair to say that no one knows precisely how all these overlapping measures will compound the costs to consumers, but the economic impact could be daunting.

As a general point, the cost-assumptions data behind the Waxman-Markey proposal must be updated. Four of the most respected national consumer organizations testified recently before the House Ways and Means Committee that the assumptions regarding impacts on household incomes and budgets were based on 30-year-old modeling that must be updated before climate policy can be adopted.[7] In addition, the former head of the Energy Information Administration, Guy Caruso, has recently stated that EIA data and models are in serious need of updating as well. Despite large increases in anticipated DOE budget outlays, no additional funding has been allocated to update EIA data.[8]

We understand that Committee members will not have any specific economic assessment of the bill before they are asked to report the proposal to the floor of the House of Representatives. Not only must models be updated, but they must analyze the effects of simultaneous adoption of all of the policies in the bill. Because the potential impacts on consumers are so severe, we respectfully request that the Committee have updated analysis at its disposal before it proceeds with passing any climate change and renewable energy legislation.

Who pays?

One thing we know for sure is that residential consumers – along with small businesses, hospitals, schools, farms, and industrial operations – all depend on reliable and affordable electric power. We also know that certain regions will be impacted worse than others. And ultimately – consumers who can least afford it, such as communities of color, the elderly, and

[7] National Community Action Foundation, National Consumer Law Center, Public Citizen and Friends of the Earth (collectively, National Consumer Groups), Statement on Consumer Impacts of a Cap-and-Trade Climate Change Policy (Mar. 12, 2009), at http://www.consumerlaw.org/issues/climate_change/content/Cap-and-TradeClimateChangePolicy.pdf.

those living on fixed incomes or in poverty will pay the highest percentage of their monthly budgets.

A. Regressive features

Groups on the frontline of addressing the impacts of energy assistance have commented on the relationship between inflexible carbon policy and unacceptable results for those living in poverty. A March 2009 report presented by the National Community Action Foundation, the National Consumer Law Center, Public Citizen and Friends of the Earth found that, "there will be a proportional shift among the consumer groups based on fuel and location." Bills paid by the consumers with significant coal resources "will rapidly become the most expensive. Electric bills make up the majority of low-income household expenditures today."[9]

Another word from the front lines comes from Catholic Charities of Cleveland. They testified that, "conversion to natural gas from coal would have a devastating effect on the people of Ohio and our country, particularly the poor and the elderly."[10]

The group attempted to quantify the impact of such fuel conversion as follows:

"The overall impact on the economy in Northeast Ohio would be overwhelming, and the needs that we address at Catholic Charities in Ohio with the elderly and poor would be well beyond our capacity and that of our current partners in government and the private sector. In a recent study on Public Opinion on Poverty, it was reported that one-quarter of Americans report having problems paying for several basic necessities. In this study, currently 23% have difficulty in paying their utilities - that is, one out of four Americans."[11]

The non-partisan Congressional Budget Office called the price effects for consumers what they are; regressive:

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[8] Kent Garber, "The Trouble with the Numbers," U.S. News & World Report, April 2009, at 40.

[9] National Consumers Groups at 3.

[10] Clean Power Act: Hearings on S. 556 Before S. Comm. on Env't & Pub. Works, 107th Cong. 757 (2002) (statement of J. Thomas Mullen, President & CEO, Catholic Charities Health and Human Services).

"The price increases resulting from a carbon cap would be regressive--that is, they would place a relatively greater burden on lower-income households than on higher-income ones. Higher-income households would face larger costs in dollar amounts, but those costs would make up a smaller share of their average annual income. For example, one study estimated that the price increases resulting from a 15 percent cut in carbon emissions would cost the average household in the lowest one-fifth of the income distribution about $560 a year, or 3.3 percent of its average income. Households in the top one-fifth of the income distribution would pay an additional $1,800 a year, or 1.7 percent of their average income."[12]

B. Communities of Color and the Elderly

The cost impacts are regressive but, as is often the case, they fall with disproportionate impact on certain subgroups in our society.

A 2008 study based on historical energy consumption survey data and current energy price forecasts from the U.S. Department of Energy's Energy Information Administration (EIA), made the following findings that demonstrate the disparate impact of energy price increases on minority communities:

* In 2008, the average American family with an after-tax income of $52,586 will spend more than $6,200 on energy, or 12 percent of the total family budget.

* The 60 million households earning less than $50,000, representing 51 percent of all U.S. households, will devote 24 percent of their after-tax income to energy. For the 27 million families with incomes between $10,000 and $30,000, energy expenditures will consume 26 percent of average after-tax incomes.

* In 2008, African-American and Hispanic households with annual pre-tax incomes below $50,000 will spend roughly one-quarter of their after-tax income on energy.

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[11] Id.

[12] Congressional Budget Office, Shifting the Cost Burden of a Carbon Cap-and-Trade Program, at ix (July 2003).

* After paying federal and state taxes, the average African-American family had an estimated income of $35,949 compared to $38,252 for all Hispanic families and $54,125 for white households. [13]

Similarly, older Americans are disproportionately affected by higher energy costs. As a share of income, households headed by a person age 65 or older spend more on energy bills than younger households. As CRS recently reported, "Older households account for approximately 20% of our nation's total consumption on energy-related products. Although in *actual dollar terms* older households spend slightly less on energy-related consumption than households headed by a person under age 65, they spend a *higher share of their income* on energy-related expenditures."[14]

Therefore, to the extent a restrictive federal RES is adopted, its cost will be borne disproportionately on the backs of minority households. In this sense, a federal RES behaves like a regressive income tax.

C. Regional differences

Consumers in the Midwest and Southeast will literally face double the impacts of carbon caps than consumers elsewhere in the country. The Oak Ridge National Laboratory has reported that, "The carbon intensity of heating fuel and electricity generation will lead to very different cost increases in residential fuels. [The Oak Ridge] findings reveal dramatic variation in impacts across the regions by 2030, with vulnerable consumers in the South and Midwest incurring price increases more than double those of lower-income consumers in the Northeast and West."[15]

This difference in carbon intensity creates stark regional differences in carbon policy. Similarly, the differences in availability of renewable energy converts the RES into an income transfer from

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[13] Rising energy costs disproportionately impacting minority households, Louisiana Weekly, Aug. 29, 2008, available at http://www.louisianaweekly.com/news.php?viewStory=271.

[14] Janemarie Mulvey, Impact of rising energy costs on older Americans, CRS Report for Congress No. RS22826 (Mar. 4, 2008), at http://assets.opencrs.com/rpts/RS22826_20080304.pdf.

[15] National Consumer Groups at 3.

the Southeast and the Midwest to states that have greater access renewable. As Consumer Counsel David Springe of Kansas noted, "there may be a legitimate reason why a utility cannot, or perhaps should not, be constrained by these [RES] deadlines. For example, if a wind developer knows that a utility must meet a statutorily imposed deadline for acquiring wind power, the utility loses bargaining power. It could also be the case that a utility does not have the necessary natural gas fired generation available to back additional wind at the deadline."

He concluded that responsible energy policy should not be based on a premise "that consumer interests or consumer utility rates are secondary to political expediency."[16]

D. Hospitals and schools

It is often tempting to think of energy price shocks as limited to business and consumers. But important social service organizations like hospitals and schools are also in the crosshairs when costs are not properly contained.

EPA has found that hospitals "use twice as much energy per square foot as do office buildings." Compounding the effects of direct energy costs, "Virtually every item consumed in a hospital is to some extent connected to fossil fuels." Recent health policy initiatives like electronic record keeping only exacerbate the trends. One recent study found that "electricity used exclusively for medical records is rapidly increasing, by 400-800% in the past four years." So in short, energy costs – and specifically electricity – are a major cost burden on hospitals and health care.[17]

Schools are likewise adversely impacted when energy costs go up. The American Association of School Administrators recently found that 99 percent of school superintendents reported direct budget impacts as a result of increased energy costs associated with transportation, heating and air conditioning. Worse yet, Superintendents have found that higher energy costs directly

[16] Springe at 1.

[17] Dan Bednarz, Rising energy costs and the future of hospital work, Energy Bulletin, Apr. 29, 2008, available at http://www.energybulletin.net/node/43514.

teaching positions and the ability of schools to take students off campus for events and competitions.[18]

What can be done?

The current proposed bill does not sufficiently costs associated with the bill. While many of the answers to cost issues depend on ultimate changes to the legislation and on matters not yet defined, Empower Consumers has several suggestions:

First, the legislation must be subject to rigorous cost analysis that includes up-to-date economic and energy models. The analysis must consider the simultaneous adoption of the renewable energy standard, the energy efficiency standards, the low-carbon gasoline standards, and the carbon cap and trade program. Past analyses have viewed these in isolation;

Second, the legislation should consider mechanisms that establish floor and ceiling prices for carbon allowances. Should allowances exceed the price established as the ceiling, then more credits should be made available at the ceiling price. Only in this way can certainty be restored for purposes of investment and consumer protection;

Third, allocation of credits is preferred over near-term auctions. Some have rejected the notion of free allowances as a windfall to the regulated community. This is not the case. With 100% auction, electricity providers would have to make substantial investments to comply with both the RES and to install technology made necessary under the cap. In essence, the energy consumer would pay twice: once for technological changes and again for auction prices. By contrast, with sufficient allocations, energy providers can use the value of the allocated credits to defray the costs of capital improvements or process changes, in whole or in part. As noted

[18] UPI, Energy costs spurring school spending cuts, July 29, 2008, available at http://www.upi.com/Top_News/2008/07/29/Energy-costs-spurring-school-spending-cuts/UPI-96071217347633/.

above, there is already a significant chance that consumers will suffer at the hands of the cap and trade program. An auction approach doubles the burden;

Fourth, get rid of expensive mandates and let trading programs work. The record of government energy mandates providing relief to consumers is not a good one. The use of incentives and mandates for ethanol has neither helped consumers with fuel prices or with food prices. Similarly, the adoption of a low-carbon fuel standard and an RES makes little sense if both refiners and utilities are already to be placed under a carbon cap;

Fifth, do not believe rebates will fix the problem. Recently, there has been much discussion of direct rebates to consumers. While the devil is in the details for such a program, it is clearly better to control costs at the front end – with reasonable timetables, targets and allocations – than it is to run up a bill and try to cover its impact at the end of the day. If the initial costs to small businesses on Main Street – who would not necessarily benefit from rebates – is sufficient that jobs are lost, it is not clear that any amount of consumer assistance will succeed. Further, if consumer assistance rebates are provided in equal measure in all parts of the country, data shows that Southeastern and Midwestern consumers will still be shortchanged because their price impacts are twice as large; and

Last, make the cost impacts of the bill transparent to consumers. Consumers deserve to have a good sense as to how much this will cost them. It should appear on in their statements and made available to consumer groups and the media. Educated consumers are essential for effective climate policy.

Thank you for this opportunity to testify. Empower Consumers looks forward to working closely with the Committee as it seeks to address these issues.

Mr. MARKEY. Thank you, Mr. Bassett, very much. Now we will turn to questions from the subcommittee members. The Chair will recognize himself and let me turn to you, Mr. Cowart, and you, Mr. Greenstein, so I can ask you a little bit of a question so you can both get a chance to expand on the impact on consumers.

Can you talk a little bit about what happens if we put together a good formula dealing with energy efficiency, recycling revenues and the cost of inaction? We saw the price of a barrel of oil spike to $147 a barrel last year if we don't put together a plan to break our dependence on imported oil.

Mr. Cowart.

Mr. COWART. I will start. My message is plain here, that cost-effective energy efficiency is the cost containment mechanism you are looking for. And I encourage all the subcommittee members to look really carefully at all the mechanisms in this legislation that would promote end-use energy efficiency. And I suspect that Mr. Greenstein and I are going to agree that that is one of the ways to bring prices down across the board for everybody.

And secondly, that in particular we should support targeted low-income energy assistance that would direct cost-effective energy efficiency, particularly to low-income families, through such things as dramatically expanding the weatherization programs.

So there are a lot of mechanisms here to help consumers both directly and indirectly by lowering carbon prices and lowering power prices through aggressive energy efficiency actions.

Mr. MARKEY. Okay. Let me go to you, Mr. Greenstein.

Mr. GREENSTEIN. I think things like energy efficiency and consumer relief go hand in hand. The way that we think of and the way we recommend you think of and I think the way the committee, as I understand it, is thinking of consumer relief is that the consumer relief be related to some share of the permits. The more effective the efficiency and shifts to alternative forms, cleaner forms of energy, via the price signal are, then the less will be the amount that the allowances sell for, and the smaller will be the hit on consumers' budgets. I don't think this bears one way or another on the form of the consumer relief. But under the proposal that I have suggested with tax credits, to payments on Social Security and veterans and the debit card mechanism, the amount of the rebate would be tied each year to the price that the allowances were selling for and thereby to the overall impact on consumers. So the better the results one gets from investments in efficiency and alternative energy, the less the burden both on the overall economy and on consumers. And if X percent of the permits are going for consumer relief, the dollar amount of that relief will be less because the impact on their budgets will be less because the efficiency is working.

Mr. MARKEY. Thank you, Mr. Greenstein.

Mr. Sterba, in my home State of Massachusetts there are two large coal-burning power plants, the Salem plant and the Brayton Point plant. Since our State required utilities to spin off these plants as part of its restructuring plan, they are not subject to regulation by the Massachusetts Department of Public Utilities. If we were to give Dominion Power, which owns Salem, and PGE which owns Brayton Point, free allocations, what would prevent them

from pocketing that financial windfall rather than passing on the savings to the consumer?

Mr. STERBA. Mr. Chairman, the primary benefit that will go to those consumers is the allocation that would be made to the LDC that serves the consumers in that area. The purpose of a small allocation—and we are talking about less than 10 percent of the total allocations to the electricity sector that would go to coal generators—the purpose of that is to help cover the costs that are not recovered by that coal generator through the price of electricity caused by the imposition of a cap and trade. So it helps cover that small component of cost that is not recovered through the market price.

Yes, they will sell it. Yes, that generates revenue to them. What it does do—and let me use Texas, where I am more familiar, Mr. Chairman, because I operate there—is it helps ensure that that coal resource stays viable for a period of time because the allowances that are allocated to that generator would decline. But it helps ensure that you don't end up causing that unit to be shut down or mothballed and replaced with gas generation.

Mr. MARKEY. Let me go to, if I may, Mr. Morgan. Do you agree with that?

Mr. MORGAN. I agree in part that the benefits to consumers come through the allocation to the LDCs. But I don't see how the consumer gets any benefit from giving of free allowances to the generator because those benefits are—we have no way to make sure that they get passed along. The company, in fact, wouldn't necessarily even keep that plant operating. If it becomes uneconomic because carbon is being priced, the allowance allocation is based on the baseline and they would get this perpetual stream of allowances into the future even if the plant has been retired. So there really isn't any incentive for them to even keep the plant running. And there is every opportunity for them to pass along the value of that future allowance stream to the shareholders and really no way for it to get to——

Mr. MARKEY. My time has expired. We have to continue this conversation, I think. My time has expired. The Chair recognizes the gentleman from Michigan, Mr. Upton.

Mr. UPTON. Thank you, Mr. Chairman. As you know, a number of States actually exceed 90 percent of their power produced from coal. And I have always been a supporter of clean coal technology. And Mr. Sterba, you indicated that you thought that there should be free allowances until technology is in place that will actually reduce those emissions.

I was a cosponsor of the Boucher bill last year. I hope that we can proceed on it this year. But if it works—and I hope that it does—it is still 8 or 10 years probably away before it is actually in place and you can actually see it begin to be implemented with a number of different facilities around the Nation, particularly in the Midwest.

So assuming that that is all accurate, you would want a free allocation until that technology is on the shelf ready to use, is that right?

Mr. STERBA. Yes, sir. In fact, I think that free allocations in order to help mitigate consumer impact should last longer than just

8 to 10 years. I think—but they would be declining as the cap declines. So to me, you should be thinking about allocations that would last 20 to 30 years. But it is a declining amount, and that is for the consumer protection purposes.

Mr. UPTON. Now as we talk about consumers getting money back, in essence a rebate, our State, Michigan, my State, Michigan, we have lost 150,000 jobs in the last number of months. Estimates that were released earlier this week by the University of Michigan show that we are going to lose more than 230,000 before the end of the year. We already provide 79 weeks of unemployment benefits, and you might have seen the news this morning that GM is suspected of closing all of their facilities or virtually all of them for 9 weeks beginning next month, which will impact even more than what was shown by the U of M.

I know that there is a lot of thoughts about rebating consumers. Of the panel here, how many believe that consumers also should be employers eligible for such rebates that you might impose, as Mr. Greenstein indicated, for those—Mr. Sterba. Anyone else believe that employers should be able to receive rebates as well as individuals? Just two? Can I have a show of hands? Three. Mr. Morgan, you are a "no" then, is that right? Mr. Greenstein, are you a "no"?

Mr. GREENSTEIN. My sense is the most efficient way to do this is employers will have some increased cost that they will pass through to consumers. And the system I recommend, this is part of the impact on consumers that would be compensated.

Mr. UPTON. Okay. Mr. English, you indicated that you are looking for an out, was it 4 million megawatts, is that what it was?

Mr. ENGLISH. Well, I was suggesting that as far as small utilities are concerned, that is what Small Business Administration identifies as small utility exemption, so, yes, I would suggest that on renewable electricity standard.

Mr. UPTON. Okay. What is the average renewables now? I support renewables, wind, solar, a whole number, hydro. What is the average of your membership in terms of what they would now provide for renewables? What percentage?

Mr. ENGLISH. Well, I think it depends on what you define as renewable. That is part of the difficulty we have. Different States have different definitions. What we would include, which would include hydro, is about 11 percent. And you are talking about roughly we use—about 9 percent of the power that electric cooperatives use does come from renewable energy that is hydro.

Mr. UPTON. If you include a broader base, include hydro, include a whole number that waste energy, do you support the 25 by 25?

Mr. ENGLISH. Well, I am a member of the steering committee of the group known by 25 by 25 that has that as an objective. And I think that does comes down as to how flexible you are going to be, how inclusive.

Let me add quickly, there is another problem here. And that is, if we are going to produce renewable energy on a large scale and we would advocate that that is what needs to be done if we meet these standards, that the one thing that you are going to have to have as a part of this legislation is siting.

Mr. UPTON. That is my last question. I have 28 seconds. I want to come back to it. Mr. Morgan, Mr. Cowart, there is nothing as I read this bill—as we look at renewables, we have had a problem in California. I support renewables, whether they be off Nantucket or whether they be in Lake Michigan for wind. With that also comes the siting or the connection to the transmission lines. We have seen a pretty vocal struggle in California where the senior center there has announced that the Mojave Desert should not be a place for solar. We have seen off San Diego a major solar park being—the transmission lines trying to be sited sued by the Sierra Club. Is there a length of time the local PUCs should make a decision before FERC comes in with a heavier hand?

Mr. ENGLISH. I think it is going to have to be a very, very short time if in fact we are going to meet these objectives. That is the whole point. If you are going to have a carbon cap on it and we are going to rely heavily on renewable energy, we have to have siting and have it very, very quickly. And I would suggest that that has to be focused primarily on renewable energy, on the building of that high voltage transmission.

Mr. UPTON. Mr. Morgan, you agree?

Mr. MORGAN. Yes. If I could add, the amount of time available for commissions to review—first of all, we don't see any evidence that that is a problem right now. There are many other problems associated with siting transmission lines. A lot of the problems, particularly in the West, have been associated with siting lines across Federal land. And we do, in fact, have legislation in place now that provides the Federal backstop where commissions don't act within a certain amount of time.

NARUC would prefer to give a chance for this law to work. We don't see any evidence that it is not working. And we are, in fact, open to discussions about further changes in transmission policy. But we would like to see the current law given a chance to work.

Mr. MARKEY. Great. The gentleman's time has expired. The Chair recognizes the gentleman from Pennsylvania, Mr. Doyle.

Mr. DOYLE. Thank you, Mr. Chairman. Mr. Sterba, Mr. Morgan stated that he is opposed to allowances for merchant generators. I wonder if you would like to explain why you think it is important to allocate credits to merchant generators as called for in the U.S. cap report.

Mr. STERBA. Yes, sir. Thank you. First, I only believe that it is appropriate to allocate to some merchant generators. In the typical markets in the United States natural gas sets the market clearing price. So included in that price will be the cost of allowance for natural gas. Natural gas emits about 50 percent of the carbon that a coal plant emits. So part of that 50 percent is already being reflected in the price. The only thing we are proposing—and with this comment I will represent both EEI and U.S. cap—is the coverage of the other 50 percent for unregulated coal generation. If we do not maintain for a period of time that level of unregulated coal generation, which represents about 16 percent, 17 percent of all generation in the United States, we run the risk of a switch and a rush to gas which will increase natural gas prices for all consumers. That is a very hidden cost that is real. And we have seen

what happens when natural gas prices move from $4, $5, $6 to $14, $15, $16.

Mr. DOYLE. How do you feel about that clarification, Mr. Morgan?

Mr. MORGAN. Well, first of all, having those allowances available, which are based on the baseline, does not provide an incentive to keep that plant running. If the plant is not economic because of pricing carbon, the most efficient thing for the company to do is shut the plant down and keep the allowances and you will have the rush to gas anyway. Really what it is, is just—as I said earlier, it is kind of a golden parachute for these old dirty plants to help cover their obligations to their shareholders. It is not going to keep the plants running. It is not going to help solve that problem.

Mr. STERBA. Mr. Doyle, if I could, and this is a personal statement. As an owner of unregulated coal generation in Texas, if I don't have a plant running, I shouldn't get allowances. I agree with that.

Mr. DOYLE. Right. Let me ask you also, Mr. Sterba, the draft text calls for alternative compliance payments to be set at 5 cents per kilowatt hour. How does that affect your membership in the real world? What would the effect of that be?

Mr. STERBA. Well, the effect is to increase cost. I believe that somewhere in the 2.5 cent alternative cost is appropriate. I think 5 cents imposes a heavy burden on consumers. One of the biggest concerns I have got is that we will do the right thing by putting in place carbon legislation. But we do it in a way in which electricity prices increase to a point where we get a consumer backlash. We have seen it happen in California, in the California gaffufle of 2001. We have seen it happen elsewhere where things happen and consumers respond by saying "no more". We need to do this smartly, and if we create systems that cause prices to go up too much too fast, we will get that consumer backlash.

Mr. DOYLE. Mr. Cowart, many of us on the panel here have concerns that the 25 percent renewable standard is going to be very difficult to meet in certain regions of the country. And one of the ideas, one of the ways to lessen that burden would be to expand the list of qualifying energy sources, to recognize things such as methane recovery and waste to energy and distributed generation.

What are your thoughts on expanding the list of qualifying energy sources to meet a 25 percent standard?

Mr. COWART. Well, with respect to the list you just gave, I support it. I think that there are good reasons to expand certainly the qualified renewables to include methane conversion, which is, as you know, from a global warming perspective that is a double winner and definitely ought to be encouraged. I think that there is some merit to allowing a piece of a renewable portfolio standard to be met by accelerated achievement in energy efficiency as well. As a general matter we like to keep them separate and there are good reasons for that. But for some regions of the country where they think that it is going to take longer to get the renewables going, it allows some efficiency, early action on efficiency to qualify.

Mr. DOYLE. And just a final question because I just have 7 seconds left, just a show of hands. How many on the panel would support 100 percent auction of these credits?

Mr. MORGAN. Now or later?

Mr. DOYLE. Now. Well, of course later but right now. Just one? Okay. I see my time is up, Mr. Chairman. Thank you.

Mr. MARKEY. The Chair recognizes the gentleman from Texas, the ranking member of the full committee.

Mr. BARTON. Thank you, Mr. Chairman. I am not sure where to start. I guess I will start by complimenting Mr. Sterba. It is good to see you, sir.

Mr. STERBA. Thank you.

Mr. BARTON. When I walked in, you kind of changed your look. I thought I was looking at Ming the Magnificent of Flash Gordon, which is a good look, not a bad look.

Mr. STERBA. I appreciate your taste, sir.

Mr. BARTON. Let me just start out by clarifying something that our distinguished subcommittee chairman said. One of the reasons we are apparently doing this bill is to become less dependent on imported oil, which I support the goal. How much imported oil is used in the generation of electricity among the member companies of EEI?

Mr. STERBA. Mr. Barton, I don't recall the specific number. It is fairly small.

Mr. BARTON. It is close to zero.

Mr. STERBA. It might be in the 1 percent range.

Mr. BARTON. Yeah. So we are not going to get a lot out of this bill that—because the imported oil is going for the transportation industry. It is not going for the power generation industry.

Mr. STERBA. That is correct. And I think that is where plug-in hybrids come in for the future.

Mr. BARTON. Well, speaking of plug-in hybrids, hybrids are made in my district down in Arlington, Texas. The additional cost of the hybrid is such that it never pays for itself. At $4 a gallon gasoline it took somewhere between 10 to 15 years. At $2 gasoline, you are buying a hybrid just because you want to buy a hybrid. There is no payback to it. And in any scenario, the GM plant in my district that makes the GMC hybrid, the Cadillac hybrid, they have the capacity to make approximately 60 per hour. In the entire country I am told they are selling about 30 a week.

So let's don't kid ourselves. Unless we force America—and I mean force 'em, this theology that everybody is going to transition to an electric vehicle or a hybrid vehicle, unless it is mandated by Federal law, backed up by the Army, it is not going to happen.

I do want to thank you, Mr. English, for reminding the committee of jurisdiction that when we passed the Clean Air Act amendments in 1990, which I voted for too, we explicitly didn't include CO_2. It wasn't serendipitous that we just kind of forgot about it. We debated it and thought about it, and we didn't think CO_2 was a pollutant and needed to be regulated as a criteria pollutant under the Clean Air Act.

The Republican alternative when we put it out for this bill is going to have a provision from Congresswoman Blackburn, a member of the committee, that explicitly states that, which is something that I think the committee members need to keep in mind.

Mr. Michaels, I want to ask you a question since you talk a little bit about cost. Could you explain to the committee and to me how

raising the price of any commodity, in this case CO_2, can be absorbed without being passed on to anybody in the economy, which is apparently what my friends on the other side think they can do.

Mr. MICHAELS. The fundamentals of supply and demand say that no matter what kind of increase in price, increase in tax there is, there is going to be—part of it is going to be borne by consumers, part of it may be borne by producers, by consumers as higher prices, by producers as having lower profits, fewer funds that they can reinvest in their businesses. The exact details of how the numbers break down in the carbon case is a subject of considerable debate, and certainly in California they haven't settled that issue yet.

Mr. BARTON. Let's assume that by some miracle Mr. Doyle, my good friend, can come up with an allowance system that doesn't cost anybody anything. Then there is no reason to use less of the commodity that is being capped, is there, if there is no cost to it?

Mr. MICHAELS. But the only way that could happen would be if allowances were redundant and it was as good as if they didn't exist at all.

Mr. BARTON. My time has almost expired, Mr. Chairman. I do want to compliment you. Yesterday I learned that the oil and gas in Alaska is there as a result of continental plate shift. And I am sure that I may learn something of a similar value as this hearing progresses with the other 20 witnesses that we have here today. So I am going to yield back the balance of my time.

Mr. MARKEY. I thank the gentleman.

The Chair recognizes the gentleman from Washington State, Mr. Inslee.

Mr. INSLEE. I am glad my good friend Mr. Barton mentions Alaska because as we speak the tundra is melting because of carbon dioxide. The polar ice cap is disappearing because of carbon dioxide. The oceans that sustain the salmon fishery of Alaska are becoming much more acidic because of carbon dioxide.

So I just want to ask you a preliminary question to the extent I hope you can answer a yes or no pretty much to this question. I want to just ask each of you very quickly to answer this.

Do you believe that the threats associated with the pollutant carbon dioxide and the threats of changing the climate and the acidity of our oceans are significant enough to the United States that we should endeavor to cap, to limit the amount of this pollution in the atmosphere, Mr. Sterba?

Mr. STERBA. Yes.

Mr. ENGLISH. I think we are doing it no matter what.

Mr. CRISSON. Yes, Mr. Congressman.

Mr. SOMERHALDER. Yes, Mr. Congressman.

Mr. MORGAN. Yes, NARUC supports taking Federal action to reduce carbon emissions.

Mr. COWART. Absolutely.

Mr. GREENSTEIN. Yes.

Mr. MICHAELS. The science is not yet clear enough to make a decision on as drastic a policy as this.

Mr. BASSETT. Yes.

Mr. INSLEE. The reason I ask that question is that we have two very significantly different approaches. One side of this committee believes that this problem demands action. One side believes that

this is not a problem and therefore has not proposed any action to deal with this problem. So I take the majority of your answers to be that these industries suggest we need action. And there has been and there will be much criticism of the proposal we have made to take action on this problem. But we have made a proposal. We have stepped up to the plate to suggest one cause of action. We have come up with ideas on how to solve this problem. And simply sniping at this particular proposal, although in the finest American tradition, is not going to help us solve this problem. And I look forward to one day where all members of this committee can start being part of the solution rather than being part of the problem and not taking any action.

So I want to ask about the action that we should take. First, the question I want to ask is, could someone help us on the best way to assist the siting of transmission? I do believe in this bill there are some additional measures we should consider that as these renewable sources start to come online with concentrated solar offshore wind we are going to see a significant increase for need for transmission lines. And I think we need some backstop Federal authority to site those.

I will turn to Mr. English for his thoughts.

Mr. ENGLISH. Well, thank you very much. Let me just say, I would respond that we have a more practical situation in front of us right now. I think the Clean Air Act is going to be used to address this issue. And I think that this committee and the Congress needs to make sure that we have something that is deliberately passed to address the carbon issue.

Second is renewables have got to play a huge role in this thing. And from a practical standpoint we have to move very rapidly if, in fact, this legislation is going to be timely as far as—and I think that is what you intend.

Mr. INSLEE. When you say move rapidly, are you referring to transmission?

Mr. ENGLISH. Particularly transmission. I think efficiency, we have got to be very aggressive on it. And quite frankly, I don't think we are anywhere close to what we need to have done on that.

Secondly, as far as transmission is concerned, I understand "not in my backyard" "I don't want any part of it." But quite frankly if, given the amount of reliance that I expect that we are going to have on renewable energy and what I think probably the authors of this bill intend, we have to have that siting, probably we need the siting yesterday, not tomorrow, not 2 years from now, not 5 years. We cannot build the renewable energy that is going to be necessary to move this country forward and to even approach 15 percent or 20 percent, much less 25 percent, unless that siting is done within the next 2 years.

Mr. INSLEE. We will be making some suggestions to the committee about how to move that forward in future drafts of the bill. And we hope any and all of you can help us with your insights on how to draft that. Very quickly, as we recycle the money from the auction proceeds, and I do believe there should be 100 percent or high level of auction except for the permits that Mr. Doyle and I have fashioned, a measure to go back to energy-intensive manufacturing industries. But as we recycle that, what is the best way to

do it if we want to encourage the use of those recycled dollars back to consumers to use it for efficiency improvements? Is it just increasing the weatherization program or some voucher program?

I will take about a 20-second answer if the Chair will allow it from someone. Mr. Cowart.

Mr. COWART. We need an entire suite of energy efficiency programs. It includes weatherization, it includes assistance to industries. It includes assistance for retooling factories. It includes commercial energy efficiency as well. The local distribution companies or other trustees appointed by and supervised by State regulators are the best means to ensure that these dollars are returned to customers in the form of enhanced efficiency.

Mr. INSLEE. Mr. Greenstein, we are out of time. I want to respect the Chair.

Mr. MARKEY. Quickly, Mr. Greenstein.

Mr. GREENSTEIN. I was just going to say, in terms of consumers' efficiency investments, you are going to get consumers investing more in home efficiencies themselves if they see the price signal in their utility bills and they are made whole by a direct payment so they still see the—if you are to officially keep the bill down, there is going to be less incentive for them themselves to take conservation and efficiencies.

Mr. INSLEE. Thank you. Thank you, Mr. Chairman.

Mr. MARKEY. The gentleman's time has expired.

The Chair recognizes the gentleman from Oregon, Mr. Walden.

Mr. WALDEN. Thank you. The first question I have for each of you, and I want a yes or no answer. Have you read the draft discussion bill yourself in its entirety? Mr. Bassett.

Mr. BASSETT. Yes.

Mr. WALDEN. Mr. Michaels.

Mr. MICHAELS. No.

Mr. WALDEN. Mr. Greenstein.

Mr. GREENSTEIN. In its entirety, no. Parts of it, yes.

Mr. WALDEN. Mr. Cowart.

Mr. COWART. Same answer.

Mr. WALDEN. Mr. Morgan.

Mr. MORGAN. Same answer.

Mr. SOMERHALDER. Same answer.

Mr. CRISSON. Not entirely.

Mr. ENGLISH. Not entirely.

Mr. STERBA. Not entirely.

Mr. WALDEN. I have not either, but I am just about there. 648 pages and I think I am down to about 603 right now.

The reason I ask that is not to put you on the hot seat except that our job here is to legislate. So every word matters. Despite what my colleagues on the other side may think that we are not supposed to ask questions, I intend to ask questions, and I intend to pursue this pretty aggressively because I think we are about to put into law a policy that will have enormous ramifications for consumers, small businesses, every American and our future. And so I am going to take my time, and I may invoke my rights under the House rules, which cannot be superseded by this committee, to get 5 minutes for each of you for questions. Because I think it is that important of an issue. So let's start out.

Mr. English, I appreciate your testimony today and your work on behalf of the rural electric co-ops. You have a very good organization and I work closely with my members in my district. Explain to me how the provisions in this bill affect your members, a lot of them very small little cooperatives out across very rural landscapes, when it comes to them participating in an auction. Can you explain to me how they compete with a five-member board or a 10-member board out in Hood River or John Day or somewhere?

Mr. ENGLISH. We don't think even our largest members can compete in that kind of an environment at an auction. It would be extremely difficult for us to do so. And let me also say, that does need to take into account the regional ramifications of an auction.

Mr. WALDEN. And yet in the Northwest we have enormous wind energy, a lot of it in my district. I am proud of it. But I also know that one of the great synergistic actions there is being able to use the hydro system as a storage battery. There are provisions in this legislation that both completely discriminate against hydroelectric power as renewable, if it was online prior to 2001, as well as any new hydro is not considered renewable if in some way it affects the pool level behind a storage facility at any time or any location.

Doesn't that pretty much rule out new hydro as a battery for wind?

Mr. ENGLISH. I think it is a mistake to eliminate any kind of renewable whatsoever. We are looking at biomass, we are looking at all different aspects of generating renewable energy. But again I want to go back to the biggest limitation on renewable energy is transmission and is the question of siting.

Mr. WALDEN. I am going to bring this up again. This is Bonneville Power's hourly measurements of wind energy in the Northwest. You see the dramatic drop in output of wind. You have to have something to balance it out. We are going to move forward with renewable energy, which is a good thing, but it cannot be done in a vacuum.

So can somebody explain to me how you do not need other power sources that you can bring online rapidly to balance this out. The same would go with solar at night.

Mr. ENGLISH. I will just say very quickly, you are right.

Mr. WALDEN. I appreciate that. Let's talk about natural gas. Does anybody believe here that this legislation will not drive up the cost of natural gas?

Mr. SOMERHALDER. For the reasons that were mentioned earlier, clearly even your example related to intermittent sources of power from renewable, that will require generation that can back it up. Natural gas is the quickest source of new facilities that could come on the quickest to back that up.

Mr. WALDEN. And so everybody is agreeing, yes, natural gas—anybody disagree? And I don't mean to move fast. But I am down to a minute. Smart grid. I am going to go back to Mr. English on this. As I read this legislation, everybody that serves a power customer is going to have to have a plan put in place rather rapidly on how to deal with plug-in hybrids and a smart grid technology. Now out in Fossil, Oregon, there is one person for every 9 miles of power line. Can you explain to me if there is a cost associated

with that smart grid technology and that plug-in requirement here and how that would be addressed?

Mr. ENGLISH. Well, first of all, let me just say——

Mr. WALDEN. I drive hybrids, by the way, despite my ranking member.

Mr. ENGLISH. First of all, we don't have a clear definition of what smart grid means. Second, we are very proud. Of course electric cooperatives seem to be well in advance of the rest of the industry, according to the Federal Energy Regulatory Commission, in this area. Third is we think the very need for efficiency is going to drive a good deal of new technology. And fourth, you have to have flexibility to address the kind of situation that you have locally.

Mr. WALDEN. Mr. Chairman, I realize my time for this round has run out. I would encourage you each to read this bill in its entirety word for word because every word in this bill has an enormous impact, and I can't wait until we get into trying to figure out biomass which if it comes off of Federal land is not renewable and probably not even off private forest land and why municipal solid waste converted into energy is not renewable. There are a lot of questions here, Mr. Chairman, and I hope we get time to ask them.

Mr. MARKEY. I thank the gentleman.

The Chair recognizes the gentlelady from California, Ms. Matsui.

Ms. MATSUI. Thank you, Mr. Chairman. The main electric utility in my district is the Sacramento Municipal Utility District, popularly known as SMUD. It consistently receives high marks of customer satisfaction while investing significantly in energy efficiency and renewable energy development. SMUD supports a transparent cap-and-trade system to get greenhouse gases under control. It has also undertaken a number of positive and voluntary programs that help people control their energy usage and increase the amount of energy they use from renewable sources. SMUD is highly supportive of allocating emission allowances directly to the LDCs, of which SMUD is one. The idea behind this is that LDCs are able to pass potential savings directly onto their rate payers while avoiding windfall profits.

Mr. Sterba, I know that SMUD agrees with you that allocation should be distributed directly to LDCs. I know this is one of the main issues that this committee will have to deal with before marking up the draft legislation before us. So I would like to delve a little bit more deeply into the details. SMUD tells me that giving allowances directly to LDCs would protect against windfalls to generators and illuminate opportunities for market manipulation.

Why do you think the LDCs are in a better position than anywhere else along the energy supply chain to protect the consumer welfare and guard against windfall profits?

Mr. STERBA. The distribution company is, in our instances, for shareholder-owned utilities, are regulated. The regulator is familiar with how to handle the costs and the benefits of trading in allowances. It is done today relative to SO_2 and in many instances NO_X. So we have proven mechanisms by which those benefits from an allowance are flowed through to customers, and I know that that would continue to exist.

Ms. MATSUI. Let's assume for a moment that some of the emission allocations under this bill would be auctioned. In the case of

an auction, is it your opinion that LDC should also receive the lion's share of the auction revenue to pass through to the ratepayers?

Mr. STERBA. In the instance that you—for the allocated share of allowances associated with electric generation, as it is allocated—I am sorry—as that auction moves on, I believe the Congress should consider providing the value of those allowances, cash if you will, back to the regulated entity to help mitigate impact if it chooses not to do an allocation. The much simpler way is to allocate and allow the commission in each State to oversee how those values are provided back to consumers.

Ms. MATSUI. Okay. Just a follow-up on that. We need to ensure as much discretionary auction revenues go toward complementary policies to mitigate and adapt to climatic change. How are the LDCs positioned relative to other entities in the supply chain to ensure that the auction revenue is spent on activities that would reduce further global warming, emissions, weatherization and renewables, efficiency, et cetera?

Mr. STERBA. I think there are certainly other things that can be done with proceeds resulting from auctions. For example, in helping to ensure there is a very robust weatherization program. The use of those funds to invest in technology. If what we are about is creating a mechanism or a set of mechanisms to reduce our carbon footprint, why should not all of the value that is associated with imposing these costs on the economy be used for that purpose?

Ms. MATSUI. Okay. In your testimony you referenced the oil fund payment the Alaskans receive every year. I was thinking about the Alaska situation earlier this weekend and it seems to me that returning money directly to consumers in this way might sound good politically but would create problems down the line when the emissions cap starts to drive down the amount of revenue generated from the cap-and-trade program.

How can we best ensure that consumers are assisted with temporary higher energy costs without making them dependent on a rebate payment from the Federal Government?

Mr. STERBA. The absolute simplest way is to provide an allocation to the LDC such that that cost is never incurred by the consumer. Prices at—I agree with Mr. Cowart that prices don't drive everything. And so having that allocation made to the LDC such that that cost is not passed back on to consumers is the best appropriate strategy.

Ms. MATSUI. Okay. So the role that the LDC is playing in ensuring the allocation of revenues, you can really believe the LDCs can really play an effective role in essence in the allocation of revenues?

Mr. STERBA. Yes, I do.

Ms. MATSUI. Okay. Looks like my time is almost up. Thank you.

Mr. MARKEY. Great. The gentlelady's time has expired.

The Chair recognizes the gentleman from Illinois, Mr. Shimkus.

Mr. SHIMKUS. Thank you, Mr. Chairman. This is a great start to start really hashing out the numbers as we tried to address yesterday. And I would appeal to the chairman that once they decide on a mark that we have a hearing on the numbers. I also appeal to the chairman that—I know you want to move this fast—but enough

time is given for everyone to score this out. And let me just ask that to the panel. I did this yesterday.

Do you agree that transparency is better than a lack of transparency in this process? Everybody agree with that? Everybody is shaking their head yes. Would it be better for us to know the numbers that are proposed a week prior to the markup of a bill? Does everyone agree with that, transparent process? Everyone agree? Yes, everybody is shaking their head yes. I am assuming everybody is shaking their head yes. No one is willing to go on record saying no, we would rather have a full and transparent process. At least a week amount of time.

Should we have time in a full transparent process, a time to allow people who are making the economic analysis, the numbers so that a proper economic analysis of the impacts, good or bad, those that will help move to a green economy and those that may—does everybody agree that that should be part of this process, a full, transparent, regular order process so we can debate this? Anyone disagree with that? So everyone is agreeing, Mr. Chairman.

So I would hope that in this—and there is great divergent opinions. And we have got a lot of committees and a lot of processes. The marker is really down for these numbers to be laid out in time for us to really have a credible debate.

Now why is this important? It is important because there are going to be job losses. There is a supposition that there will be job gains. There are some people claiming that there will be an equal amount of job losses to job growth. I reject that proposal. I think the Spanish study also rejects it. For every one job created there were two jobs lost.

And so we will continue to focus on job creation. Why is this important to me? You all have talked about the Clean Air Act, the 90 amendments. We cannot use the 1990 Clean Air Act amendments and say that the cap-and-trade provision on a small amount of emittents with available technology is related to the huge amount of captured emittents, if you want to call carbon dioxide that, and the inability to have any technology to do it at this time.

Peabody Mine Number 10, Kincaid, Illinois, fuel switching, Mr. Chairman. That is what this natural gas debate is. Fuel switching cost 1,200 United Mine Workers jobs in one coal mine. And the commodity was switched. There was a fuel switched. These guys lost their jobs. Done poorly with no transparency, you are going to have fuel switching and I am going to lose more. The number I would like to use was even more.

And they came to our hearings. To the chairman's credit we had the Ohio Mine Association here a couple weeks ago. You know how many mine workers' jobs were lost during the 1990 Clean Air Act amendments in Ohio? 35,000 mine workers' jobs. Now, what does that mean to rural America? For this piece of coal from Willow Creek Mine, underground employment, 411 miners. The prep plant has 51. This is just one mine. 462 jobs. This is in rural, poor southeastern Illinois. The total economic impact for this one mine in poor southeastern Illinois is $123 million. That is money that goes to the local schools, to the local roads, to the local county, to hire sheriffs. That is what is endangered if we don't do this right. If we are going to fuel a switch to natural gas, these jobs are lost. Nat-

ural gas is high—especially, Mr. Chairman, if we don't move to more exploration, location and recovery of natural gas emissions.

Appreciate your panel, and the fight continues. I yield back my time.

Mr. MARKEY. The gentleman's time has expired.

The Chair recognizes the gentleman from California, Mr. McNerney.

Mr. MCNERNEY. Thank you, Mr. Chairman. You know the issue of allowances is really at the heart of cap and trade. It is difficult and it is politically difficult. So I appreciate the diversity of opinions that are expressed here this morning. And I think this panel represents the diversity of the opinions of the American public. So if we can work in the face of this diversity to find something that is passable by this committee and by the House, I think we will have something that will be beneficial and it will work.

Personally I believe—and in terms of allowances, allocations that we should go as far upstream as possible, but I realize politically for a number of legitimate reasons that that isn't going to happen. And so I appreciate the spirit of compromise shown by Mr. Greenstein in biting your tongue and saying well, okay, we will work with the LDC. So I hope that the committee can work in that spirit and find legislation that we can live with.

Now I have a couple of questions. Mr. Sterba, I think your presentation was very good. I appreciate that. I lived in New Mexico for many years. So I understand the situation.

We have seen though in the past or recent past the opponents of clean energy crying wolf in the 1990 Clean Air Act amendments and to a lesser degree with the Montreal Protocol, and yet those catastrophic predictions were never borne out, and in fact we saw a good benefit at very little cost. So I would like to ask you what you think made these estimates so wrong and what lessons can we learn from that experience?

Mr. STERBA. I think in the instance of the Clean Air Act amendments for sulfur dioxide, for example, it is that—and the point that was made by Mr. Shimkus is true. There were technologies that could be used and what happened is that they ended up costing a lot less than people assumed. And it is the power of a market. And that is the value I think of a cap-and-trade system is it capitalizes on that power of the market to drive the costs for compliance down. So where $3,000 was an expected value for the cost of an allowance, it turned out to be $300. So I think that is—and that is one of the things we want to capture.

The difference here is there are some new technologies that must be developed. Carbon capture and storage to ensure that it is available. And that is what we have to get to.

Mr. MCNERNEY. Well, thank you. One of the things that is sticky in California particularly is that we have invested a lot in efficiency. And how do we get credit for that early efficiency?

Mr. Cowart, could you take a stab at that? How could we give credit in allowances for this?

Mr. COWART. There are actually two answers to that question. First is the good news. The good news is that as I talk to people in California they think they have an advantage in an environment such as the one we are entering because in California you know

how to do energy efficiency and that actually you are not disadvantaged by the fact that you have in place the human capital and the experience to do the job.

But to answer your question directly, it is through the selection of a baseline period for the allocation to LDCs. We are proposing an allocation to LDCs in part based upon consumption levels, and it is important that that selection of consumption level be done in such a way as to reward successful performance over time in the delivery of efficiency so that if you are successful tomorrow, for example, in delivering efficiency to your customers, that next year your allocation doesn't go down just because of that. And the same thing could be said in terms of back-casting to a baseline.

Mr. MCNERNEY. Thank you. I know the Edison Electric Institute is leading the effort in terms of small grid, and I appreciate that because I spent many years in the 1990s developing a smart grid utility meter for residential use. So I think there is potential there. One of the things that I think gives the greatest potential is marrying smart meters with hybrid vehicles.

Could you comment on that, Mr. Sterba?

Mr. STERBA. Well, smart meters are a part of the smart grid and it is an essential component of it that allows communication to occur in two directions instead of only just in one. And we absolutely in order to facilitate plug-in hybrids—which today have a cost disadvantage, but frankly I personally believe that will change dramatically over time. We have to be able to help ensure that those vehicles cannot just be users of electricity but also storers of electricity for the benefit of the grid. And that means that you have to have a meter or the capacity to measure electricity going both ways and to communicate price signals so that the ability for someone who owns a plug-in hybrid to support the grid can be recognized on an economic basis.

Mr. MCNERNEY. My time has expired.

Mr. MARKEY. Mr. Pitts.

Mr. PITTS. Dr. Michaels, we often hear that California is the leader in climate change policy. You testified that people, using California as an example of effective energy efficiency policy, have an untenable case. Would you elaborate on that?

Mr. MICHAELS. I just went through several basic points about it. Yes, there are some California energy efficiency programs that have delivered. But as a simple fact, the California Energy Commission has always looked at projected resource needs in the future, and they have almost invariably overestimated what the likely contribution of efficiency is going to be.

Mr. PITTS. If you could look at the policy of California on climate change, what would be the main lesson that we could draw from California utility policies?

Mr. MICHAELS. It is infinitely more complicated than anyone could imagine, and there is no precedent for it. Everybody who talks about using some model to get numbers, the bad news is you are talking about something unbelievably complex, as much so as the whole economy plus the whole ecosystem. We don't know how to do this. The projections you get, if you look at the Federal figures, use models from the Energy Information Administration,

which itself has shown what incredibly poor predictors of things they are in its own documents.

Mr. PITTS. Some of your fellow panelists advocate different types of allocation schemes to protect consumers. Are there any schemes that will truly insulate consumers and small businesses from the cost impacts of this cap-and-trading scheme?

Mr. MICHAELS. How could there be? After all, what you are doing is making something that was formerly free; namely, the right to emit carbon, scarce. All you have done is you have increased the cost of doing business for businesses, you have increased the cost of living for consumers ultimately, because some of that is going to be passed on to them.

There is no way to insulate the entire economy or even a major segment of it from as massive a scarcity as we are thinking about creating here.

Mr. PITTS. Now, you have said, Dr. Michaels, every major provision of this bill is at base a tax. Would you elaborate on that? Why is the renewable electricity standard a tax, for instance?

Mr. MICHAELS. The renewable electricity standard is not a Federal tax that is going to be explicitly paid to this government; but what it is, is a mandate upon States that their utilities catch a certain fraction of their power from renewables over the course of time in the future.

Renewables are not cost effective now. We don't know when, if ever, they are going to be. Even wind, which is the most common renewable—and renewable is almost a synonym for wind—still is not cost effective without a Federal subsidy, production tax credit, and accelerated depreciation. We are talking about people's electric bills rising because regulators have to fold these costs in for regulated utilities. That is as good as a tax.

Mr. PITTS. From your understanding of the issue, Dr. Michaels, would imposing this tax on energy lead to any meaningful global emissions reductions?

Mr. MICHAELS. I am not an expert on that, but I am aware that as a fraction of global emissions the U.S. is relatively small. And my understanding—and I am not an expert again—is that it is going to take a much larger increase than is ever contemplated in this legislation to make a dent in it.

Mr. PITTS. Now, you say the bill will have massive effects on both consumers and small businesses. Does anyone on the panel disagree with that? Mr. Cowart.

Mr. COWART. Well, I will disagree to this extent. To the degree that we are smart about how we implement it and to the degree that we recycle revenue that advances highly efficient technologies, the impacts on consumers and businesses can be quite moderated.

Mr. BASSETT. I think the impact is going to be disproportionate, and that is why I underscored any approach should be an approach that recognizes regional differences. Obviously, some consumers in certain parts of the country are going to be disproportionately impacted because of their coal dependency. So any formula needs to take that into consideration.

Mr. PITTS. Mr. Greenstein.

Mr. GREENSTEIN. I think it all depends on how the legislation is designed. Well-designed legislation that makes appropriate use of

auction proceeds and permit allocations, as I have indicated, can hold low and middle income consumers harmless generally. And with regard to businesses, while I don't think—I am going to commend the answer I gave earlier to Mr. Upton. While I don't think it makes sense to do allowances generally for businesses, there may be particular businesses or particular sectors that need transition help of some sort. Whether it is through allowances or other mechanisms, I am not sure what the best mechanism is.

Mr. PITTS. Dr. Michaels, what is your response to that?

Mr. MICHAELS. It is not at all clear to me how, again—simply reduces to a question of scarcity. All you are doing is making something scarce that was relatively abundant before. And there is no way—there are ways to make a little bit more or a little bit less be borne by one class of customers or another; but by and large, this is very, very small relative to the totality that is being contemplated here, if I look at the bill.

Mr. PITTS. My time is up. Thank you, Mr. Chairman.

Mr. MARKEY. The Chair recognizes the gentleman from Texas, Mr. Green.

Mr. GREEN. Thank you, Mr. Chairman.

Mr. Morgan, currently what percentage of the District of Columbia electricity is produced by what is defined as renewable electricity in this bill?

Mr. MORGAN. Well, the District of Columbia currently imports more than 98 percent of its electricity from outside. So it is a little bit hard to answer that question.

We do have some solar generation on some Federal facilities and universities and a growing number of homes.

Mr. GREEN. But you don't have a percentage?

Mr. MORGAN. I don't. I can tell you it is very small.

Mr. GREEN. I think as a customer, and some Members are customers. On a yearly basis we get ours in a bill showing what percentage, and it is very small. I think less than 1 percent.

Mr. MORGAN. We do have a requirement for the load-serving entities to report on the energy mix. Most of that power is imported and includes renewables.

Mr. GREEN. Again, whether you import it or what, because we import power. In fact, that is the goal of this bill, is to be able to import power from parts of the country that generate it to parts that don't. But, still, the mandate would cover it.

And I noticed the Public Counsel for Columbia's Equal Opportunity Council, Betty Knowle, was concerned about the 20 percent mandate that the District's standard would cost about $26 million annually. Does D.C. Currently have a 20 percent mandate?

Mr. MORGAN. Yes. The City Council recently increased the renewables portfolio standard for the District to eventually reach 20 percent in the year 2020. That is correct.

Mr. GREEN. Let me ask others from groups, the co-ops, the EEI, and in the public sector. What are the percentage, Glenn, or does co-ops actually have—and I know you have had a discussion on what is considered. I know the bill actually considers qualified hydropower. But what is the percentage of the real co-ops that have and what would be defined as renewable energy in the bill?

Mr. ENGLISH. As I mentioned, as defined by the bill would be about down to 2 percent, would be roughly.

Mr. GREEN. Because general hydropower is not, quote, qualified?

Mr. ENGLISH. That is correct.

Mr. CRISSON. In the case of the publics, Mr. Congressman. As customers of the power marketing administrations, they use a lot of hydroelectric. But you are not including hydroelectric from either the PMAs or the generation that is owned by our members. It is right around the industry average, which is about 3 percent.

Mr. STERBA. And I think on the investor-owned side, that may be a little higher than the general average because we are complying with mandates in a number of States. But it is certainly no higher than 4 percent overall.

Mr. GREEN. And I guess the last one would be the—well, and that is EEI, I guess, the investor.

Mr. STERBA. Yes.

Mr. GREEN. That is, I guess, our concern on the electricity and national standard of 25 percent, although 25 by 25 and—to get there. And I know in the State of Texas we are doing so many things with wind power, and actually our public utility commission committed $5 billion to transmit that power to get to the Dallas-Fort Worth, the urban markets, Austin, San Antonio, and Houston, Galveston. And the legislature now is expanding solar compared to what they did with wind power. But there is some concern we still may not be able to do 25 percent in 2025 even with the growth that we are doing. Is there a response to that or compared to other States?

Mr. CRISSON. Mr. Congressman, I would just add that the 15 percent limit that we support for a Federal RES is really a very aggressive standard. When you look at the fact that right now the total national renewable resource capacity excluding hydro is about 3 percent in 2008, we are talking about a five-fold increase in a little over 10 years with 15 percent. And even with the recent State renewable energy standards Mr. Sterba referred to in the recent years, the year over year increase has been about 5 percent.

To get just to 15 percent, you are talking about nearly a 14 percent year over year increase. And it is a very aggressive standard.

Mr. STERBA. I would echo that, Mr. Green, and add one other thing. That it is not just the percentage, but it is also what qualifies. And that can dramatically change whether or not you can get to that standard.

There is also an electrical stability issue associated with intermittent generation. You have to be careful.

Mr. GREEN. Mr. Bassett, in the few seconds I have left, some have discussed the EPA's preliminary and economic analysis. Have you had a chance to review it?

Mr. BASSETT. Yes, sir.

Mr. GREEN. It does not assume an RES or a low carbon fuel standard. Do you have any thoughts on the EPA's analysis, economic analysis?

Mr. BASSETT. Well, I said earlier I thought it was a great first step. But it doesn't go far enough, because there are overlapping mandates in this particular draft that have to be taken into consideration.

I would think the committee would be remiss if they would move forward without having a complete analysis of all of the variables that are included in the draft, and then, further, understand what the simultaneous implementation of all those provisions would have, that impact on consumers.

So while I applaud it as a good first step, I don't think it goes far enough in dealing with the other provisions in the draft.

Mr. GREEN. Thank you, Mr. Chairman.

Mr. MARKEY. The gentleman's time has expired.

The Chair recognizes the gentleman from Oklahoma, Mr. Sullivan.

Mr. SULLIVAN. Thank you, Mr. Chairman. And my first question is for Mr. Sterba and Mr. English, Mr. Crisson.

What is your position with regards to implementing a domestic cap-and-trade program before there is substantial and verifiable commitment to emissions reductions by China, India, and similar emission heavy developing nations?

Mr. STERBA. EEI's position is that we believe that the U.S. should provide leadership and go forward with some form of climate change legislation. But it must be in the context of international negotiations to help bring along the other countries, because if we are the only ones that do it we don't get there. But neither do—and this is my personal statement—do I believe we can just say we won't do anything until the others do it first.

Mr. ENGLISH. We agree that other countries should be included. And certainly someone the magnitude of China needs to be a party of this. I think there is an issue of who goes first. And as you said, the problem that we face right now is that we are going first, unless the Congress wants to stop that, through the Clean Air Act. I think the Supreme Court started that ball rolling nearly 2 years ago.

So I suppose we are leading, but I certainly think that Congress needs to do everything they can to get other countries to join with us.

Mr. CRISSON. Mr. Congressman, we would support moving ahead with a workable and sustainable cap-and-trade system, some kind of mechanism to address climate change in order to show leadership in the international community. We would be very concerned, however, if there was not some kind of reciprocity shown in the very near future by countries like China and India.

Mr. SULLIVAN. And the next question is I guess for all of the panelists. What are your concerns or position on leakage, the process by which companies will move business operations to foreign countries to avoid higher costs in the U.S.?

Mr. MICHAELS. In California that has been a very, very major issue with the implementation of the State program. And even the most optimistic projections that are coming from people who have been analyzing the State program—I don't place much faith in them, but even the most optimistic ones are that California is going to lose a very substantial fraction of what industrial load is left.

Essentially, what is going to be left in California is only the kind of businesses that can't move because of their closeness to the consumer. Electrically, you are going to be seeing the same issue, and that is being played out once again not just in California but in the

negotiations over the Western Climate Initiative. If California outlaws coal-fired power imports, it just means the plants in other States are going to produce electricity for those residents.

Mr. BASSETT. I think my answer to that question is obvious. Any time there is a possibility for loss of jobs, whether it is major corporations or small businesses that will certainly be affected by this draft, they are concerned. And so that is why I think that, going forward, we need to make certain that we are considering all of the variables. And that is why I have underscored my initial concerns earlier.

Mr. COWART. Leakage is certainly a problem in any cap-and-trade regime, and we need to be careful about how we approach it. It is one of the reasons that we need a national program, frankly, because of the State-to-State competition problems that cause leakage across State borders.

And with respect to international arrangements, I support transitional assistance to industries that are affected by international trade concerns. And I think I echo the comments of those made earlier, that we as a nation need to be engaged quite actively with other countries to make sure that we create over time as level a playing field as we can.

Mr. MORGAN. I agree with Mr. Cowart. I think we need to look at the issue of leakage in the context of an international approach. The fact that the United States is thus far not part of international agreements already is creating a leakage problem in the other direction. What we really need to do is work together with other nations to address this problem.

And I also wanted to highlight the issue of leakage when you are looking at State or regional programs which are already in place in parts of the U.S. And, as Mr. Cowart said, that is a problem that could be solved by developing a national program and having arrangements for dealing with interchange between U.S. and Canada of electricity and that sort of thing.

Mr. SOMERHALDER. We have already seen in the past the comment about rush to gas. We have seen that impact businesses and industries in our areas when we had gas used so much for power generation.

What this has the potential to do, in addition to increasing demand for natural gas, if we have carbon allowance costs for residential customers and small businesses, that has the potential to impact their businesses and do just what you fear. So, for those reasons, we think it is necessary that we deal with the allowances and allocating those in the appropriate way to mitigate that impact.

Mr. CRISSON. We share that concern. And as Mr. Somerhalder pointed out, this is one of the big advantages of 100 percent allocation of allowances, particularly in the transition early years as we move to a low carbon energy system.

Mr. STERBA. I agree that one of the biggest challenges that we can face is not just thinking about what is the impact on electricity but what is the impact on the mix.

If we throw coal out prematurely, out of the mix, we can have a significant impact on natural gas prices that not only affect residential customers but all of the industries that use it as feedstock,

and the inability for them to remain competitive in an international market.

Mr. WELCH [presiding]. The Chair recognizes himself for 5 minutes.

Two of the issues that have been raised constantly, among others, are the impact on jobs but also the impact on cost, the cost to the consumer.

Mr. Cowart, welcome. You and I worked together in Vermont, and I appreciate the work you did there and around the country and the world. I would ask you to further elaborate on the potential of the efficiency as a means of reducing energy costs. I mean, if we are going to be concerned about the consumer, as we must, residential consumer and the business consumer, to elaborate on how efficiency can be their friend.

Mr. COWART. Thank you, Mr. Chairman.

I think the efficiency opportunity is well demonstrated throughout the country. The reservoir is large and it is largely untapped, and it can be tapped at low cost. We know that in the power sector we could achieve at least 1 percent, probably 2 percent, a year in total demand reduction incrementally through aggressive energy efficiency programs that would be cost effective. They would save customers more money than they cost. And what happens when you do that is really four things.

First of all, every customer who is participating in an efficiency program or is investing in efficiency will see a lower bill. That is the first benefit. The second benefit is that by reducing demand for electricity and natural gas we reduce the clearing prices. And those benefits occur to everybody on the system. So the upward pressure that we are worried about here on clean energy and on energy prices generally can be significantly moderated by energy efficiency at the customer level.

The third benefit is that by reducing demand for consumption, we actually reduce demand for carbon allowances. And this is part of the answer to Dr. Michaels' concern about scarcity. One of the ways to affect any scarce resource is to reduce demand for it, which can be done through energy efficiency, reducing demand for carbon allowances.

And then the last point, for the half of the United States that exists in a competitive wholesale power market arena, is that when you reduce clearing prices and when you reduce carbon prices, you are reducing the cost of power across almost all megawatt hours across the entire grid. So the benefits from being a lot smarter about efficiency can be quite widespread.

Mr. WELCH. Thank you.

Mr. Greenstein, given your proposal and your concerns about LDCs but the objective you have to protect consumers, what are your thoughts on allocating allowances of 15 percent, I think is the figure people have used, to LDCs specifically for efficiency to reduce cost to consumers?

Mr. GREENSTEIN. I don't have any specific percentage. I agree with Mr. Cowart and others that efficiency is important. I am not an expert on what is the best way under this bill to achieve the efficiency gains. To the degree that allocating permits to LDCs specifically for efficiency would be the best or one of the best ways to

get efficiency gains, if that is the case, then I would think it is a good idea. I certainly think that there ought to be some efficiency investment under this legislation.

Mr. WELCH. Mr. Sterba, what about you? Has efficiency got to be a core component of any approach to address this problem?

Mr. STERBA. Absolutely. And I think that is one of the areas where State regulators come into play in helping develop along with utilities, the elimination of disincentives and the provision of incentives such that we maximize energy efficiency capacity.

Mr. WELCH. And what would you define as the specific disincentives to utilities to aggressively promote efficiency?

Mr. STERBA. One that exists in many jurisdictions today is the fact that you are incented to sell more of a product. That is wrong. We need to change that fundamental business model.

Mr. WELCH. Which we would do by what?

Mr. STERBA. It could be done by a number of mechanisms. People use the phrase decoupling as one. The problem is, it means a lot of different things to different people. But there are clearly mechanisms that we can change that business model.

Mr. WELCH. Thank you. My time has expired.

The Chair recognizes the gentleman from Arizona.

Mr. SHADEGG. Thank you, Mr. Chairman. I want to thank the members of the panel. Let me try to go through a series of questions. Mr. Sterba, let me begin with you.

Certain energy sources are subsidized by the Federal Government. What I would like to do is see if you can quantify for me how much, whether it is by kilowatt or by megawatt, the subsidy for natural gas is. Do you know that number?

Mr. STERBA. I do not.

Mr. SHADEGG. Would you assume it is zero or near zero? Does anybody on the panel know? How about the subsidy for coal, per megawatt or kilowatt? Mr. English.

Mr. ENGLISH. When you get in and talk about the issue of subsidy, that gets to be very misleading. If you are talking about using the Tax Code and providing benefits under the Tax Code as being part of that subsidy, then I think every fuel has a subsidy; every fuel receives assistance. But amounts, I don't have amounts.

Mr. SHADEGG. I am trying to get the relative amount of the subsidy. We know there is a substantial subsidy for solar. Does anybody know how much it is per megawatt?

Mr. STERBA. Currently, the production tax credit is I believe 2.1 cents for renewables. And then it could also be investment tax credit, which is 30 percent, I believe.

Mr. SHADEGG. So can you give me a number per megawatt for solar?

Mr. STERBA. Well, the production tax credit would be 2.1 cents, or $21 a megawatt hour.

Mr. SHADEGG. And then the other one you mentioned?

Mr. STERBA. That would be applicable to any renewable at this time. I would agree with Mr. English, there are certain built subsidies that have occurred at different stages of fuel being developed. Any fuel source that was developed probably had some subsidies at different points in time.

Mr. SHADEGG. Do you know what the current subsidy for wind is?

Mr. STERBA. On the production tax credit, it would be the same, the 2.1 cents per kilowatt hour.

Mr. SHADEGG. I thought it would be useful to know what those subsidies are relative one fuel to the other, natural gas or coal, relative to solar and wind.

The next question I would like to ask to the entire panel, and I would like to get a yes or no answer from each of you, if I might. Do you agree that this legislation will increase the cost of energy produced in the United States? Yes or no. Mr. Sterba.

Mr. STERBA. Yes. The degree to which it does is dependent on——

Mr. SHADEGG. Yes or no? I am short on time.

Mr. ENGLISH. Yes.

Mr. CRISSON. Yes.

Mr. SOMERHALDER. Yes.

Mr. MORGAN. Qualified yes.

Mr. COWART. Qualified yes.

Mr. GREENSTEIN. Yes.

Mr. MICHAELS. Unqualified yes.

Mr. BASSETT. Yes.

Mr. SHADEGG. If you agree that it will in fact increase the cost of energy in the United States, do you also agree that it will increase the costs of all goods which require energy to produce them, steel, or anything?

Mr. STERBA. Yes.

Mr. ENGLISH. Yes.

Mr. CRISSON. Yes.

Mr. SOMERHALDER. Yes.

Mr. MORGAN. To the extent efficiency substitutes for energy, no.

Mr. COWART. Yes.

Mr. GREENSTEIN. Yes.

Mr. Bassett. In general, yes.

Mr. SHADEGG. Dr. Michaels, did I get my unqualified yes?

Mr. MICHAELS. Yes, sir.

Mr. SHADEGG. Thank you very much. Let me ask another. Isn't it in fact—and I think either Mr. Cowart or Mr. Greenstein, you made this point. One of the goals of the legislation is to increase the cost of energy to induce the efficiency that you talked about, Mr. Cowart, and to discourage the use of the consumption of energy? Isn't that correct, Mr. Sterba?

Mr. STERBA. I think the purpose is to provide a price signal for a commodity that is by public policy opinion being made scarce.

Mr. SHADEGG. Which you do by increasing cost. Right?

Mr. STERBA. Yes.

Mr. SHADEGG. Thank you. Mr. English?

Mr. ENGLISH. I am not going to interpret motives here, but let me just say I think we have to send on the front end of it that it is basically to reduce the emission of carbons.

Mr. SHADEGG. By setting a price signal.

Mr. ENGLISH. It does set a price. By putting a limitation on the carbon being used in the country, yes, that sends a price signal.

Mr. CRISSON. Combination of cap and price.

Mr. SOMERHALDER. I agree.

Mr. COWART. I actually don't think that the purpose is to raise the price. The purpose is to reduce emission.

Mr. SHADEGG. Did Mr. Morgan not respond?

Mr. MORGAN. Well, I do agree that the purpose is to send a price signal. Putting a cap on the quantity is one way of doing that. But price—

Mr. SHADEGG. Well, you are not putting a cap on the total quantity. You are putting a cap on the quantity per industry, and then charging for that for anyone—actually, you might charge for that initial catch and then also charge for exceeding the cap.

Mr. MORGAN. Either way. I mean, you are trying to make the product more scarce, as Dr. Michaels pointed out.

Mr. SHADEGG. By increasing the price and sending the price signal?

Mr. MORGAN. That is correct. That is certainly part of the purpose. Of course, as we pointed out, there are some ways to offset that.

Mr. SHADEGG. Sure. We are not talking about offsetting. Does it in fact send a price signal, or isn't that a part of the structure of the bill?

Mr. Cowart.

Mr. COWART. I think that a price signal is useful, but that the other policies that are inherent in the bill are actually more important.

Mr. SHADEGG. Thank you.

Mr. Greenstein, I am really looking for does it—is one of the goals to send a pricing—increasing the pricing of the cost of energy so that we consume less and therefore reduce CO_2 emissions?

Mr. GREENSTEIN. A key purpose is to send a price signal both so that we consume less, but also that we switch to cleaner sources of energy. But the fact that it sends a price signal should not be interpreted to be a negative for the economy.

Mr. SHADEGG. I was just asking the question. Don't read motives into my question. Dr. Michaels?

Mr. MICHAELS. It is a price signal. The real question with price as well is, what are you getting for it? If in fact we are getting very little in the way of solutions to the whole world's carbon problem, then all we are doing is it is a burnt offering type of sacrifice.

Mr. SHADEGG. Mr. Bassett.

Mr. BASSETT. I won't ascribe motives to the drafters or to your question. But I will say that the net effect of setting a price signal in this instance will raise prices.

Mr. SHADEGG. Thank you very much. Unfortunately, my time has long since expired.

Mr. MARKEY. I wasn't sure whether Mr. Michaels was in the Old Testament or the New Testament.

The gentleman from Louisiana, Mr. Scalise.

Mr. SCALISE. Thank you, Mr. Chairman.

Earlier, I think some people involved in the discussion have implied that this is the only piece of legislation that is out there that addresses an energy policy. I would direct them to an alternative plan that has been on the table for about a year now and is actually still out there on debate, something that we are going to be

presenting most of the components of this bill. The American Energy Act that was filed in the last Congress will be filed again and debated as part of an alternative to this cap-and-trade energy tax. But it is a bill that actually involves an all-of-the-above energy policy that will not only support and in fact fund research and development to advance the alternatives, like wind and solar, but also make recognition of our own natural resources here in this country, to explore additional natural resources like oil, like natural gas, sources that we are using today, clean coal technology, and also nuclear power, which is a very reliable, efficient source of energy many other countries are using that this cap-and-trade energy tax does not contemplate at all; and then, also encourage people to make those efficiencies that they are making today that many more will make.

So anybody who suggests that one group of people on this committee is just against everything, they are being very disingenuous because this is a bill that has been out there for about a year now, many of the components of which will be presented as an alternative, a bill that will actually create American jobs here in this country, create those green jobs that we are talking about, but not invoke policies that will export millions of jobs out of this country which the cap-and-trade energy bill clearly will do. No one has disputed those findings.

And so, with that, I go to the bill that we are debating today, and specifically the allocation policies that this panel is discussing. And I am going to have some questions, but first for those of us who have been going through this bill, one of the big frustrations that we feel is not only a frustration to us as members, I am sure many of you who are trying to do analysis of this bill, but also to the American people who are trying to contemplate whether or not this is good policy or bad, is the main details of this bill, especially what this committee is talking about today on allocation policies.

If you go to page 478 of the bill, which actually is supposed to be talking about the main source of how this whole cap-and-trade scheme would work.

Let's go through. Disbursement of allowances and proceeds from auctions of allowances. Subsection A, allocation of emission allowances. The administrator shall allocate emission allowances established under section 721 in the following amounts.

So, you want to go read those amounts? It says: To be supplied. The section is blank.

You go next to section B, auction of emission allowances. The administrator shall auction emission allowances established under section 721 in the following amounts: To be supplied.

Subsection 3, funds established. There is established in the Treasury of the United States the following funds: The strategic reserve fund, one. Number two: Other funds to be supplied.

We are talking about what many people have described as one of the most important initiatives brought before this Congress in decades, the most important change in energy policy our country has probably seen, and the bulk of the details don't even exist today, aren't even presented to the public.

Now, there is discussion that many of these details are being worked out behind closed doors and some of those deals are being

cut as we speak. Unfortunately, none of that is being done here in this committee meeting where the transparency is supposed to be where the people can actually watch and participate in the discussion, where experts can actually give detailed analysis of the components of the bill and the policies that would affect every consumer in America.

So with that, I want to ask Mr. Bassett, because you have testified that—you talked about the rigorous cost analysis that you would like to see done on it. When it comes to the details of this bill that are completely left unanswered, how do you do a real cost analysis to estimate how much this is going to cost American families, how many jobs will be exported to foreign countries, when so many of the details are left out?

Mr. BASSETT. Well, you can't. And that is a concern that I have, as I was reviewing the bill, and I know that consumers across the country are going to have. So what I would do is encourage this committee before you move is to consider cost estimates on every provision that is in the bill. And then go further, as I have said earlier, then test for the impact that a simultaneous implementation of those are going to be.

I just don't see how you can reach a conclusion as grave as this.

Mr. SCALISE. And I know we are running out of time. I am sorry to cut you off. I want to ask anybody on the panel if they would address the question. Should we, and is it responsible, to go forward with a debate on a bill this important when so many of the key components are not even included that we can assess, analyze, and discuss? Does anybody think it is responsible to be going forward with this right now?

Nobody responded. I yield back my time.

Mr. GREENSTEIN. If I could just say, there is every reason to have debate on all the issues that we already know, all the parts of the bill that are filled in, and what a number of us think or are recommending today should be in there for the parts of the bill that aren't filled in. And I presume, at the appropriate time, you will get a fully filled in bill and you all have further debate on it at that time.

Mr. SCALISE. Right. And with nine panelists, we probably have nine different ideas that are very divergent on how that should be. Unfortunately, we should be all debating one set—because ultimately this committee would pass one set plan, not nine different plans. Unfortunately, we can't debate that one set plan because it doesn't exist and it is not before us today.

Mr. MARKEY. The gentleman's time has expired. And unless the gentleman from New York has questions, then all time for questioning for this panel has been completed. But you have provided a very valuable set of testimonies for the committee. And I can actually see some—I won't call them deals, but I can actually see some new working arrangements that could be constructed out of your testimony to create a format, create a formula that we might be able to use. And amongst your testimony, I think that it has been perhaps the most productive that we have had so far because this is a very thorny question. But yet I can see a lot of desire to find a working formula that we could use. And we thank you for your testimony.

Mr. WALDEN. Mr. Chairman, I am not going to trigger the House 5-minute rule. But following on what you said, because somebody here on the panel mentioned the importance of worker transition during this process, I don't remember who it was, but somebody did. And I would refer them to page 568, where the section 424 for worker transition is. I would encourage you to read it fully, because all we can read is: To be supplied.

Mr. MARKEY. I thank the gentleman very much. And we thank all of you for your testimony. We would like to stay in close working cooperation with you in the next month or so. Thank you.

Now we would ask the witnesses to take their places at the witness table.

Welcome. Welcome to the second panel. And this panel will deal with the issue of ensuring U.S. competitiveness and international participation.

Our first witness is Mr. Jack McMackin. He is a principal in the law firm of Williams and Jensen, and a Director of Owens Illinois, a leading producer of glass containers. He is here today on behalf of the Energy Intensive Manufacturers Working Group on Greenhouse Gas Regulation.

We welcome you, Mr. McMackin. Whenever you are ready, please begin.

STATEMENTS OF JACK McMACKIN, PRINCIPAL, WILLIAMS AND JENSEN, LLC, ON BEHALF OF THE ENERGY INTENSIVE MANUFACTURERS WORKING GROUP ON GREENHOUSE GAS REGULATION; RICH WELLS, VICE PRESIDENT FOR ENERGY, THE DOW CHEMICAL COMPANY; TOM CONWAY, INTERNATIONAL VICE PRESIDENT, UNITED STEEL WORKERS; TREVOR HOUSER, VISITING FELLOW, PETERSON INSTITUTE FOR INTERNATIONAL ECONOMICS; ELLIOT DIRINGER, VICE PRESIDENT, INTERNATIONAL STRATEGIES, PEW CENTER ON GLOBAL CLIMATE CHANGE; LEE LANE, RESIDENT FELLOW, AMERICAN ENTERPRISE INSTITUTE; REVEREND C. DOUGLAS SMITH, EXECUTIVE DIRECTOR, VIRGINIA INTERFAITH CENTER FOR PUBLIC POLICY

STATEMENT OF JACK McMACKIN

Mr. MCMACKIN. Thank you, Mr. Chairman. The Energy Intensive Manufacturers Working Group on Greenhouse Gas Regulation appreciates this opportunity to testify today.

I am Jack McMackin, a Principal in the law firm of Williams and Jensen, and I have served for 15 years as a Director of Owens Illinois. OI is headquartered in Perrysburg, Ohio, and it is the world's leading producer of glass containers.

As this subcommittee is aware, our group was formed early last year for a limited but important purpose: To engage constructively with Members of Congress, the environmental community, labor, and all interested stakeholders to attempt to solve the economic and environmental problem that is known as carbon leakage, or job leakage. Our focus has been exclusively on the Inslee-Doyle type grant of free allowances or allowance value rebates.

Since I appeared before the subcommittee last month, our working group has expanded. We include representatives of all of the

traditionally recognized energy intensive sectors as well as companies from smaller sectors that our work has identified as subject to leakage. Our members include AK Steel, Alcoa, Corning, Cliffs Natural Resources, Dow, Wholesome U.S., New Page Corporation, New Corps, Owens Corning, Owens Illinois, PPG, Rio Tinto, Terra Industries, U.S. Steel, and Weyerhauser. Much has changed, and much progress has been made since last month. The upshot is that we are more convinced than ever that the leakage problem can be adequately addressed in climate legislation.

Since our earlier testimony, Congressmen Inslee and Doyle have introduced a new and strengthened version of their anti-leakage bill, and the discussion draft in turn has adopted much of the Inslee-Doyle mechanism. As a result, the discussion draft contains a structure that can work.

That said, the draft also leaves critical decisions unmade and critical issues unfinished. The success of the anti-leakage provision hangs in the balance. Before turning to what we view as the two most important remaining issues, let me briefly mention one of the draft's key advances.

The discussion draft, like the new Inslee-Doyle bill, has adopted a principled data driven mechanism for determining which sectors or subsectors should be eligible for anti-leakage allowances. Industries meeting specific energy intensity and trade intensity levels would be presumptively eligible, and others may make individual showings. This was a mechanism we advocated. We believe it is a major advance, and that it brings a reasonable level of certainty as well as fairness to the process.

Now, for the two key remaining issues. The first is funding of the provision with an adequate number of allowances. The discussion draft of course is silent on this issue. My written testimony updates in some detail our submissions to the committee on this critical issue.

In short, we believe the provision requires in the range of 850 to 900 million allowances. That represents about 16 percent of the allowances in the discussion draft's highest year, its fifth.

The second issue is the phasedown or termination of the anti-leakage allowance program. The solution to the problem cannot be phased out or terminated before the underlying problem of regulation-caused production cost disparity is solved; and, the underlying problem will be solved only when other countries producing energy-intensive materials adopt climate change legislation that imposes on their industries costs comparable to what the ACES bill would impose on ours. We believe that the Inslee-Doyle bill is very close to creating a workable mechanism to govern phasedown and termination of the provision, but that the ACES bill has yet to do so.

Chairman Markey, I would like to mention one final other matter, an issue upon which you in particular have shown persistent leadership, and that is recycling. Use by energy intensive industries of recycled materials in lieu of raw materials produces enormous savings in energy and even greater reductions in carbon emissions, greater because not only combustion emissions, but also process emissions are greatly reduced.

Those of us in the packaging industry, for instance, can make a bottle or a can out of recycled bottles or cans with a fraction of the

carbon emissions; yet, we cannot get enough recycled materials. We urge you to include muscular effective provisions in the bill to enhance the opportunities for all energy intensive industries to obtain and make use of recycled materials.

In summary, Mr. Chairman, we commend you and all who have worked so hard to make possible the remarkable progress on the anti-leakage provisions, and we very much look forward to cooperating with you in any way that we can.

[The prepared statement of Mr. McMackin follows:]

Written Testimony of John J. McMackin
on behalf of
The Energy-Intensive Manufacturers' Working Group
on Greenhouse Gas Regulation

Before the House Committee on Energy and Commerce
Subcommittee on Energy and Environment

Hearing on the American Clean Energy and Security Act

April 23, 2009

Summary: Continued Progress—and Remaining Critical Issues

Mr. Chairman and members of the Subcommittee, the Energy-Intensive Manufacturers' Working Group on Greenhouse Gas Regulation greatly appreciates this opportunity to testify concerning the March 31 discussion draft of the American Clean Energy and Security Act. Much has changed—and much progress has been made—since I testified before the Subcommittee on behalf of the Working Group last month. We commend you and the Subcommittee for the quality of your work, your responsiveness to the unique threat posed to energy-intensive, trade-exposed industries by unilateral climate-change legislation, and for the openness of your process to stakeholders.

The Working Group is more convinced than ever that the problem upon which it is exclusively focused, the leakage of carbon and jobs to unregulated countries that could result from the costs imposed on U.S. energy-intensive and trade-exposed industries, can be adequately addressed. The draft has adopted a structure—largely paralleling the work of Congressmen Inslee and Doyle—that can work.

However, the draft leaves several critical decisions unmade—and the success of the anti-leakage output-based-rebate provision hangs in the balance. Chief among those issues are two: first, funding of the provision with an adequate number of allowances, and, second, making sure that the provision stays in effect until the underlying problem is solved through comparable actions by countries whose energy-intensive manufacturers compete in the global market.

Before addressing those two issues, I will briefly review the Working Group's membership as well as developments since we last testified. I will also discuss a key element of the progress to date, i.e., adoption by the discussion draft and by the newly-reintroduced and modified Inslee-Doyle bill of an eligibility mechanism that—with a few modifications—can go a long way towards infusing objectivity, fairness and relative certainty into the process of determining which industries should qualify for relief.

The Energy-Intensive Manufacturers' Working Group

Our group is composed primarily of companies from the U.S. industries that are widely and correctly seen as most vulnerable to leakage: ferrous metals (iron and steel), non-ferrous metals (aluminum and copper), cement, glass (including fiberglass), ceramics, chemicals and paper. It also has members from some of the other industrial sectors or subsectors that our work has identified as subject to leakage, such as nitrogen fertilizer producers. The companies include AK Steel, Alcoa, ArcelorMittal, Corning, Cliffs Natural Resources, Dow, Holcim(US), NewPage Corporation, Nucor, Owens Corning, Owens-Illinois, PPG, Rio Tinto, Terra Industries, U.S. Steel and Weyerhaeuser.[1]

The Working Group was formed early last year for a single purpose: to engage constructively with Congress and other stakeholders in working out the many design questions involved in constructing a workable allowance-grant (or allowance-value rebate) provision.

I am a principal in the law firm of Williams & Jensen, PLLC and have been a director of Owens-Illinois, Inc. for nearly fifteen years. O-I is headquartered in Perrysburg, Ohio and has U.S. manufacturing facilities in eleven states. It is the world's largest manufacturer of glass containers. O-I is an active and committed member of the Working Group.

Developments Since our March 18 Hearing Testimony

At the time of our March 18, 2009 testimony in the Subcommittee's *Hearing on Competitiveness and Climate Policy: Avoiding Leakage of Jobs and Emissions* the Committee had not yet finished or released its discussion draft, nor had Congressmen Inslee and Doyle yet introduced a new version of their anti-leakage bill. Our testimony recommended that the Committee adopt the output-based rebate concept and general structure of Inslee-Doyle as it then existed, but we were also advocating a refined eligibility mechanism (building on work of the World Resources Institute, the Peterson Institute and others) that made use of objective standards for determining presumptive eligibility based upon energy-intensity and trade-intensity quotients, and that provided an opportunity for individual showings by sectors or subsectors not meeting the presumptive criteria. The proposed methodology, moreover, in contrast to most prior work, made use of relatively disaggregated data, using North American Industrial Classification System codes at the narrow six-digit level.

In conjunction with its testimony, the Working Group released a study by FTI Consulting (also included in our March 24 testimony before the Ways & Means Subcommittee on Trade) that showed the results of applying the presumptive criteria: 45

[1] While this written testimony generally represents the position of the Working Group, not all statements are necessarily endorsed by every member. I do not represent individual members of the group other than Owens-Illinois, and while my responses to any questions during the hearing will attempt not to stray from the group's views, those responses will be my own and not necessarily the group's.

qualifying sectors or subsectors. As the study showed, the criteria serve both to expand the number of industries or sub-industries subject to potential relief by identifying smaller or otherwise previously ignored sectors, and, at the same time, to disaggregate some of the traditionally identified but very general categories, such as "glass" or "steel."

The study has received wide distribution within the private sector and government agencies, has been well received, and has informed discussions on eligibility. Attached to this testimony as Exhibit A is an updated version of the study, reflecting some minor corrections that emerged from our work and discussions subsequent to the hearing.[2]

On March 26, Congressman Inslee and Doyle introduced a revised version of their legislation, H.R. 1759, now called the "EMPLOY Act" or the "Emission Migration Prevention with Long-term Output Yields Act." The new Inslee-Doyle bill adopted an eligibility mechanism very similar to that advocated by the Working Group, and the Committee's Working Draft of its ACES bill, similarly, adopted, with some significant changes, much of the Inslee-Doyle bill, including similar eligibility provisions.

The New Eligibility Mechanism

Much of our optimism that a workable anti-leakage provision can be achieved is based upon the inclusion of the basic structure of the presumptive eligibility mechanism in the draft bill. We continue to work with Congressmen Inslee and Doyle, the Committee and other stakeholders to improve the provision. We strongly believe that in many instances where the discussion draft differs from Inslee-Doyle, the Inslee-Doyle language should be used. Moreover, some drafting issues exist in the discussion draft which, if not remedied, would greatly undermine the determinacy of the presumptive criteria and the certainty it was meant to foster. Further, among the major omissions in the discussion draft is a provision of Inslee-Doyle that specifies that industrial processes that can be conducted on either an integrated or separate basis shall be aggregated for calculating whether they meet the presumptive thresholds. Another provision that needs significant further clarification is Subsection (b)(3) providing for individual showings of presumptive eligibility.

Allowance Adequacy—The Question of a Cap and Its Amount

The discussion draft leaves unanswered the question of a cap on the number of allowances available to fund the anti-leakage rebate for energy-intensive, trade-exposed industries. By contrast, Inslee-Doyle, like the Brown-Stabenow provision in the Senate, capped the amount available under the provision at 15% of the first year's number of total allowances. (Both those bills assumed that the total number of allowances under a cap and trade bill would be highest in the first year.) If the number actually needed exceeded the cap in any given year, recipients would receive a pro-rata reduction.

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[2] On page 9 (Methodology for Estimating Emissions), the emissions figure in the first bullet has changed from 612 million to 614 million, and in the second bullet from 806 million to 802, to remain consistent with the table on page 8.

The analysis done by our Working Group and submitted to the Committee last month as Exhibit A to my March testimony indicated that allowances capped at 15% should be sufficient to fund the anti-leakage, Inslee-Doyle-type rebate. (That analysis is repeated in the updated version of the study attached hereto, at page 8.) However, that analysis, like most of the thinking to date on the question, assumes that the "first year of regulation" number of allowances would be approximately that of the Lieberman-Warner bill, i.e., 5.775 billion (or, as it is often expressed, in millions, 5,775 MM.) Fifteen percent of 5,775 MM represents 866 million allowances. It is something in the range of that number that we believe represents an adequate cap.

Our reasoning stems from our analysis of the industries that would qualify under the presumptive standards and the emissions of those 45 industries. It also reflects the need to allow for additional industries qualifying through mechanisms other than application of the NAICS-code-level presumptions, the possibility of *growth* of qualifying domestic industrial sectors, the uncertainty inherent in the estimates, and the nature of a cap itself.

As can be seen on page 8 of the Appendix, our analysis indicates that the 45 presumptively qualifying sectors and subsectors represent approximately 771 MM tons of emissions (combustion, indirect and process). That is 13.4% of the 5,775 allowances provided for in the first year of Lieberman-Warner.

Those figures do not reflect the 15% across-the-board reduction in allowances granted qualifying facilities that Inslee-Doyle and the discussion draft would impose. The Working Group does not believe that reduction is appropriate policy, especially in light of the potentially huge uncompensated costs that energy- and trade-intensive industries are likely to suffer under unilateral legislation. These include, for instance, the increase in the cost of carbon-favored substitutable fuels such as natural gas caused by both demand increases and upward shifts in their demand curves. They also include the increase in the cost of many production inputs, such as raw materials.

Nonetheless, even if it is assumed that the 15% reduction will be included in final legislation, any cap still needs to be no lower than, roughly, the 850-900 MM range. The 15% haircut would reduce the estimate of allowances to be provided to the 45 qualifying sectors to about 655 MM (85% of 771), or 11.3 percent of the Lieberman-Warner first-year level of 5,775 MM.

That still leaves only 211MM allowances (866-655), or 3.7% of the Lieberman-Warner level, to cover the following:

- the uncertainty of the estimation process;
- sectors or subsectors that qualify under either of the two methods of individual showings under the bill; and
- growth in American industrial, energy-intensive manufacturing, including: (i) growth in export markets; (ii) growth involved in "green manufacturing" (e.g., wind turbines including their towers and bases, energy-efficient automobiles, and a reconstructed power grid); and (iii)

growth involved in making our residential and commercial structures more energy efficient (requiring insulated plate glass, fiberglass, steel, cement, etc.).

The structure of the ACES draft's annual allowance distributions complicates a discussion conducted in percentage terms of the number of allowances needed to fund the anti-leakage provisions. For instance, the ACES bill's distributions are lower in the first two years than they are in the third, and lower in the fourth year than in the fifth, which is the highest year overall. [See Subsection 721(e)(1), pp. 360-361]. Moreover, the bill allows the Administrator to adjust these numbers. [Subsection 721(e)(2), pp. 362-365.] Additionally, even the bill's highest level, 5,391 MM in 2016, is significantly less than the Lieberman-Warner level of 5,775 MM. If the presumptively eligible sectors received the 771 MM we believe is appropriate that would represent 14.3% of available allowances even in that highest year, leaving only .7 % for the uses identified above. If the presumptively eligible received the 15%-reduced amount, 655 MM, that would represent 12.1% and leave only 2.9%, or 152 MM allowances, for the additional needs.

In the Working Group's view, the best way to express any cap is in absolute terms, and it should be in the range of 850-900 MM allowances. We urge the Committee to note that this is a cap, not a grant of allowances, and that the consequences of a cap that is too low are far more deleterious in policy terms than is a cap that is too high. A cap set lower than the needs of the energy-intensive industries under the Inslee-Doyle structure will result in underfunding of the Inslee-Doyle formulaic relief, raising, by the same measure, the risk of leakage. A cap that is set higher than what turns out to be actual need simply means that more allowances will be available for auctioning or other uses.

Reduction and Termination

As a country we need a solution to the leakage problem that is as serious as the problem itself. That means, among other things, that the solution cannot be phased out or terminated before the underlying problem of regulation-caused production-cost disparity is solved, and the underlying problem will be solved only when the other countries producing energy-intensive materials adopt climate legislation that imposes on their industries costs comparable to what the ACES bill will impose on ours.

A scheduled phase down unrelated to the actions of other countries is a phased unilateral disarmament that will only encourage other countries to drag their feet. It would, moreover, simply schedule the re-emergence of leakage. The realities of international competition and international sourcing, further, means that the actual leakage would take place greatly in advance of its scheduled return. Businesses in energy-intensive, trade-exposed, international industries make decisions on capital expenditures and footprint re-alignment every year. Many of those decisions, such as whether to build or close a plant or replace a furnace, must have 20-year, 30-year or longer time horizons. The threat that leakage relief would expire before the leakage problem will very quickly be factored into those decisions.

Inslee-Doyle, like the Brown-Stabenow amendment, ties reduction of leakage relief strictly to the reduction of the underlying problem. Accordingly these proposals do not tie the amount of available anti-leakage allowances to the reduction in the economy-wide number of allowances. The discussion draft is silent on this point, but the effectiveness of the relief it provides depends on following the Inslee-Doyle approach of a free-standing pool of allowances.

Instead of scheduled, automatic reduction, the Inslee Doyle bill contains two provisions for reduction or elimination of the relief tied to reducing or eliminating the underlying international competiveness/regulation-cost problem. One of these involves a scheduled reduction that is itself to be eliminated or reduced if competing countries do not achieve objective benchmarks for greenhouse-gas regulation—benchmarks that signal comparable burdens on their energy-intensive industries. The second involves some level of broader discretion for the President and the EPA.

The working draft re-mixes the two provisions—moving the objective standards out of the scheduled-decline provision and into the discretionary one—in a fashion that significantly weakens the protections afforded U.S. manufacturing. The draft also weakens the protections in other significant ways. The Working Group very much believes that we need to return in this respect to the Inslee-Doyle structure and work to strengthen that in several respects as well.

Conclusion

The progress to date, much of it reflected in the discussion draft, has strengthened the Working Group's belief that climate change legislation can adequately address the problem of the leakage of carbon and jobs affecting our energy-intensive and trade-exposed industries. It has likewise strengthened our resolve to continue to work with Congressmen Inslee and Doyle, the Committee and all its members, and the other stakeholders to that end.

EXHIBIT 1

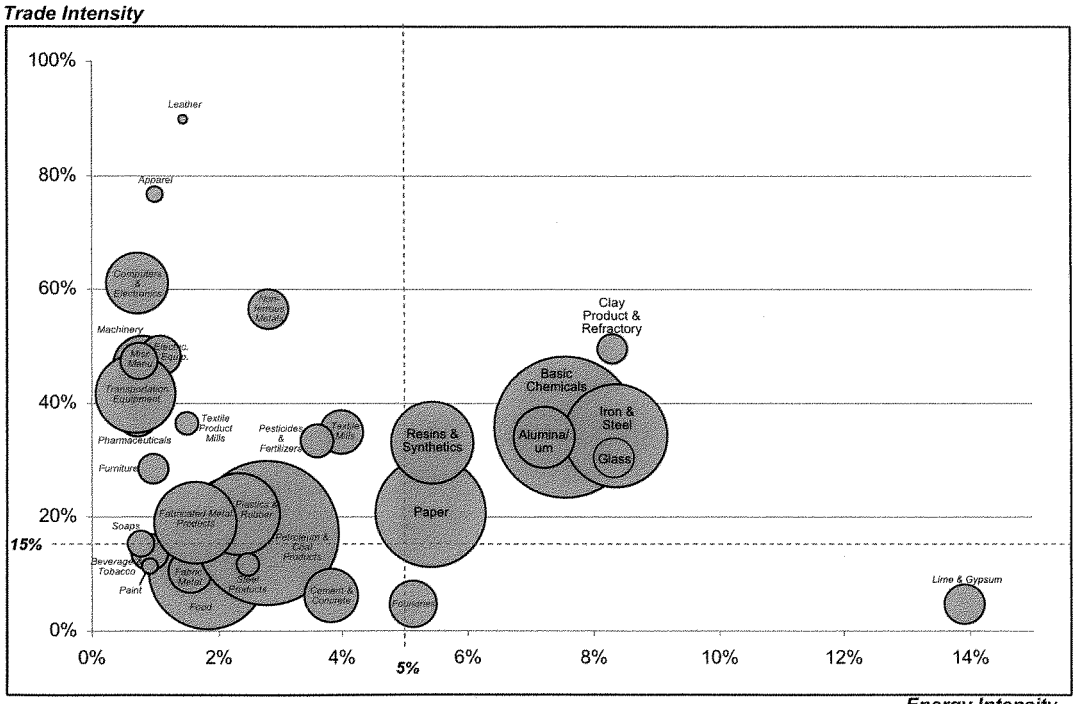
Greenhouse Gas Emissions Legislation
Leakage-Exposed Manufacturers

Briefing Book

April 23, 2009

FTI
Rob Fisher
(202) 589-3408

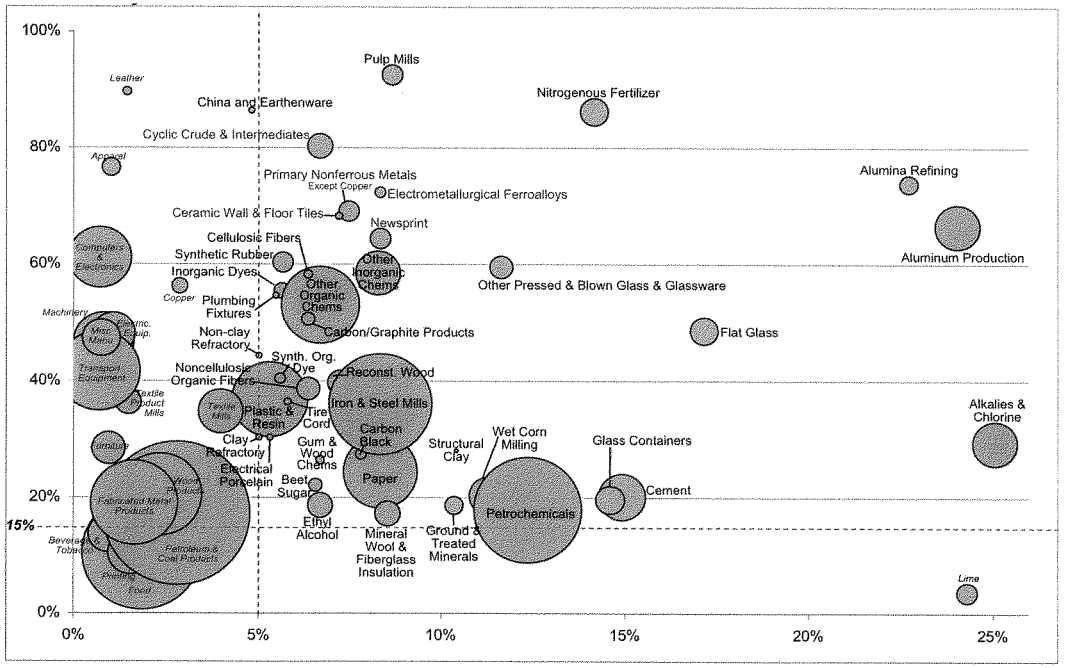
US Manufacturing Leakage Exposure: Aggregate Level



Trade-Intensity = (Imports+Exports) / (Value of Shipments+Imports)
Energy-Intensity = (Energy & Fuel Costs + Generation) / Value of Shipments
Size of Bubble = Amount of energy and fuel consumed as proxy for emissions
Sources: US Census 2006 Annual Survey of Manufacturers, EIA 2002 MECS, US International Trade Commission Tariff & Trade DataWeb

US Manufacturing Leakage Exposure: Detailed Industry Level

Trade Intensity



Energy Intensity

Trade-Intensity = (Imports+Exports) / (Value of Shipments+Imports)
Energy-Intensity = (Energy & Fuel Costs + Generation) / Value of Shipments
Size of Bubble = Amount of energy and fuel consumed as proxy for emissions
Sources: US Census 2006 Annual Survey of Manufacturers, EIA 2002 MECS, US International Trade Commission Tariff & Trade DataWeb

Leakage Exposure

To identify the manufacturing industries that are the most highly exposed to this leakage issue, we calculated the energy intensity and trade intensity of each manufacturing sub-industry (at the 6-digit NAICS code).

Methodology for Calculating Energy-Intensity and Trade-Intensity

- We first calculated the energy intensity of each industry. The primary data source we used was the most recent Annual Survey of Manufacturers (ASM) from the US Census, which includes data for 2004-2006. From the ASM we calculated the costs of purchased electricity and of purchased fuel as a percentage of the value of shipments.

- For export and import data, we relied on the US International Trade Commission's Trade Dataweb statistics for 2004-2006, which provides trade data at the 6-level NAICS level.

    - For Imports, we used the US Imports for Consumption category and within that category, we used the CIF Import Value.
    - For Exports, we used the Domestic Exports category. Within that category, we used FAS Value.

- Based on the work in other studies and on the EU's scheme, we have used two thresholds to determine those industries most exposed to leakage[2]:

    1) Energy intensity of **5%**
    2) Trade intensity of **15%**

- The maximum for the last three years of available data (2004-2006) was used to determine eligibility. So, for example, if an industry's energy intensity for the last three years respectively was 4%/5%/4%, it met the eligibility requirement.

[2] Ratios were rounded to nearest whole percentage point. For example, a calculated energy intensity of 4.51% or higher was rounded up to 5.0% and thus met the 5% threshold.

Methodology for Calculating Energy-Intensity and Trade-Intensity (continued)

- 41 industries met these two criteria.
- In addition, we included NAICS code 311210 (Iron and steel tube and pipe from purchased steel) in order to treat it the same for eligibility purposes as tube and pipe manufactured on an integrated basis.
- We added NAICS code 212210 (Iron ore mining and processing) to capture the beneficiation and other processing for similar reasons – to treat products the same for eligibility purposes whether they are produced at an integrated or non-integrated facility.
- To determine eligibility for the copper industry, we combined the energy and trade data for NAICS codes 331411 (Primary smelting and refining) and 212234 (Copper and nickel mining) to properly capture all copper processing whether the beneficiation of ore occurs at an integrated or non-integrated facility.
- A product that meets the energy intensity and trade intensity criteria should be considered eligible even if the facility that produces it is classified in a non-qualifying NAICS code by virtue of the facility's other products or the facility's ultimate product.

Qualifying Manufacturing Industries

Sectors	NAICS	Sub-Industry	Leakage-Intensity		Value of Shipments
			Energy Intensity	Trade Intensity	
Pulp, Paper & Newsprint Mills	322110	Pulp mills	9%	92%	4
	322121	Paper (except newsprint) mills	8	24	47
	322122	Newsprint mill products	8	64	4
Basic Chemicals	325110	Petrochemicals	12	18	66
	325131	Inorganic dyes and pigments	6	55	4
	325132	Synthetic organic dyes and pigments	6	40	3
	325181	Alkalies and chlorine	25	29	6
	325182	Carbon black	8	27	2
	325188	All other basic inorganic chemicals	8	58	19
	325191	Gum and wood chemicals	7	26	1
	325192	Cyclic crude and intermediates	7	80	9
	325193	Ethyl alcohol	7	18	8
	325199	All other basic organic chemicals	7	53	69
	325211	Plastics material and resins	5	37	79
	325212	Synthetic rubber	6	60	7
	325221	Cellulosic organic fibers	6	58	1
	325222	Non-cellulosic organic fibers	6	38	7
Nitrogenous fertilizer	325311	Nitrogenous fertilizer	14	86	4
Ceramics/Porcelain	327111	Vitreous china plumbing fixtures	6	55	1
	327112	Vitreous china and earthenware articles	5	86	1
	327113	Porcelain electrical supplies	5	30	1
	327122	Ceramic wall and floor tiles	7	69	1
	327123	Other structural clay products	10	28	0.2
	327124	Clay refractory	5	30	1
	327125	Non-clay refractory	5	44	1
Glass Production	327211	Flat glass	17	48	3
	327212	Other pressed and blown glass and glassware; incl. optical fiber	12	59	4
	327213	Glass containers	15	20	4
Cement	327310	Cement	15	20	11
Fiberglass	327993	Mineral wool	9	17	6
Iron & Steel	331111	Iron and steel	8	36	92
	331112	Electrometallurgical ferroalloy products	8	72	1
	331210	Iron and steel pipe and tube from purchased steel			10
	212210	Iron ore mining and beneficiation	18	54	2
Alumina/um	331311	Alumina refining	23	74	1
	331312	Primary aluminum production	24	66	6
Copper	331411	Primary smelting and refining of copper	6	71	10
	212234	Copper and nickel mining and beneficiation			
Other Industries	311221	Wet corn milling	11	20	10
	311313	Beet sugar	7	22	3
	314992	Tire cord and tire fabric mills	6	34	1
	321219	Reconstituted wood products	7	39	8
	327992	Ground or treated minerals and earth	10	19	3
	331419	Primary nonferrous metal (except copper and aluminum)	8	69	5
	335991	Carbon and graphite products	8	50	2

Trade-Intensity = (Imports+Exports) / (Value of Shipments+Imports)
Energy-Intensity = (Energy & Fuel Costs + Generation) / Value of Shipments
Sources: US Census 2006 Annual Survey of Manufacturers, EIA 2002 MECS, US International Trade Commission Tariff & Trade DataWeb
EPA -- Inventory of US Greenhouse Gas Emissions and Sinks, 1990-2006
Note: Percentages are rounded to nearest percentage point

Qualifying Industry Descriptions

NAICS	NAICS Name	Description
311221	Wet corn milling	Wet milling corn and other vegetables (except to make ethyl alcohol) to make such products as corn sweeteners (eg, glucose, dextrose, and fructose); corn oil; and starches (except laundry)
311313	Beet sugar	Refined sugar from sugarbeets
314992	Tire cord and tire fabric mills	Cord and fabric of polyester, rayon, cotton, glass, steel, or other materials for use in reinforcing rubber tires, industrial belting, and similar uses
321219	Reconstituted wood products	Reconstituted wood sheets and boards, such as waferboard, oriented strandboard and particleboard
322110	Pulp mills	Pulp manufacturers that do not make paper or paperboard; pulp is made by separating the cellulose fibers from the other impurities in wood or other materials
322121	Paper mills	Paper (except newsprint and uncoated groundwood paper) made from pulp; may also manufacture or purchase pulp
322122	Newsprint mill products	Newsprint and uncoated groundwood paper from pulp
325110	Petrochemicals	Acyclic (aliphatic) hydrocarbons (eg. ethylene, propylene, and butylene) and/or cyclic aromatic hydrocarbons (eg. benzene, toluene, styrene, xylene, ethyl benzene, and cumene) made from refined petroleum or liquid hydrocarbon
325131	Inorganic dye and pigments	Black pigments, except carbon black, white pigments, and color pigments.
325132	Synthetic organic dye and pigments	Includes lakes and toners (except electrostatic and photographic)
325181	Alkalies and chlorine	Chlorine, sodium hydroxide (i.e., caustic soda), and other alkalies often using an electrolysis process
325182	Carbon black	Carbon black, bone black, and lamp black
325188	All other basic inorganic chemicals	Basic inorganic chemicals (except industrial gases, inorganic dyes and pigments, alkalies and chlorine, and carbon black)
325191	Gum and wood chemicals	Wood or gum chemicals (eg, naval stores, natural tanning materials, charcoal briquettes, and charcoal, except activated) or Distillation of wood or gum into products (eg, tall oil and wood distillates)
325192	Cyclic crude and intermediates	Cyclic crudes or, cyclic intermediates (i.e., hydrocarbons, except aromatic petrochemicals) from refined petroleum or natural gas or the distillation of coal tars
325193	Ethyl alcohol	Nonpotable ethyl alcohol
325199	All other basic organic chemicals	Basic organic chemical products (except aromatic petrochemicals, industrial gases, synthetic organic dyes and pigments, gum and wood chemicals, cyclic crudes and intermediates, and ethyl alcohol)
325211	Plastics material and resins	Resins, plastics materials, and nonvulcanizable thermoplastic elastomers and mixing and blending resins on a custom basis and/or noncustomized synthetic resins
325212	Synthetic rubber	Synethetic rubber such as Styrene-Butadiene-Rubber (SBR), butyl, polychloroprene, and stereo polyisoprene elastomers
325221	Cellulosic organic fibers	Cellulosic (i.e., rayon and acetate) fibers and filaments in the form of monofilament, filament yarn, staple, or tow
325222	Non-cellulosic organic fibers	Noncellulosic (i.e., nylon, polyolefin, and polyester) fibers and filaments in the form of monofilament, filament yarn, staple, or tow
325311	Nitrogenous fertilizer	Production of fertilizer through inorganic (Synthetic ammonia, nitric acid, urea, and ammonium compounds) or organic sources
327111	Vitreous china plumbing fixtures	Vitreous china plumbing fixtures and china and earthenware bathroom accessories, such as faucet handles, towel bars, and soap dishes
327112	Vitreous china and earthenware articles	Table and kitchen articles, art and ornamental items, and similar vitreous china, fine earthenware, stoneware, coarse earthenware, and pottery products
327113	Porcelain electrical supplies	Porcelain electrical insulators, molded porcelain parts for electrical devices, ferrite or ceramic magnets, and electronic and electrical supplies from nonmetallic minerals, such as clay and ceramic materials
327122	Ceramic wall and floor tiles	Includes mosaic and quarry tiles
327123	Other structural clay products	Clay sewer pipe, drain tile, flue lining tile, architectural terra-cotta, and other structural clay products
327124	Clay refractory	Clay refractory, mortar, brick, block, tile, and fabricated clay refractories, such as melting pots. A refractory is a material that will retain its shape and chemical identity when subjected to high temperatures and is used in applications that require extreme resistance to heat, such as furnace linings.

Qualifying Industry Descriptions

NAICS	NAICS Name	Description
327125	Non-clay refractory	Nonclay refractory, mortar, brick, block, tile, and fabricated nonclay refractories such as graphite, magnesite, silica, or alumina crucibles.
327211	Flat glass	Flat glass made by melting silica sand or cullet (includes integrated facilities that also produce laminated glass)
327212	Other pressed and blown glass and glassware	Glass made by melting silica sand or cullet and products made by pressing, blowing, or shaping glass or glassware (except glass packaging containers); Also includes fiber optics
327213	Glass containers	Glass containers for commercial packing and bottling, and for home canning, including bottles and jars
327310	Cement	Portland, natural, masonry, pozzalanic, and other hydraulic cements; manufacturers may calcine earths or mine, quarry, manufacture, or purchase lime
327992	Ground or treated minerals and earth	Calcining, dead burning, or otherwise processing beyond beneficiation, clays, ceramic and refractory minerals, barite, and miscellaneous nonmetallic minerals
327993	Mineral wool and fiberglass insulation	Mineral wool and mineral wool (i.e., fiberglass) insulation products made of such siliceous materials as rock, slag, and glass or combinations thereof
331111	Iron and steel mills	Steel production, direct reduction of iron ore, manufacture of pig iron, conversion of pig iron into steel, includes both BOF and EAF; includes integrated facilities that also manufacture shapes (e g., bar, plate, rod, sheet, strip, wire) or form tube and pipe
331112	Electrometallurgical ferroalloys	Ferroalloys add critical elements, such as silicon and manganese for carbon steel and chromium, vanadium, tungsten, titanium, and molybdenum for low- and high-alloy metals
331210	Iron and steel pipe and tube from purchased steel	Welded, riveted, or seamless pipe and tube from purchased iron or steel
212210	Iron ore mining and processing	Mine site development, mining, and/or beneficiation (i.e., preparation) of iron ores and manganiferous ores valued chiefly for their iron content and/or (2) sinter iron ore production (except iron ore produced in iron and steel mills) and other iron ore agglomerates
331311	Alumina refining	Alumina (i.e , aluminum oxide) refining generally from bauxite
331312	Primary aluminum production	Aluminum production from alumina; includes integrated facilities that also roll, draw, extrude, or cast the aluminum into primary forms (e g., bar, billet, ingot, plate, rod, sheet, and strip)
331411	Primary smelting and refining of copper	Smelting of copper ore and/or the primary refining of copper by electrolytic methods or other processes to makeprimary copper and copper-based alloys, such as brass and bronze, from ore or concentrates
212234	Copper and nickel ore mining and beneficiation	Mine site development, mining, and/or beneficiation (i.e., preparation) of copper and/or nickel ores, and recovery of copper concentrates by the precipitation, leaching, or electrowinning of copper ore
331419	Primary nonferrous metals (except copper and aluminum)	Primary production of nonferrous metals by smelting ore and/or by electrolytic methods or other processes; includes lead, gold, silver, titanium, zinc and magnesium
335991	Carbon and graphite products	Carbon, graphite, and metal-graphite products including fibers, brushes and brush stock, and electrodes for thermal and electrolytic uses

Methodology for Estimating Emissions

After identifying the manufacturing industries exposed to carbon leakage, we then estimated the emissions for these qualifying industries to determine the scope of required allowances to address the issue. We estimated the 2007 emissions based on available EPA and EIA data. Since sufficient emissions data are not available at a sub-sector level, we needed to make certain assumptions based primarily on electricity and fuel use to estimate emissions for qualifying industries.

Emissions (EPA's Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2007)[3]
(Million metric tons CO_2 Equ.)

	Fuel Combustion	Electricity	Industrial Processes	Other Emissions	Total
Total	3,350	2,397	328	992	**7,068**
Industrial	857	708			1,565
Manufacturing	802	614			1,416
Representative Industries	**391**	**222**	**158**		**771**
% of Total Emissions	5.5%	3.1%	2.2%		10.9%
% of 2012 Allowances *(Est. 5,775)*	6.8%	3.8%	2.7%		13.4%

- We started with the EPA 2007 emissions for the Industrial sector, broken out between combustion and electricity.
- Using the EIA's Annual Energy Outlook 2008, we calculated the percentage of Industrial emissions that Manufacturing represented for electricity (87%) and for consumption (94%).[4]

[3] The Total and Industrial rows are from the EPA, remaining data is derived
[4] The Industrial sector is Manufacturing plus Agriculture, Forestry, Fishing, Hunting, Mining and Construction

Methodology for Estimating Emissions (continued)

- The next step was to allocate the overall Manufacturing emissions to each sub-industry of the Manufacturing sector to determine how many emissions our qualifying industries represent. To allocate electricity emissions, we applied the percentage of purchased and generated kWhs of electricity (from the ASM) for each sub-industry to the overall electricity emissions figure (614 million) for Manufacturing.

- To estimate the consumption emissions, we started with the manufacturing consumption figure derived from the EPA (802 million). We used the EIA's 2006 paper[5] to determine the initial allocation percentages. We first added up the emissions for all the fuel sources and calculated the percentage of the total for each industry. Over 90% of the consumption emissions are allocated to an industry. We allocated to sub-industries where necessary based on the emissions data given and then based on the fuel spend. For the remaining 8.6%, we allocated to the other industries based on fuel spend.

- We assigned/allocated the process emissions from the EPA to the individual industries.

- Definitions of emissions categories:

    - Fuel Combustion: Fossil fuel combustion to generate heat, steam or electricity to power industrial processes

    - Electricity: Indirect emissions from purchased electricity

    - Industrial Processes: Byproduct or fugitive emissions of greenhouse gases from industrial processes not directly related to energy activities such as fossil fuel combustion

[5] Energy-Related Carbon Dioxide Emissions in US Manufacturing (November 2006; Mark Schipper)

Emissions for Qualifying Manufacturing Industries
(million metric tons CO_2 Equ.)

Manufacturing Industry	NAICS	Sub-Industry	Fuel Combustion	Electricity	Industrial Processes	TOTAL
Food	311221	Wet corn milling	14	6		19
	311313	Beet sugar	3	1		4
Textiles	314992	Tire cord and tire fabric mills	0	1		1
Wood Products	321219	Reconstituted wood products	2	4		6
Paper	322110	Pulp mills	2	1		3
	322121	Paper (except newsprint) mills	28	20		48
	322122	Newsprint mill products	2	2		3
Chemicals	325110	Petrochemicals	27	10	4	41
	325131	Inorganic dyes and pigments	1	1		3
	325132	Synthetic organic dyes and pigments	1	1		2
	325181	Alkalies and chlorine	11	14	2	26
	325182	Carbon black	5	1		5
	325188	All other basic inorganic chemicals	7	15		22
	325191	Gum and wood chemicals	1	0		1
	325192	Cyclic crude and intermediates	3	3		6
	325193	Ethyl alcohol	6	3		9
	325199	All other basic organic chemicals	52	24	6	82
	325211	Plastics material and resins	46	21		67
	325212	Synthetic rubber	2	1		3
	325221	Cellulosic organic fibers	1	1		1
	325222	Non-cellulosic organic fibers	3	4		7
	325311	Nitrogenous fertilizer	9	3	36	48
Non-Metallic Mineral Products	327111	Vitreous china plumbing fixtures	0.4	0.1		0
	327112	Vitreous china and earthenware articles	0.3	0.1		0.4
	327113	Porcelain electrical supplies	0.2	0.3		0.5
	327122	Ceramic wall and floor tiles	1	0		1
	327123	Other structural clay products	0.2	0.0		0.2
	327124	Clay refractory	0.3	0.2		0.5
	327125	Non-clay refractory	0.4	0.2		1
	327211	Flat glass	3	1	1	4
	327212	Other pressed and blown glass and glassware	2	2	0.4	4
	327213	Glass containers	3	2	1	6
	327310	Cement	29	8	45	82
	327992	Ground or treated minerals and earth	2	1		3
	327993	Mineral wool	2	3		5
Primary Metals	331111	Iron and steel	111	36	54	201
	331112	Electrometallurgical ferroalloy products	1	1		2
	331210	Iron and steel pipe and tube from purchased steel	1	1		2
	212210	Iron ore mining and beneficiation	3	4		8
	331311	Alumina refining	2	0.3	1	4
	331312	Primary aluminum production	4	17	7	28
	331411	Primary smelting and refining of copper	1	0.4		1
	212234	Copper and nickel mining and beneficiation	1	3		4
	331419	Primary nonferrous metal (except copper and aluminum)	1	3	4	7
Electrical Equipment	335991	Carbon and graphite products	0.5	1		1
			391	222	158	771

Fuel Combustion Fossil fuel combustion to generate heat, steam or electricity to power industrial processes
Electricity: Indirect emissions from purchased electricity
Industrial Processes Byproduct or fugitive emissions of greenhouse gases from industrial processes not directly related to energy activities such as fossil fuel combustion

Frequently Asked Questions

- Why use energy intensity rather than emissions?
  For purposes of identifying qualifying industries, as opposed to calculating the number of allowances to be awarded, energy spending arguably is a better metric than emissions to determine the financial impact to manufacturing industries of greenhouse gas legislation. For instance, firms may be impacted by the increases in the cost of natural gas that will be inversely related to natural gas's relative carbon intensity advantage. Any emissions metric also will depend on an assumed allowance price, which is difficult to estimate. In addition, emissions data is not readily available at a detailed industry level. There are 473 Manufacturing sub-industries (6-digit NAICS). No known resource provides emissions data, or even detailed fuel usage data from which emissions could be derived, at a level of detail anywhere close to that. In any event, energy spending serves as a reasonable proxy for emissions since combustion emissions are a function of the energy used, varying only by the mix of fuels.

- Why use the Census's ASM rather than EIA's MECS?
  The most recent data for the MECS Survey is from 2002 rather than from 2006 for the ASM. Additionally, the ASM provides data on a much more granular NAICS level than the MECS Survey does. For the 473 NAICS sub-industries (6-digit), MECS provides energy data for only 39 at the 5- or 6-digit level. ASM provides 2005 or 2006 energy data for 472 of the 473 industries (Petrochemicals is the only one with no data) at 5- or 6-digit level. We have validated our results against MECS and in the case of Petrochemicals, we used the MECS data.

- Why is Imports in both the numerator and the denominator of the trade intensity formula?
  The size of any US market in which a manufacturer competes equals Domestic Production + Imports, where Exports are a subset of Domestic Production. Using Imports in the denominator of the trade intensity formula keeps the ratio from exceeding 100%. Note: We have used the same ration that is used by the EU.

- How is the variability from year to year in energy intensity and trade intensity addressed?
  We used the maximum of the three years (2004-2006) for energy intensity and trade intensity, which minimizes situations where an industry may qualify one year and not another. However it should be noted that these metrics have very little variability from year to year. The average annual change in energy intensity is only 0.2%. The average annual change in trade intensity is only 3%.

Mr. MARKEY. Thank you, Mr. McMackin, very much.

Our second witness is back again. We welcome you, sir, Rich Wells. He serves as Vice President of Energy for Dow Chemical Company. He has also had lead position in management at Dow Chemical's global advocacy activities in the areas of climate change and energy policy. He was appointed to the Michigan Climate Change Action Council in 2008.

We welcome you, sir. Whenever you are ready, please begin.

STATEMENT OF RICH WELLS

Mr. WELLS. Thank you, Mr. Chairman. I appreciate the opportunity to provide our views on the competitiveness provisions of the American Clean Energy and Security Act. I am Vice President of Energy for Dow Chemical, a leading specialty chemical and advanced materials company with over 50,000 employees, half of which are located in the U.S.

Today, I would like to address Dow's position on climate change. As a member of U.S. Climate Action Partnership, or US–CAP, Dow supports enactment of environmentally effective, economy sustainable, and fair climate change legislation.

As a representative from an energy intensive and trade exposed sector, I would like to give you a glimpse into what the chemical industry is doing to save Americans energy and reduce their greenhouse gas emissions.

Since 1990, the U.S. chemical industry has achieved energy efficiency gains of 28 percent. At Dow, that number is 38 percent. In Dow's case, we have saved over 1,600 trillion BTUs of energy since 1994, the electrical equivalent to power every home in California for one year. And our track record on greenhouse gas emissions reductions is equally impressive. At Dow, we have reduced our greenhouse gas emissions by over 20 percent. This has resulted in preventing more than 86 million metric tons of CO_2 from entering the atmosphere. The U.S. chemical industry as a whole can report similar numbers, numbers that would have exceeded Kyoto Protocol targets.

The chemical industry also contributes a number of energy saving products and materials to American society. This includes building and appliance insulation, as well as material that enables solar and wind power and other efficiency applications such as lighting.

Simply put, the American chemical industry uses energy to save energy. In fact, a soon to be released McKenzie study shows that the products of chemistry reduce an average of three tons of greenhouse gas emissions for every one ton produced in our manufacturing process. As you can see, from an energy and greenhouse gas reduction viewpoint, this is an excellent story. However, from an economic standpoint the situation is much different.

Over the past 10 years, the U.S. chemical industry, a $660 billion enterprise, has lost over 120,000 jobs, or approximately 15 percent of our total workforce. For the most part, this loss of jobs can be attributed to high and volatile energy prices. As an example, Dow's energy and feedstock costs have gone from $8 billion in 2002 to over $27 billion in 2008.

In order for a cap-and-trade system to be economically sustainable, it must be designed such that American energy intensive and trade exposed manufacturers remain globally competitive. We see the approach included in the discussion draft as a positive step towards protecting U.S. manufacturers. This approach defines these sectors based on objective criteria, and includes a provision to reduce or eliminate the allowances when the potential for carbon leakage has been reduced or eliminated. However, I would caution that it is critical the number of allowances be adequate to compensate those sectors that meet the eligibility criteria. If Congress does not set aside enough allowances to address the carbon leakage issue, then it will fail to protect American jobs in the manufacturing sector.

We also believe it is critical that the allowances not be reduced or eliminated until the competitive disadvantage is reduced or eliminated. Targeted assistance to energy intensive industries should be terminated only when the carbon leakage problem is solved through an international agreement.

In addition to the provisions that pertain to energy intensive and trade exposed sectors, other provisions of the bill also would impact the competitiveness of U.S. Manufacturers. For example, the bill would provide compensatory allowances to companies that use fossil energy as a feedstock material rather than as a fuel source.

Unfortunately, this provision is unworkable in its current form, and we recommend that it be modified to ensure that nonemissive uses of fossil energy are properly compensated.

Dow also recommends changes to the bill to avoid excessive fuel switching from coal to natural gas in the power sector. These changes would include establishing a trigger price for the release of additional allowances and offsets from the Strategic Reserve to avoid the so-called dash to gas.

In conclusion, Congress should pass energy and climate change legislation that maintains the competitiveness of U.S. manufacturers as we transition to a low carbon economy.

I thank you for the opportunity to speak today. I look forward to your questions.

[The prepared statement of Mr. Wells follows:]

The Dow Chemical Company

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STATEMENT FOR THE RECORD

SUBCOMMITTEE ON ENERGY AND ENVIRONMENT
COMMITTEE ON ENERGY AND COMMERCE

HEARING ON

The American Clean Energy Security Act of 2009

April 23, 2009

Submitted By:
Rich Wells
Vice President, Energy

The Dow Chemical Company appreciates the opportunity to submit these written comments to the Subcommittee on Energy and Environment, Committee on Energy and Commerce on the competitiveness provisions of the American Clean Energy Security Act of 2009.

Dow was founded in Michigan in 1897 and is one of the world's leading manufacturers of chemicals and plastics. We supply products to customers in 160 countries around the world, connecting chemistry and innovation with the principles of sustainability to help provide everything from fresh water, food, and pharmaceuticals to paints, packaging, and personal care products

Dow is committed to sustainability. We have reduced our absolute levels of greenhouse gas (GHG) emissions 22% since 1990, and we are committed to do even better in the future. Our ambitious 2015 sustainability goals underscore this commitment.[1]

Dow is an energy-intensive company. We use energy, primarily natural gas and natural gas liquids, as a feedstock material to make a wide array of products. For its global operations, Dow uses the energy equivalent of 850,000 barrels of oil every day. This amount is more than the oil consumption of some countries, such as The Netherlands or Australia.

Because roughly half of our operating costs are energy costs, Dow is actively investigating and moving forward on alternate feedstock materials such as glycerin to propylene glycol (for use in antifreeze) and soy to polyols (for use as cushioning in furniture).

Despite being energy-intensive, Dow products help consumers save energy and reduce GHG emissions. For the home or business, our insulation and polyurethane foam sealants can reduce home and business energy costs by 20%-30%. In 2008, a third-party validated lifecycle assessment found that the avoided emissions from the use of Dow insulation products in service are about seven times greater than our company's total annual emissions.[2] For saving energy on the road, our new diesel particulate filter technology enables improved environmental performance and fuel efficiency. We offer amines technology to capture carbon dioxide emissions from the power sector. We also offer plastics, composites, and adhesives to help make cars stronger and lighter, while improving overall gas mileage. For the industrial sector, we have saved energy by down-gauging industrial stretch film, a process of making a plastic film thinner but stronger, so that less plastic (and feedstock energy) can be used while getting the same benefits in use.

This testimony describes the challenges faced by an energy-intensive, trade-exposed company under a US policy to control greenhouse gas (GHG) emissions. Specific focus is on the competitiveness provisions of the March 31, 2009 draft energy and climate bill developed by Chairman Waxman and Rep. Markey. This testimony also identifies other important provisions of the bill that will have a significant impact on competitiveness.

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[1] To learn more about Dow's commitment to sustainability, go to our website at www.dow.com.
[2] To learn more, see our 2008 annual report at www.dow.com/financial/pdfs/161-00722.pdf

USCAP Perspective

As a member of the U.S. Climate Action Partnership (USCAP), Dow supports prompt enactment of environmentally effective, economically sustainable and fair climate change legislation to reduce U.S. greenhouse gas emissions sharply by mid-century. The centerpiece of legislation should be an economy-wide cap and trade program. This market-based approach is the best way to put a price on carbon and ensure that short- and long-term emissions targets are met.

USCAP launched its landmark report, titled *A Call for Action*[3], in January 2007, which lays out a legislative framework for climate protection. Most recently, USCAP released *A Blueprint for Legislative Action*, which provides consensus recommendations for climate protection legislation. USCAP includes a total of 30 businesses and environmental organizations.[4] The coalition recognizes that the United States faces an urgent need to reinvigorate our nation's economy, make the country more energy secure, and take meaningful action to slow, stop, and reverse GHG emissions to address climate change. Thoughtful and comprehensive national energy and climate policy will help secure our economic prosperity and provide American businesses and the nation's workforce with the opportunity to innovate and succeed.

According to USCAP, manufacturers and industries that deal with certain commodity products that are both energy-intensive and trade-exposed will be particularly challenged by US climate policy if they face competition from countries that have not committed to an internationally recognized GHG-emission-reduction path. In such cases, there is a risk of "leakage", by which we mean the shifting of production (and jobs) and GHG emissions from the US to these other countries.

To remedy this situation, USCAP recommends that an adequate amount of allowance value be provided to US manufacturers facing such competition (determined by objective criteria). USCAP recommends that these allowances be tied to any GHG-related competitive imbalance and reduced or eliminated when the GHG-related competitive imbalance is reduced or disappears. USCAP also believes that any provisions designed to address competitiveness should be consistent with World Trade Organization rules.

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[3] *A Call for Action* and *A Blueprint for Legislative Action* can be found at www.us-cap.org.

[4] The current members of USCAP are: Alcoa; Boston Scientific Corporation; BP America, Inc.; Caterpillar Inc.; Chrysler LLC; ConocoPhillips; Deere & Co.; Dow; Duke Energy; DuPont; Environmental Defense Fund; Exelon Corporation; Ford Motor Company; FPL Group; General Electric; General Motors Corporation; Johnson & Johnson; Marsh, Inc.; Natural Resources Defense Council; NRG Energy; PepsiCo North America; Pew Center on Global Climate Change; PG&E Corporation; PNM Resources; Rio Tinto; Shell Oil Company; Siemens Corporation; The Nature Conservancy; World Resources Institute; and Xerox Corporation.

Maintaining US Competitiveness

The draft bill (Title IV, Subtitle A, Part I) includes provisions to provide compensation to energy-intensive, trade-exposed sectors that are at risk of leakage under a US program to control greenhouse gases. Representatives Inslee and Doyle have long championed this approach (as embodied in their bill, H.R.1759, the EMPLOY Act) , which Dow believes is the best way to address the competitiveness issue prior to an international agreement among major emitting countries or a global sectoral agreement.

The Inslee-Doyle approach proceeds in two steps. In the first step, EPA would identify energy-intensive, trade-exposed sectors that are at risk of leakage based on clear and objective criteria. In the second step, EPA would award rebates to eligible facilities to compensate them for some portion of their direct and indirect GHG emissions. The Inslee-Doyle approach is generally consistent with the approach outlined in the USCAP Blueprint for Legislative Action in that (1) the definition of energy-intensive and trade-exposed sectors is based on objective criteria, and (2) there are provisions to eliminate or reduce the rebates when the potential for leakage has been reduced or eliminated.

Dow would like to offer one word of caution, and recommend two changes, to this provision of the draft bill.

First, we offer a word of caution. It is critical that the rebate be adequate to compensate the sectors that meet the criteria for eligibility. If Congress implements this provision by awarding free allowances, but does not set aside enough allowances to address the leakage issue, then it will fail to protect American jobs in the critically important US manufacturing sector.

As for our recommended changes, we believe it is critical that the compensation not be reduced or eliminated until the competitive disadvantage is reduced or eliminated. The March 31 draft bill envisions a phase-down starting in 2021, which may precede creation of an internationally level playing field. Targeted assistance to energy-intensive industries should be terminated only when the carbon leakage problem is solved through an international agreement. And, it should be phased down only in proportion to progress made in reducing the cost differentials between trading partners in a fashion that demonstrably reduces the disadvantage to domestic producers—not according to an arbitrarily defined timeline.

We also believe that the compensation should address more than just direct and indirect emissions. Consider a chemical company that meets the eligibility criteria. It is likely that the largest increase in cost to such a company will be an increase in the price of fossil energy purchased as a feedstock material. To the extent that the increase in feedstock cost is not addressed elsewhere in the legislation (e.g., in the compensatory allowance provision in the draft bill, see the next section of this testimony), the facility should receive compensation to offset the increase in feedstock cost.

Protecting Feedstock Use of Fossil Energy

Dow would be remiss if we did not acknowledge that other provisions of the draft bill will impact competitiveness, and that care must be taken to ensure these other provisions are designed to protect American manufacturing jobs.

The bill imposes a point of regulation not just on those who emit GHGs, but also on those who produce fossil energy (i.e., petroleum products). This means that there will be a price signal imposed not just on fossil energy that is combusted, but also on fossil energy that is used as a feedstock material to make carbon-based products that are not designed to be combusted and many of which help people save energy.

To minimize the price signal imposed on fossil energy used as a feedstock, the draft bill (Title III, Section 721f) would provide compensatory allowances to those who use fossil energy in non-emissive ways, such as a feedstock material. Unfortunately, the definition of "non-emissive use" is so restrictive that, in our opinion, no company would be able to claim a single compensatory allowance. In addition, such compensatory allowances would not be bankable, and the timing of the issuance of such compensatory allowances is unclear.

Dow recommends four changes to this section: (1) allow compensatory allowances to be bankable, (2) require EPA to provide compensatory allowances within the first 90 days of the year immediately following the feedstock use, (3) change the definition of non-emissive use to refer to the extent to which the carbon content of the fossil energy remains in the substance created through the manufacturing process, and (4) require that EPA provide free allowances equal to the tons of CO_2(e) sequestered. Such changes would compensate chemical companies for using fossil energy not as a fuel, but as a feedstock, thereby preventing GHG emissions from entering the atmosphere. This issue is likely the most critical issue to the chemical sector in the March 31, 2009 version of the draft bill.

Preventing a "Dash to Gas"

One of the easiest, and most likely, ways to meet aggressive, short-term emission reduction targets, such as those in the draft bill, is through fuel switching from coal to natural gas in the power sector. Too strong a price signal on carbon would exacerbate such a movement, which is already underway even in the absence of a US program to reduce GHG emissions. If fuel switching is excessive, demand for US natural gas will rise, and US manufacturers that depend on natural gas will suffer.

The fuel-switching solution could be economically ruinous for those industrial businesses and consumers dependent on affordable natural gas, if natural gas supply does not keep pace with rising demand, or if natural gas supply lags significantly behind demand. Recent US history suggests this is a plausible scenario.

Natural gas prices have skyrocketed by more than 460% over the last eight years. The increase in price volatility has significantly contributed to the US manufacturing sector losing over 3.7 million jobs, the chemical industry losing nearly 120,000 jobs[5], and the permanent loss of nearly half of the US fertilizer production capacity. The manufacturing sector, which has limited fuel switching ability, has become the shock absorber for high natural gas costs. For the forest products industry, energy is the third largest manufacturing cost—up fifty percent in recent years for pulp and paper mills. For some mills, the cost has eclipsed employee compensation.

Dow first expressed alarm about high natural gas prices in 2002. At that time, our total annual energy and feedstock bill was $8 billion. In 2008, our energy bill was $27 billion. Our energy expenditures are by far the largest component of our production costs, and equate to about half of our total revenues.

Congress has been enticed into over-reliance on natural gas before. The Clean Air Act Amendments of 1990 were enacted with the belief that natural gas would be the clean fuel of the future and would be cheap and plentiful. Unfortunately, Congress did not anticipate the run-up in natural gas prices and the resulting demand destruction in the industrial sector.

We view the recent softening of natural gas prices to be associated with the weakening economy. We do not believe the current market prices for natural gas are indicative of the future. Congress must anticipate the future demand for natural gas as the economy rebounds. According to EPA/DOE analyses, cap and trade legislation will increase the demand for natural gas at least in the near-term (prior to 2030), as power companies find it economical to fuel switch from coal to less-CO_2-intensive natural gas. In the longer-term, fuel switching is of less concern as new technology is deployed to cost-effectively address GHG emissions from coal-fired power plants.

In designing a cap and trade program, several different elements (targets and timetables, cost containment, and complementary policies for coal and energy efficiency) will impact the degree of fuel switching, and Congress should keep all of these in mind as it develops a climate policy. Dow recommends that any US climate policy be designed in ways to minimize fuel switching. We commend the complementary policies for energy efficiency in the draft bill, which will help to reduce the degree of fuel switching that would otherwise occur in the absence of such complementary policies.

Dow recommends that the following changes be made to the March 31 draft bill to minimize the possibility of fuel switching in the power sector: (1) follow the USCAP recommendation of grants for the first 5 GW of coal-fired, CCS-enabled, power by 2015,

[5] The chemical industry uses 1.93 trillion cubic feet (TCF) of natural gas annually, representing 8% of US natural gas consumption. The majority of steam boilers and cogeneration units in the manufacturing sector are powered by natural gas. The remainder is for feedstock purposes. Due to the historic abundance and low cost of natural gas in the USA, natural gas has been vital to domestic chemical production.

(2) increase the maximum limit on offsets from 2 billion per year to between 2-3 billion per year (in keeping with another USCAP recommendation), (3) change the ratio of offsets to allowances from 1.25:1 to 1:1, and (4) change the price trigger for releasing offsets or allowances from the strategic reserve from a set formula to an approach that gives a duly–qualified entity the ability to adjust the trigger so that it prevents undue economic harm (e.g., to prevent excessive fuel switching). These changes will lessen the degree of fuel switching that would otherwise occur.

Conclusions

Dow strongly supports the framework developed by Inslee and Doyle to address competitive pressures facing energy-intensive, trade-exposed sectors of the economy. It is imperative that the set-aside of allowances be adequate to address this issue, and that these allowances not be phased-down before the competitiveness issue has been addressed. Incremental increases in the cost of fossil energy used as a feedstock and are otherwise uncompensated under this bill should be part of the calculation of energy-intensity and should also be part of the rebate (i.e., free allowances) to prevent leakage.

Dow strongly recommends that the compensatory allowance provision be altered to ensure allowances are provided to the US chemical sector for its use of fossil energy as a feedstock. The bill should allow banking of such compensatory allowances, provide for prompt delivery of such allowances, and define "non-emissive use" so as to reward companies for using fossil energy in value-creating ways rather than as a fuel to be combusted into GHG emissions.

Dow also recommends changes to the bill to avoid excessive fuel switching in the power sector. These changes ought to include grants for the first 5 GW of CCS-enabled coal-fired power by 2015, establishing a 1:1 offset to allowance ratio (rather than 1.25:1), and increasing the maximum amount of offsets from 2 billion to between 2 and 3 billion annually.

In Dow's opinion, the draft bill borrows heavily from the recommendations of USCAP, including the treatment of energy-intensive, trade-exposed sectors. However, the recommended changes described in this testimony are necessary to ensure that US manufacturing jobs are not lost due to leakage.

Appendix—Dow's Progress and Commitment To Reduce Its Climate "Footprint"

Dow accepts the Intergovernmental Panel on Climate Change (IPCC) conclusion that it is very likely that human activities are causing global warming. We recognize the serious nature of the threat and that it warrants bold action.

We understand that it is not enough to agree with consensus scientific opinion. Our commitment to sustainability requires that we act upon such information responsibly. To that end, Dow has made considerable progress in reducing its climate "footprint":

- From 1995 to 2005, in keeping with its publicly announced sustainability goals, Dow reduced its energy intensity (BTU per pound of product) by 22%, resulting in energy saving of 900 trillion BTUs, which is enough to power all the homes in the entire state of California for a year.
- Since 1990, Dow reduced its absolute greenhouse gas (GHG) emissions since to a level that exceeds Kyoto targets. Overall, emissions of Kyoto GHGs were reduced by more than 20% during this time period.
- GHG emission reductions achieved through the use of Dow products more than offset the GHGs produced during the manufacture of those products.

Although this record is positive, we are committed to continued improvement and reduction of our environmental footprint. In order for Dow to contribute even more to climate change solutions, we have developed a clear vision and key milestones for the years 2015 and 2025. Our vision will guide our decisions today and into the future, and based on this vision, we pledge to reach a number of far-reaching objectives:

- Our vision is to have contributed to the achievement of a world in carbon equilibrium, a target described by Princeton University professors Robert Socolow and Stephen Pacala in the September 2006 edition of *Scientific American*. We will have set the industry benchmark through our own performance. We will apply our innovation and expertise to help solve the world's GHG and energy challenges.

- Our key milestones:

  - By 2015, Dow will reduce its energy intensity by another 25% compared to base year 2005.
  - By 2015, Dow will reduce its GHG emissions intensity (tons of CO_2 per pounds of production) 2.5% per year.
  - By 2025, Dow will stop the growth of absolute emissions of GHG within the company. Our absolute emissions will remain below the 1990 baseline, and we will begin on a journey of year-over-year reduction in GHG emissions.
  - By 2025, Dow aims to have non greenhouse gas emissive energy provide at least 400 MW equivalents, or 10% of Dow's global electrical demand.
  - By 2050, at least 50% of the energy consumed by Dow globally will be non-carbon emitting.

Mr. MARKEY. Thank you, Mr. Wells, very much.

Now let us welcome Tom Conway, the International Vice President of the United Steel Workers. He has been in the steel business since 1978. Since working with the United Steel Workers, he has been involved in most of the major collective bargaining efforts within the United States steel industry.

We welcome you, sir.

STATEMENT OF TOM CONWAY

Mr. CONWAY. Thank you. Good afternoon. On behalf of the members of the Steel Workers, I would like to thank Chairmen Waxman and Markey and the committee for holding the hearing, and in particular recognize your leadership and the hard work you do in crafting difficult climate policy that will ensure the competitiveness of U.S. workers and their industries.

My name is Tom Conway. I am the Vice President of Steel Workers Union. The USW has long been a leader in the labor movement on environment issues, and we support the advancement of a climate policy. Our members work in nearly every sector of every economy. We produce a wide range of products, including paper, grass, cement, chemicals, aluminum, rubber, and of course steel. All these products are produced in facilities that are as efficient as any in the world, and we are ready to lead the way in the development and production in the next generation of clean energy products that will help revitalize the American economy and reassert our Nation's leadership on the cutting edge of new technology. But we can only answer that call if our jobs are not squandered to the law of unintended but not necessarily unforeseen consequences.

A well-designed climate policy can fuel America's recovery and ensure that the economy comes back stronger and cleaner than before. But a poorly designed policy can have the opposite effect and cost thousands and millions of American jobs. In commodity-based industries such as ours, even small differences in production costs can have a huge effect.

In crafting legislation, Congress must address the critical need to mitigate the competitive disadvantage that will be placed on these industries as well as the carbon leakage that will occur as a result. Only by fully addressing the leakage issue can Congress meet their environmental and investment goals, and ensure that the jobs that exist today in energy intensive industries are not lost nor the manufacturing of these products offshore. Failure to fully address these issues not only endangers our recovery from the current recession, but will likely result in making the problem of climate change worse instead of better.

For the purpose of time, I am going to get straight to our suggested improvements in the competitiveness provision, but ask that members refer to my full testimony which I have submitted to the record.

One of the most delicate balancing acts in designing an economywide climate change policy is properly constructing transition assistance to specific industries that develop clean energy process and products. We are keenly aware of all the concerns, such as quantity, time length of assistance, and windfall profits associated with this assistance. And, from that perspective, the Inslee-Doyle

approach of tying allocations or rebates to output is the best and most effective allocation system that has been proposed to date, as eligibility is targeted very narrowly to those industries which demonstrate a high energy intensity profile and a potential for significant competitive disadvantage.

However, while an allocation system such as output-based rebate systems seeks to mitigate the cost differential between domestic and international products by reducing the effective cost of compliance for producers, it is not designed to completely eliminate that differential. In the discussion draft, manufacturers and covered sectors or subsectors would be rebated 85 percent of the sector average carbon cost of producing each covered good. This rebate level would not only penalize the worst performers in the sector, but would impose an unrebated cost and a competitive disadvantage on a majority of companies in these sectors. As long as that differential exists at any level, a commensurate amount of leakage will be unavoidable. Therefore, the rebates must be coupled with a border adjustment to equalize carbon costs if the carbon leakage issue is to be fully addressed and America's environmental economic goals achieved.

Once such a broader adjustment is enacted the rebate level can and will act as an incentive to producers to reduce emissions. Until then, however, it will not eliminate the threat of leakage. In the interim, we must ensure that these cost pressures do not effectively destroy critical sectors of the economy until the full extent of the competitiveness program can be implement.

On the rebate levels, rebates to companies in covered sectors and subsectors should be increased to 100 percent of each firm's direct or indirect compliance cost from the date of enactment of the domestic program until the date of the enactment of an effective border adjustment. Once the border adjustmentis in place, we would recommend that the rebates be paid at 100 percent of the sector's average per unit of output. This will ensure the producers who are better than average for their sectors will not be penalized despite their high performance, and will provide below average producers an incentive to reduce emissions to avoid paying an unrebated cost of compliance. As these below average companies improve their performance, this will drive the sector average emissions down, prompting companies to continue to reduce emissions.

A border adjustment should be enacted as quickly as possible. Although we are aware of the arguments that suggest some period of time is necessary before it can be done to allow for negotiation of an international treaty and to meet U.N. international obligations, as such, we are prepared to accept whatever length of time is necessary for there to be done right as long as we eliminate leakage concerns during the interim through a full rebating of compliance costs.

On the issue of presidential discretion, we have strong concerns with the discretion given to the President under the International Reserve Allowance Program in the discussion draft. Under that provision, in 2017 the President is directed to make a determination whether the rebates have been effective at preventing leakage, and no requirement that he make any subsequent determination. If the President does determine that leakage is occurring, then that

leakage and the job loss that goes with it will be allowed to continue for an additional 2 to 3 years while regulations are written before a border adjustment is enacted to prevent it. If he decides no leakage exists, on that day in 2017 there is no recourse should leakage develop later, either when the rebates begin to phase out, or foreign competitors simply wait until after that day to flood our markets with dirty products.

Finally, the decision to implement a border mechanism should not be left to the discretion of the President or anyone else. The legislation should require that the border adjustment begin on a certain date, and direct the President to issue regulations in sufficient time that it may begin on time.

Addressing the potentially catastrophic issues posed by climate change is a challenge of our generation, and meeting that challenge will require the mobilization of everyone in the world behind a common purpose. It is time for America to reclaim its position of leadership in the world economy, and the United Steel Workers are ready to do everything in our power to assist that process.

Again, I am grateful to Chairmen Waxman and Markey for holding this hearing, for the leadership provided by them, particularly Mr. Inslee and Mr. Doyle. We look forward to working with you and the committee now and in the future.

[The prepared statement of Mr. Conway follows:]

Testimony of

Thomas M. Conway

International Vice President
United Steelworkers (USW)

Before the

Subcommittee on Energy and Environment
Committee on Energy and Commerce
U.S. House of Representatives

April 23, 2009

Good afternoon. On behalf of the 850,000 active members of the United Steelworkers (USW), I would like to thank Chairmen Waxman and Markey for holding this hearing on the issues facing America and the world as we attempt to address climate change and the need for clean energy. In particular, I would like to thank the chairmen and the committee for their leadership and hard work in crafting climate policy with the need to ensure U.S. competitiveness in mind. My name is Tom Conway, and I am the International Vice President of the United Steelworkers. Our members supply almost every sector of the economy, and produce a wide array of products, including paper, glass, ceramics, cement, chemicals, aluminum, rubber, and, of course, steel. They produce these energy-intensive products in facilities that are as efficient as any in the world. They are ready to lead the way in the development and production of the next generation of clean, environmentally-friendly products that will not only revitalize the American economy and reassert our leadership on the cutting edge of new technology, but will provide the long-term solution to the challenge of growing our economy while reducing emissions. Still, they can only answer that call if their jobs are not unnecessarily squandered to the law of unintended, but not unforeseen, consequences.

These unforeseen consequences are damaging enough when the economy is growing and strong, but during a long, slow recovery they can be devastating. A well-designed climate policy can augment and fuel the recovery, and ensure that the economy comes back stronger and cleaner than before. A poorly-designed climate policy, however, can create a disincentive to bring production back online in the United States, and achieve emissions reductions only at the cost of thousands or millions of American jobs.

The United Steelworkers have long been a leader in the labor movement on environmental issues. In 1990, we stated our union's environmental policy in "Our Children's World" which included our declaration of the need to address the issue of climate change, a declaration we reiterated in 2006. We were one of the first industrial unions to support comprehensive climate change legislation. USW is also a founding member of the Blue-Green Alliance, which brings together unions and environmental groups to plan a new way forward for America through the promotion of policy solutions that spur growth and investment in green technologies and products produced here in America.

We are as convinced today as we were in 1990 and 2006 that climate change is the most important environmental issue of our lifetime. It is the challenge of our time to transform the way this nation and the world operate in order to bring this problem under control before it is too late. Still, in undertaking the enormous and critical task of crafting comprehensive energy and climate legislation, Congress must ensure that the desired emissions reductions and energy transformations are achieved in a structured, responsible way. While the legislation must not only strive to reduce emissions of greenhouse gasses to the level that the best science believes is necessary and ensure the development and deployment of clean energy technologies, it must do so in a way that minimizes costs to businesses and consumers as much as possible. It must place a special emphasis on the development of a domestic investment portfolio to ensure that these new clean energy technologies and products are developed and produced here in America; ensure that domestic exporters are not unfairly disadvantaged in the global marketplace; and it must ensure as much as possible that the jobs that exist here today in energy-intensive manufacturing are not lost, nor the production of those products offshored unnecessarily by neglecting the very real and potentially disastrous problem of carbon leakage. If leakage is not addressed in the development of a climate change regime, any policy runs a significant risk of not only costing American jobs, but actually exacerbating, instead of mitigating, the problem of global warming.

Carbon Leakage

Most policy proposals to address climate change, including cap-and-trade, arise from the idea that the assessment of a cost on emissions will provide an incentive to reduce them, either through the development of more efficient processes or of new products which can be made with fewer emissions. This theory is sound, as long as those costs cannot simply be evaded by companies offshoring production or downstream producers and consumers avoiding the cost by purchasing imported goods from nations who have not taken action to address the need for climate change abatement.

In industries like steel, glass, aluminum, chemicals, rubber, and paper, this threat is particularly acute because they are commodity-based industries, in which even small differences in production costs can have a huge effect. Finding a way to mitigate the competitive disadvantage that will be placed on these industries, and the carbon leakage that would occur as a result, is critical to recovering from the current recession and achieving the goal of stopping climate change. A recent study conducted by High Road Strategies and the Millennium Institute showed that climate policies that put a price on carbon "could have significant impacts on the competitiveness of U.S. energy-intensive manufacturing sectors over the next two decades if climate regulations are applied only in the U.S."

This is a global problem, and greenhouse gas emissions affect the environment exactly the same whether they occur here or abroad. The difference is that American industry and workers are among the best in the world, producing energy-intensive goods with some of the lowest emissions in the world. The same cannot be said of many of our competitors. For example, the American steel industry has become 25% less energy-intensive over the past 20 years, while the Chinese steel industry now emits as much carbon as the rest of the global steel industry combined. The production of a ton of steel in China generates more than three times the carbon emissions of a ton of steel produced here, because China relies more heavily on

older, dirtier production methods and higher-sulfur coal than the increasingly state-of-the-art U.S. industry, and the Chinese government is lax in enforcing those environmental laws they do have.

A climate policy that fails to prevent the unnecessary offshoring of production to less efficient, more carbon-intensive countries will not only cost American jobs, but because production in those countries emits more carbon, will actually cause a net increase in the global greenhouse gas emissions from these sectors, which will only make the problem of climate change worse.

A Framework for Preventing Leakage and Maintaining American Jobs

The USW is pleased that a growing consensus is forming around the idea that, if climate change policy is to be comprehensive and effective, measures must be taken to address the issue of carbon leakage. We thank Chairmen Waxman and Markey for including a competitiveness program in Title IV of their discussion draft, and are particularly grateful for all of the hard work done on this issue by Mr. Inslee and Mr. Doyle, whose output-based rebating proposal is an important piece of the program.

USW believes any leakage program must not only address the short and medium-term needs of energy-intensive manufacturing, but do so in a way that helps to lay the groundwork for a long-term solution. In the long term, climate change is a global problem and requires a global solution. To that end, we support the United States in its work through the U.N. Framework Convention on Climate Change to negotiate an international treaty that will bring global emissions down to the level necessary to avert the worst effects of climate change. Further, USW believes that in a global economy, the unique set of issues facing energy-intensive manufacturers are best addressed through a global climate treaty that includes a set of international sectoral agreements for these industries. Only by setting up an international system where all products must bear a carbon cost commensurate with their associated emissions, no matter where they are produced, can the playing field ever truly be leveled, and the cost incentive to reduce emissions most effectively leveraged.

With an international treaty featuring international sectoral agreements for energy-intensive manufacturing as the long-term goal, the best competitiveness policy is one that not only meets the short and medium term needs of domestic manufacturers, but starts the U.S. on the road to a comprehensive system for energy-intensive products by sector, which can be folded into such an international system as efficiently as possible.

The draft bill seeks to address the competitiveness issues facing manufacturers of energy-intensive products through a hybrid approach consisting of output-based rebates backed up by a variable border adjustment on these products. We believe the approach has promise, and, with the right improvements, could provide a workable solution to carbon leakage. We look forward to working with the Committee to strengthen the proposal to ensure it fulfills the goals we all share of reducing carbon emissions, preventing carbon leakage, and supporting a revitalized clean energy economy in the United States.

Output-Based Rebates

One of the most delicate balancing acts in designing an economy-wide climate change policy is determining if and how certain industries will have the cost of such a

policy mitigated to provide transition assistance to allow those industries to develop clean energy processes and products. Within that broader question are the questions of how much cost should be mitigated, for how long, and how to structure these programs to avoid windfall profits to industries which do not need help or may simply use these windfalls to facilitate the offshoring of production.

USW is keenly aware of all of these concerns, particularly the need to retain jobs and production in this country and avoid offshoring, and to provide incentives to ensure that the goal of having emissions reduced through increased efficiency, not simply relocated, is met. From that perspective, the Inslee-Doyle approach of tying allocations or rebates to output is the best and most effective allocation system that has been proposed to date.

First, eligibility is targeted very narrowly to those industries which demonstrate a high energy-intensity profile and the potential for significant competitive disadvantage if these costs are not mitigated. Specifically, the most recent version of Mr. Inslee and Mr. Doyle's bill (H.R. 1759) and the Waxman-Markey discussion draft target these rebates to sectors or subsectors which meet the test of being at least 5% energy-intensive and 15% trade exposed. Sectors or subsectors, as defined by six-digit codes of the North American Industrial Classification System (NAICS), are considered presumptively eligible for rebates if Census Bureau data for such a sector or subsector meets the 5%/15% threshold.

Within a given six-digit NAICS code, however, the potential does exist for different emissions profiles to exist for certain products that are not the result of inefficiency, but of different processes for the production of a given product which are necessary for a fully-developed industry. The example most often used to describe this issue is the steel industry, given that steel produced in integrated facilities and steel produced in electric arc furnace facilities have very different emissions profiles (integrated facilities use more coal, but electric arc facilities use more electricity). In order to create the most direct comparison possible, it makes sense to judge integrated facilities against each other, and electric arc facilities against each other, and we are pleased that the distinction between the two is specifically addressed in the discussion draft. Still, this is not the only example of this issue, and we are also pleased to see that the discussion draft includes a petition process by which an industry may seek to have a similar determination made within other sectors or subsectors.

Although this process by which companies and sectors qualify for rebates is an improvement over previous proposals, it results in anomalies that should be corrected. NAICS codes, by necessity, are very broad even at the 6-digit level, because not all products fit into certain categories. As a consequence, the NAICS code includes miscellaneous, catch-all codes designed to capture all of the products which do not fit into one of the other codes. This anomaly can result in a situation where, for example, a producer of ceramic tiles for construction is presumptively eligible to receive rebates because those products fall under a six-digit NAICS code that is presumptively covered, but a producer of ceramic substrates for environmental equipment such as catalytic converters would not be covered because that product falls into one of these miscellaneous codes that also includes other unrelated products that do not and would not need rebates. This anomaly is an unavoidable result of using NAICS codes, and would exist at whichever level of NAICS code was chosen.

There are many benefits of using NAICS codes, however, and this anomaly can be corrected by creating procedural improvements in the individual showing provision that will reduce the burden on efficient facilities that should qualify for presumptive relief – because they are energy-intensive and trade exposed – but do not because they are classified in one of these miscellaneous codes. The individual showing provision should allow the Administrator to consider the facility's individual data along with industry data in deciding whether to grant rebates to the facility. It should also require that the Administrator make a determination within four months. This should not create a presumption of eligibility or ineligibility, and will allow all those who should be covered under the program but who are not only for NAICS classification reasons an avenue for redress.

Once the determination of covered sectors, subsectors, and facilities is determined, the amount of the rebates is determined based on the average direct and indirect costs of producing each unit of these energy-intensive products, and the appropriate amount for each unit of output produced is rebated. The link to output is key, as it prevents a company from taking its free allowances, selling them on the allowance market, and using the windfall profits to build factories in India, Mexico, Brazil, China, or elsewhere. However, as discussed in more detail below, the average efficiency component of the rebate formula will result in some producers bearing compliance costs that may create leakage concerns if an effective border adjustment is not simultaneously imposed.

Trade Mechanisms

While an allocation system such as the output-based rebate system seeks to even out the cost differential between domestic and international products by reducing the effective cost of compliance, trade mechanisms seek to even out the differential by imposing equivalent effective costs on imports and ensuring exports do not bear those costs. An effective border adjustment mechanism is critical if carbon leakage issues are to be fully addressed and global emissions reduction goals achieved. Because the output-based rebates are designed to mitigate, not completely eliminate, the cost imposed on domestic producers, a trade measure is imperative to ensure that all goods consumed in the United States – whether imported or domestic – bear the same costs based on their associated emissions. Emissions generated by imports entering our market should be treated the same as emissions associated with domestic goods in the market. In addition, the border mechanism should ensure that goods not consumed in the U.S., such as exports, do not bear such costs.

Hybrid System of Output-Based Rebates and Border Adjustments

While USW appreciates all the work and leadership shown by the committee on these issues, we feel that further refinements are necessary before they can fully address the competitiveness needs of energy-intensive manufacturers. To the extent that a cap-and-trade program imposes a higher cost on U.S. manufacturers that are not borne by their competitors abroad, domestic goods will be put at a disadvantage against imports and, when exported, against goods in foreign markets. As long as that cost differential exists at any level, a commensurate amount of leakage will be unavoidable and our environmental goals will be unattainable.

Because output-based rebates are designed to mitigate – not eliminate – these costs and provide an incentive to reduce emissions, they must work with a border adjustment to fully eliminate the cost disadvantage that leads to carbon leakage. Eliminating this cost differential does not mean that domestic producers will be able to evade paying their fair share as America addresses the issue of climate change. Instead, eliminating the cost differential simply ensures that the theory behind a carbon cost works as intended. As costs rise, companies will have incentive to reduce emissions and develop new processes and products to lower the amount they must pay. Under a comprehensive competitiveness program, those companies which can do this most efficiently will be rewarded, which provides direct incentive for investments in new technology. Without a comprehensive competitiveness program, however, companies would have little or no incentive to engage in these investments since they will face a loss of market share due to the flood of cheap, dirty products that will enter the country.

In the discussion draft, manufacturers in covered sectors or subsectors will only be rebated 85% of sector average carbon cost of producing each covered good. From an environmental perspective, it is necessary to impose some costs on inefficient producers in order to create an incentive to reduce emissions, which is one reason this less-than-full rebating has been proposed. However, this level would not only penalize the worst performers in a sector, but would impose an unrebated cost on a majority of companies in these sectors.

For example, a hypothetical company that produces energy-intensive products 14% more efficiently than the sector average is, by any measure, a high performer that should be encouraged. Even that company would not be rebated its full compliance costs and would face some threat of leakage if these additional costs are not equalized by an effective border adjustment. Many of these energy-intensive products, like steel and cement and chemicals, are commodities where even small price differentials like this can have outsized effects.

Once a border adjustment to equalize these unrebated costs is enacted, the rebate level can and will act as intended, as an incentive to producers to reduce emissions. Until then, however, it will not eliminate the threat of leakage. In the interim, we must ensure that these cost pressures do not effectively destroy critical sectors of the economy until the full extent of the competitiveness program can be implemented. Specifically, we recommend that the rebates to companies in covered sectors and subsectors be increased to 100% of each firm's direct and indirect compliance costs from the date of enactment of the domestic program until the date of enactment of an effective border adjustment.

Once the border adjustment is in place, we would recommend that the rebates be paid at 100% of sector average per unit of output. This will ensure that producers who are better than average for their sectors will not be penalized despite their high performance, and will provide below-average producers an incentive to reduce emissions to avoid paying an unrebated cost of compliance. As these below-average companies improve their performance, this will drive the sector average emissions down, prompting companies to continue reducing emissions. Such a race-to-the-top structure is both good environmental policy and good economic policy.

It is obviously in the environmental interests of the nation and of the USW that this rebate structure be put in place as soon as possible. However, as we stated, this will not work as intended until there is an effective border adjustment in place, and until

then, companies in covered sectors should be rebated 100% of their compliance costs. There has been much disagreement over the past several years over the question of how quickly such a border adjustment can be put in place. During last year's debate over the Lieberman-Warner bill, the border adjustment was scheduled to be enacted 8 years after the enactment of the domestic program in the original bill, a time frame which was shrunk to 3 years in the final version reported by Senator Boxer.

The position of USW is that a border adjustment should be enacted as quickly as possible, although we are cognizant of the arguments that have been made that suggest some period of time is necessary before it can be done. This is to allow for the negotiation of an international treaty, as well as to ensure as much as possible that such a program would be consistent with the United States' international obligations. In fact, that understanding informed the formation of our proposal, which we view as a way to solve this timing question. It is in both our economic interest and consistent with our environmental values to see this vital program designed and implemented in as responsible a way as possible. As such, we are prepared to accept whatever length of time is necessary for this to be done right, as long as we eliminate leakage concerns during the interim through full rebating of compliance costs.

From this perspective, USW has strong concerns with certain aspects of the international reserve allowance program in the discussion draft. Under that provision, in 2017 – five years after the start of the domestic program for utilities and 3 years after the start of the domestic program for energy-intensive manufacturers – the President is directed to make a determination whether the rebates have been effective at preventing leakage. If the President does make an affirmative declaration that leakage is occurring, then that leakage – and the job loss that goes with it – will be allowed to continue for an additional 2-3 years while regulations are written before a border adjustment is enacted to prevent it.

Additionally, there is no requirement that the President make any subsequent determination if he determines that no leakage has occurred by 2017. This creates a dangerous incentive for foreign competitors to simply wait to flood our market with dirtier products until after 2017, when the President has decided that no border adjustment is necessary because leakage has not occurred to date, and when the output-based rebates begin to phase out. Many American industries would simply be wiped out in such an occurrence.

It is USW's position that the question of the border adjustment's imposition should not be left to the discretion of the President or anyone else. The legislation should require that the border adjustment begin on a certain date, and direct the President to issue regulations in sufficient time that it may begin on time. If competitive disadvantage is not occurring and the potential for leakage does not exist, a properly structured border adjustment will reflect that and it will be a fee no one has to pay. This is, in fact, the ideal situation. If at some point the potential for leakage develops as the rebates phase out, the border adjustment will seamlessly adjust to fill the gap between what costs are rebated and what costs are borne.

As the border adjustment is designed and implemented, it is imperative that the full range of products and issues raised are addressed. For primary products, eligibility for coverage under the border adjustment should be harmonized with the output-based rebate system. The six-digit NAICS code system, based on determination of

energy-intensity and trade exposure – with a petition process to allow for different treatment within a six-digit code, if necessary – is an effective framework for determining which sectors and products should be covered, and should also be used to identify primary products for inclusion under the border adjustment.

In addition to these primary products, the border adjustment should also cover downstream products made from energy-intensive inputs. If these products are not covered, competitiveness issues may be resolved for some, but for too many others they will only be pushed down the production chain to impose costs on finished goods manufacturers that are not borne by their competitors abroad. To the extent that downstream producers who face a significant disadvantage due to their reliance on energy-intensive inputs are not covered by the program, not only will the program not fully address the competitiveness needs, but will create a perverse incentive for the offshoring of assembly of these products.

The border adjustment program should also address the needs of American exporters, who will be disadvantaged in foreign markets by the imposition of carbon costs. While the needs of exporters would be met in the early years by the rebating of 100% of compliance costs, as those rebates phase out these exporters will face increasing disadvantage. The border adjustment should be structured in such a way that costs above the level rebated do not burden exports.

Conclusion

Addressing the potentially catastrophic issues posed by climate change is the challenge of our generation, and meeting that challenge will require the mobilization of everyone in the world behind a common purpose. America can and must lead this effort, not only by taking a bold stand to limit greenhouse gas emissions, but by harnessing this nation's greatest resource, the ingenuity and creativity of the American people. We must make a national commitment to rebuild America clean and green with products built here, to develop clean energy technologies and provide incentives to further their deployment. We must bring our power grid and energy infrastructure into the 21st century and train the American workforce to use these new technologies. We must create a revolution in our transportation sector, rebuilding the American auto industry to produce the best and cleanest vehicles in the world, and connect America's cities and neighborhoods with world class transit systems. And, of course, we must limit greenhouse gas emissions consistent with what the best science tells us.

As part of the global solution to this global problem, the long-term solution to the unique challenges faced by manufacturers of energy-intensive products is a global sectoral approach that regulates these products transnationally based on their emissions levels. The United States should be working to achieve such agreements in international negotiations, and to move that process forward our domestic program should from the outset be structured to be easily integrated into such a system and support its development. Our proposed competitiveness system is harmonized by sector and energy intensity and can be a useful step in demonstrating to the world that such a system can work.

It is time for America to reclaim its position of leadership in the world economy, and the United Steelworkers are ready to do everything in our power to assist that process. Again, I am grateful to Chairmen Waxman and Markey for holding this hearing, and for the leadership shown by them and the members of the committee,

particularly Mr. Inslee and Mr. Doyle. We look forward to working with you and the committee now and in the future.

Mr. MARKEY. Thank you, Mr. Conway, very much.

Thank you, Mr. Conway, very much.

Our next witness, Trevor Houser, is visiting fellow at the Peterson Institute for International Economics. Mr. Houser's work focuses on analyzing energy markets and climate change.

We welcome you, Dr. Houser.

STATEMENT OF TREVOR HOUSER

Mr. HOUSER. Thank you very much. And thank you for holding this important hearing.

My name is Trevor Houser. I am a visiting fellow with the Peterson Institute for International Economics. In conjunction with the World Resources Institute, we published a book last year called, "Leveling the Carbon Playing Field," and have been active in trying to ensure that U.S. climate policy doesn't undermine U.S. competitiveness. And it is my honor to be here speaking on that topic before you today.

I would just like to point out before I start that my comments are those of my own and not of the Peterson Institute.

Climate policy will impact the competitiveness of the U.S. economy in several ways, and our ability to maximize the upside and minimize the downside breaks down to roughly four factors. The first, our ability to create a level playing field for carbon-intensive industries, the topic of this hearing today, but it is not limited to that of course. It is our ability to capture opportunities in low-carbon technology, reduce dependence on imported foreign oil and catalyze improvements in productivity more broadly.

I am going to focus my comments on the first, that is the topic of this hearing, but it is important to keep in mind that the impact of climate policy on trade-exposed carbon-intensive industries is just one component of broader U.S. economic competitiveness.

The bill before you today reduces U.S. emissions along the lines necessary at a global level to avoid the catastrophic impacts of climate change. And I commend you for that effort. It also puts the U.S. in a leadership position for international negotiations.

But as the outcome of those negotiations remains unclear, it is appropriate that we think about ways to prevent aggressive action here at home from undermining the competitiveness of our industry and risk that it would force industry to relocate, thus undermining the effectiveness of climate policy here at home.

In our work looking at trade-exposed carbon-intensive industries that are vulnerable to leakage, we find that it is a limited group of industries accounting for about half a percent of U.S. employment and 1.5 percent of U.S. GDP. Now I don't say those numbers to say that leakage isn't a challenge. It is to say that it is a manageable challenge and one that we can deal with affordably through allowance revenue within the context of a broader bill.

Using the criteria laid out in the Inslee-Doyle provision, we assessed how many industries that at a six digit NAICS level would qualify, and it is a fairly affordable undertaking. About 11 percent of allowance value in the year 2014 would be required to hold the industries that qualify by the explicit criteria in the Inslee-Doyle provision harmless.

Of those industries, a fair amount are agriculture and mining industries. And one of my comments to the committee would be to assess whether that was explicit intent to include agricultural industries and mining industries in the criteria, as our view is that they face different economics than manufacturing; that if you are mining or you are agriculture, the factor endowment, where you can actually grow the crops or mine the copper, is generally a more important consideration than carbon costs. So it is one issue I would ask the committee to consider.

We believe that this provision would be sufficient to address emissions leakage. If it is sufficient, then trade measures are not required. If it is not sufficient and trade measures are required, what is important is that to the extent that a price is put on imported goods, that that is discounted by the amount of support that we provide for our domestic industries. It is critical that we don't double pay our industries through domestic support and adjustments at the border. That is important because it is a violation of our trade commitments, but also because it would set a bad precedent for other countries to do the same, to outwardly subsidize their industries under climate policy.

The more important question I think is what this transitions to. Domestic supports are transitionary measures, and I think everybody on this panel would agree that the goal ultimately is to get to an international agreement that can effectively address emissions leakage. I think what is important in thinking about this legislation is how it can inform that process and how it can be specific about what types of international agreement would be necessary to phase out output-based rebating here in the U.S. I think that in the draft so far, there has been some vagueness there, and I think that that bears clarification.

Let me turn to make a couple comments about the international environment. We have moved a long way from where we were in 1997, and the outlook for a global agreement I would say is good. But that doesn't necessarily mean the same commitments by all different countries, right. Europe is going to reduce emissions more aggressively likely than here in the U.S., and countries in the developing world are going to reduce emissions less aggressively than we are.

Now, from an environmental standpoint, that is okay as long as we all get to the same 2050 end-point, but that means different carbon prices for a transitionary period, which has impacts for trade-exposed carbon-intensive industries. Over the long term, we can deal with that through a harmonized carbon tax globally or through linking cap-and-trade systems. But as we get that infrastructure set up, we would like to see coming out of international negotiations some specific commitments on key industries among other major producers to level the playing field. If we can get that type of agreement between major producers, then that will more effectively address the issue of emissions leakage, and we will make sure that we are reducing emissions of steel produced in China, not just in China for export to the U.S.

I think that the bill before you today makes an important start in specifying costs at an industry level that would be necessary to reduce output-based rebating. I would ask that in going forward

you provide guidance to the negotiators on what you would like to see.

[The prepared statement of Mr. Houser follows:]

Ensuring US Competitiveness and International Participation

Trevor Houser
Visiting Fellow, Peterson Institute for International Economics

Testimony before the Committee on Energy and Commerce
US House of Representatives

April 23, 2009

Chairman Waxman and Rep. Barton, Subcommittee Chairman Markey and Rep. Upton, thank you for inviting me to testify on this important and timely topic. My name is Trevor Houser and I'm a Visiting Fellow at the Peterson Institute for International Economics. Last year the Peterson Institute, in partnership with the World Resources Institute (WRI), launched a multi-year initiative to examine the international economic, trade and financial dimensions of energy and climate policy. It's a great pleasure to be able to share with the Committee our research on ways that to address US competitiveness and ensure international participation through the landmark climate legislation before you today.

The Impact of Climate Policy on US Competitiveness

Before assessing the impact on US economic competitiveness of efforts to address global warming, it is important to remember that letting that warming continue unabated is not economically sustainable. Economists estimate that the cost of projected temperature increases under a business-as-usual scenario would run between 5 and 20 percent of global GDP by 2100 (Cline 2009 and Stern 2007). Arresting this process will require imposing a price for greenhouse gas (GHG) emissions, which will raise the cost of energy for US consumers and the cost of production for US industry. At an economy-wide level these cost increases are fairly modest, roughly 1–2 percent of GDP, and pale in comparison to the price of doing nothing (Cline 1992 and Stern 2007). The cost of acting, however, will not be spread evenly. Households that rely on electricity generated from coal will experience larger cost increases than households powered by nuclear energy, renewable energy or natural gas. And heavy industries that consume large quantities of energy will see their economics change more significantly than light manufacturing and services.

From an environmental standpoint, this is the intended outcome of legislation to reduce emissions. By raising the price of high-carbon products and sources of energy, market-based climate policy creates an incentive for investment in new technology and a move toward low-carbon alternatives. The impact of this transition on US economic competitiveness depends on our ability to:

1. *Level the playing field for high-carbon industries*: Ensure that imposing a price for carbon in the United States does not place American firms at unfair disadvantage vis-à-vis international competitors.
2. *Capture opportunities in low-carbon technology*: Develop new products and services that help households and firms reduce energy demand and GHG emissions.
3. *Reduce dependence on fossil fuel imports*: Save some of the $450 billion that the United States spends purchasing petroleum from abroad each year.

4. *Catalyze improvements in productivity*: Turn an incentive for improving energy efficiency into an opportunity to invest in increased productivity more broadly.

As this hearing is primarily concerned with the impact of climate policy on carbon-intensive manufacturing, I will focus my comments on ways to ensure these firms are competing on a level playing field. It is important to keep in mind, however, that this is only one element of how the transition to a low-carbon economy will impact US competitiveness.

Addressing Leakage in Domestic Legislation

As outlined in its discussion draft form, the "American Clean Energy and Security Act of 2009" would reduce US greenhouse gas emissions in line with levels needed globally to avoid catastrophic climate change and would put the US in a leadership position in international climate negotiations. But as the outcome of those negotiations is unclear, US legislation must seek to ensure that taking aggressive steps to reduce emissions at home doesn't force US industry to migrate abroad, undermining the effectiveness of domestic climate policy in the process.

Industries at risk of "leakage" of jobs and emissions are those exposed to international trade and for which pricing carbon will significantly raise production costs. A limited number of industries, accounting for 0.3% of US employment and 1.4% of US economic activity, fit this bill, making it a manageable and affordable problem to solve with allowance revenue under an economy-wide cap.[1] The European Union adopted this approach, both in phase II of their Emissions Trading System (ETS) which runs until 2012 and phase III from 2013 to 2020. Emission allowances are provided free to carbon-intensive trade-exposed industry to cover both the direct costs (greenhouse gasses emitted from the facility itself) and indirect costs (greenhouse gasses emitted in the generation of electricity consumed by the facility) associated with climate policy.

The Inslee-Doyle Output-Based Rebating (OBR) proposal included in Title IV of the "American Clean Energy and Security Act of 2009' improves upon the European approach by rebating only the costs associated with actual production on an ongoing basis, rather than compensating companies for past output. This addresses a key concern surrounding the use of free allowances to prevent emissions leakage; that companies will make windfall profits by selling allowances received for free on the market, rather then using them to offset future carbon-related production costs. Title IV goes a step further and issues allowances based on industry-wide performance benchmarks. This creates an additional incentive for firms invest in new, energy efficient technology and ensures that those who do will not be put at a disadvantage vis-à-vis foreign competitors, either in domestic or export markets, as a result of US emission limits.

Who's Covered and How Much Does it Cost?

Updating analysis my colleagues at WRI and I published last year in *Leveling the Carbon Playing Field: International Competition and US Climate Policy Design* I have included in this testimony an assessment of which industries, at a 6-digit NAICS level, would qualify for allowances under Title IV of the "American

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[1] This figure is based on an assessment of industries at a 6-digit NAICS level, and thus identifies a more targeted set of vulnerable industries than my co-authors and WRI and my analysis in *Leveling the Carbon Playing Field: International Competition and US Climate Policy Design* (2008).

Clean Energy and Security Act of 2009" and the share of overall emission allowances that would be required. To conduct this analysis I used the most recent data available from the sources explicitly listed in the bill. Energy-intensity is measured using the 2006 American Survey of Manufacturers (www.census.gov/mcd/asmhome.html). Trade-intensity is measured using 2006 data from the US. International Trade Commission (www.usitc.gov). Greenhouse gas-intensity is the most difficult metric to calculate with existing data. Where available, I use emission estimates from the Energy Information Administration's 2002 Manufacturing Energy Consumption Survey (www.eia.doe.gov/emeu/mecs/). For other industries, I estimated the GHG-intensity of direct fuel purchases reported in the American Survey of Manufacturers using the direct use tables from the Bureau of Economic Analysis's benchmark 2002 input-output tables (www.bea.gov/industry/) and converted them to physical units using energy price data from the Energy Information Administration. Estimates for process emissions are from the EPA's Greenhouse Gas inventory. GHG-intensity was calculated using a $30 per ton of CO2 price.

Using both the energy-intensity and GHG-intensity criteria described in the bill, I estimate that 35 industries would qualify for allowance rebates covering direct and indirect emissions (figures 1 and 2, table 1). Of these, 26 are manufacturing industries, 4 are mining industries and 5 are agricultural industries. Its not clear from the language in the bill whether non-manufacturing industries were intended to be covered but the criteria opens the door for their inclusion. The economics of mining and agriculture are significantly different than manufacturing, with resource endowments driving investment decisions more than differences in carbon costs. As such, I would recommend that the committee limit "presumptively eligible sectors and subsectors" to those in manufacturing and require agriculture and mining to demonstrate a need for inclusion through administrative determination.

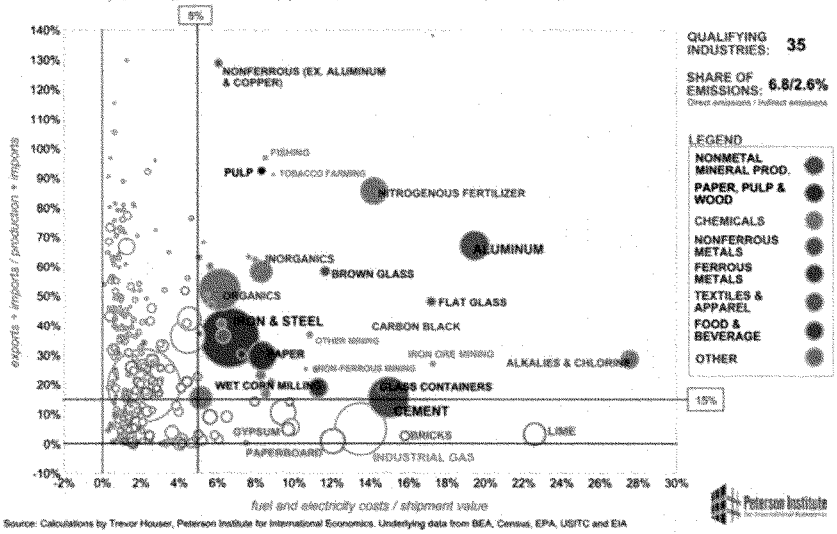
All told, the 35 industries listed in table 1 accounted for 9.4% of US emissions in 2006 (including direct, indirect and process emissions). Covering 85% of these emissions through rebates would require 11.2% of total allowances in 2014, if production and efficiency levels stay where they are today.

Is Output-Based Rebating Sufficient?

As currently structured, I believe the output-based rebating provisions in Title IV of the "American Clean Energy and Security Act of 2009" would effectively guard against emissions leakage while maintaining an incentive for firms to invest in cleaner technology. If this is the case, trade measures should not be required so long as output-based rebating is in place. Indeed, if trade measures were imposed on top of output-based rebates, US produced goods would be treated more favorably than imports, a violation of our trade commitments and a poor precedent for other countries. The question then is how, over the long term, to transition from domestic rebates to a multilateral approach. Here trade policy can play an important role.

Figure 1: ACESA Energy-Intensity Criteria

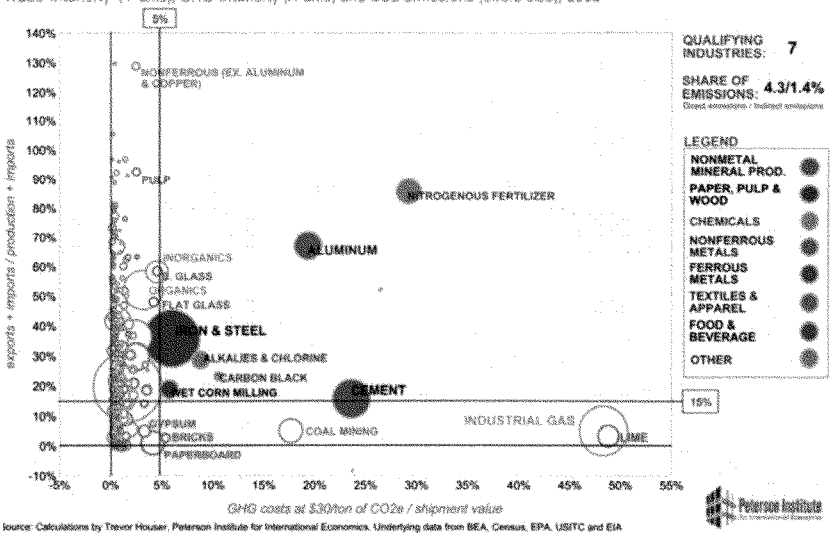
Trade-intensity (Y-axis), GHG-intensity (X-axis) and CO2 emissions (circle size), 2006



Source: Calculations by Trevor Houser, Peterson Institute for International Economics. Underlying data from BEA, Census, EPA, USITC and EIA

Figure 2: ACESA GHG-Intensity Criteria

Trade-intensity (Y-axis), GHG-intensity (X-axis) and CO2 emissions (circle size), 2006



Source: Calculations by Trevor Houser, Peterson Institute for International Economics. Underlying data from BEA, Census, EPA, USITC and EIA

Table 1: Qualifying Industries under Title IV of the ACESA 2009

Industry	GHG (million tons CO2e)				Energy-Intensity	GHG-Intensity	Trade-Intensity
Description	Energy	Process	Indirect	Total	energy costs / shipment value	GHG costs / shipment value	exports + imports / production + imports
Alkalies and chlorine manufacturing	6.2	4.2	8.2	18.6	27.5%	8.8%	28.5%
Alumina refining and primary aluminum production	4.9	6.4	36.7	48.0	19.4%	19.3%	67.0%
Iron ore mining	0.7	0.0	1.2	2.0	17.3%	3.3%	26.9%
Flat glass manufacturing	2.9	0.7	1.1	4.7	17.2%	4.2%	47.9%
Cement manufacturing	30.8	45.7	8.2	84.7	15.0%	23.6%	15.5%
Glass container manufacturing	2.7	0.0	2.5	5.2	14.6%	3.5%	18.5%
Nitrogenous fertilizer manufacturing	10.1	28.0	2.3	40.4	14.2%	29.2%	85.5%
Other pressed and blown glass and glassware manufacturing	3.6	0.0	1.5	5.2	11.6%	3.9%	58.2%
Wet corn milling	14.5	0.0	4.4	18.9	11.3%	5.7%	18.8%
Copper, nickel, lead, and zinc mining	0.6	0.0	1.2	1.8	11.2%	2.2%	25.1%
Other nonmetallic mineral mining and quarrying	1.1	0.0	1.1	2.3	10.8%	2.2%	36.7%
Other structural clay product manufacturing	0.2	0.0	0.0	0.3	10.6%	3.6%	25.1%
Tobacco farming	0.4	0.0	0.2	0.7	8.9%	1.6%	91.0%
Gold, silver, and other metal ore mining	0.9	0.0	1.2	2.1	8.8%	1.7%	20.7%
Mineral wool manufacturing	2.2	0.0	2.5	4.7	8.5%	2.2%	16.8%
Fishing	1.5	0.0	0.0	1.5	8.5%	1.4%	96.7%
Paper and newsprint mills	24.4	0.0	17.9	42.3	8.3%	2.5%	29.5%
Pulp mills	2.7	0.0	0.8	3.6	8.3%	2.5%	92.3%
All other basic inorganic chemical manufacturing	7.2	5.1	16.7	29.0	8.3%	4.5%	58.1%
Carbon black manufacturing	4.9	0.0	0.4	5.3	8.3%	10.5%	23.0%
Cotton farming	1.1	0.0	0.6	1.7	8.0%	1.5%	62.1%
Ceramic wall and floor tile manufacturing	0.7	0.0	0.3	1.0	7.6%	2.5%	63.1%
Reconstituted wood product manufacturing	1.6	0.0	3.5	5.0	7.3%	1.9%	30.2%
Iron and steel mills and ferroalloy manufacturing	91.8	56.6	37.3	185.7	6.6%	6.0%	35.7%
Grain farming	8.6	0.0	2.5	11.2	6.3%	1.2%	36.3%
Artificial and synthetic fibers and filaments manufacturing	2.7	0.0	2.3	5.0	6.2%	1.8%	40.4%
Other basic organic chemical manufacturing	68.5	5.9	17.1	91.5	6.1%	3.2%	51.9%
Primary nonferrous metal (except copper and aluminum)	0.9	0.8	2.2	4.0	6.1%	2.5%	128.7%
Synthetic dye and pigment manufacturing	1.1	0.0	1.9	3.0	5.7%	1.3%	46.7%
Synthetic rubber manufacturing	1.7	0.0	1.2	2.9	5.6%	1.2%	59.9%
Carbon and graphite product manufacturing	0.5	0.0	0.8	1.3	5.5%	1.5%	50.1%
Tree nut farming	0.3	0.0	0.5	0.8	5.3%	1.1%	68.0%
Petrochemical manufacturing	19.3	3.6	5.3	28.2	5.1%	1.3%	15.3%
Refractory manufacturing	0.9	0.0	0.4	1.3	5.0%	1.7%	37.1%
Pottery, ceramics, and plumbing fixture manufacturing	1.1	0.0	0.6	1.7	5.0%	1.7%	63.0%
Emissions	**323.4**	**157.0**	**185.0**	**665.4**			
Share of US Total in 2006	*8.6%*	*48.9%*	*7.9%*	*9.4%*			
Amount Rebated	**274.9**	**133.5**	**157.2**	**565.6**			
Share of 2014 Allowances	*5.44%*	*2.64%*	*3.11%*	*11.18%*			

Source: Calculations by Trevor Houser, Peterson Institute for International Economics. Underlying data from BEA, Census, EPA, USITC and EIA

Addressing Leakage through International Agreements

While OBR is an effective guard against leakage of jobs and emissions, it should be seen as a temporary measure. OBR creates an incentive for firms to invest in cleaner production methods by rebating 85% of average compliance costs in a given industry. Firms that perform better than average see a larger share of their total costs rebated. But in offsetting compliance costs that can't be mitigated through efficiency investments, OBR prevents an increase in the price of carbon-intensive goods like aluminum, steel and cement. This is by design. In the face of international competition that doesn't face comparable compliance costs, consumer will respond to higher product prices by switching to imports rather than less carbon-intensive domestic substitutes. Meeting long-term emission reduction goals at affordable prices will require taking advantage of the full host of abatement opportunities in the economy, including product switching from more carbon-intensive to less carbon-intensive goods.

Our long-term goal, therefore, should be to reach an international agreement where foreign producers face similar costs to their counterparts in the US and where the price for carbon is passed onto consumers.

Providing Flexibility for an International Agreement

In Bali, Indonesia in 2007 the 192 signatories to the UN Framework Convention on Climate Change (UNFCCC) agreed to negotiate a new global climate agreement to take effect in 2013. Renewed engagement by the United States, and a willingness of large developing countries to follow US leadership with commitments of their own, has injected fresh optimism into international negotiations set to conclude in Copenhagen this December.

There is an emerging consensus that to avoid the most catastrophic impacts of a warming world, the international community will need to reduce emissions 50% below 1990 levels by 2050. The most economically efficient way to achieve these cuts would be through a uniform price for carbon world-wide, either through a global carbon tax or cap-and-trade system. However, given differences level of economic development, historic responsibility and domestic politics, commitments to reduce emissions will vary by country. As part of the Bali Action Plan, developing countries agreed to take "nationally appropriate mitigation actions" as part of a global deal but not the same level of reductions as their rich world peers.[2] Even among developed countries accepting binding limits, targets will likely differ. For the third phase of its emissions trading scheme, the European Union plans to reduce emissions 20% below 1990s levels by 2020, or 30% if a global agreement is reached. The "American Clean Energy and Security Act of 2009" would reduce emissions 20% below 2005 levels by 2020, or 5% below 1990 levels.

Differences in commitment levels, and in the type of policies adopted to reduce emissions, means that, at least for an interim period, carbon prices will vary, not just between the US, China and India, but between the US, Europe and Canada. From an environmental standpoint, this is just fine. Within the context of a global target of 50% reduction by 2050, the international community has flexibility in how it chooses to share the burden and individual countries have flexibility in choosing which policy approach to take so long as the numbers add up at the end of the day. Indeed, given the magnitude of the challenge, both in reaching agreement between countries and passing legislation within countries, such flexibility will be critical in getting to a global

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[2] United Nations Framework Convention on Climate Change, 2007, Revised Draft Decision CP.13, Ad Hoc Working Group on Long-Term Cooperative Action under the Convention, Bali, Indonesia.

deal. The resulting variation in carbon prices, however, exposes carbon-intensive industry to risk of emissions leakage.

Over time, differences in national carbon prices can be reconciled by linking domestic cap-and-trade systems to create a global carbon market or harmonizing domestic carbon taxes internationally with side payments to less developed countries. Yet the political consensus and supporting infrastructure required to move to a single global carbon price will likely take at least two decades to build. In the interim, we need to look for multilateral solutions to carbon leakage in a world of differing carbon costs.

Developing Solutions for Traded Goods

The fact that only a limited number of industries are vulnerable to emissions leakage means there is plenty of scope for a multilateral solution that maintains the principle of "common but differentiated" responsibilities. While asking developing countries to impose the same carbon constraint on their citizens as Europe or the US is a non-starter, asking that they impose comparable costs or standards on a handful of internationally traded industries is a reasonable request. This could come in the form of an explicit agreement on key sectors, or commitments by major producers to impose comparable costs or standards as part of their Nationally Appropriate Mitigation Actions.

A deal reached among major producers of carbon-intensive goods on a multilateral approach to emissions leakage would help ensure that international trade does not undermine the goals of climate policy and that unilateral efforts to guard against emissions leakage don't undermine the global trading system. A multilateral approach to key sectors hammered out at the UNFCCC could be supported by a plurilateral code at the WTO establishing principles for addressing climate costs in international trade. My colleagues at the Peterson Institute have recently published a study outlining what such a code could look like (Hufbauer, Charnovitz and Kim 2009). If differences in carbon prices or standards at a sector level remain important for political or equity reasons, a WTO code could guide countries in adjusting their domestic carbon prices at the border and create a pathway for phasing out domestic rebates and supports.

US legislation can play a useful role by setting guidelines for what type of agreement on these key industries would be a sufficient replacement for domestic cost-containment mechanisms like output-based rebating. The "American Clean Energy and Security Act of 2009" takes an important step in this direction through the "Annual Review for Elimination". In addition, I would recommend that the Committee consider including more specific guidance to US negotiators on the importance of developing an international mechanism for addressing emission leakage within the context of a global deal. If the US delegation is successful in developing such a mechanism sooner than 2020, I would suggest allowing for an early phase-out of domestic rebates. To garner industry support for a multilateral approach, it's important to have a definite end-point for the provision of free allowances domestically. Unilateral trade measures could serve as a backstop against emissions leakage if suitable multilateral approach has not been reached by the time domestic rebates are eliminated.

Creating Incentives for International Participation

What tools does the US have to elicit participation in an international climate agreement broadly and multilateral approaches to emissions leakage in specific? It is important here to keep in mind that despite new-found interest in Washington in addressing climate change, we are late to the party and still have a lot of catching up to do. Europe has test-run an emissions trading scheme and adopted aggressive targets for the

2012 through 2020 period. Australia recently joined the Kyoto Protocol and is in the process of crafting its own domestic climate policy. And larger emerging economies like China, Brazil, and Mexico are taking significant action to curb their growth in emissions. That said, if the United States is going to pass binding domestic climate legislation to meet our end of the bargain, it is natural to want some insurance that actions from other countries will be enough to get us to our global target.

Trade measures that are aimed at adjusting differences in carbon prices at the border (such as those outlined in Part 2 of Title IV of the "American Clean Energy and Security Act of 2009") can be effective tools to prevent emissions leakage, but provide little leverage over the domestic policy of foreign countries. While exports of labor-intensive goods like electronics, toys, and apparel are important sources of growth in emerging economies, exports of carbon-intensive goods like steel, aluminum, and cement are not. Most of the demand for those goods comes from developing countries themselves to feed the construction boom resulting from mass urbanization. China, for example, accounts for 38 percent of all steel production world-wide. Yet only 12 percent of this is exported and less than 1 percent shows up in the United States. All carbon-intensive exports from China to the United States combined account for 0.1 percent of the Chinese GDP, not much of a stick in comparison to the cost of climate policy.

Broader trade sanctions, rather than adjustments based on the carbon-content of imports, could play a role in enforcing a global agreement, if agreed upon multilaterally and accompanied by a new WTO code along the lines called for by Hufbauer, Charnovitz, and Kim. Until then, there are a number of carrots we can use to help encourage other nations, developing countries in particular, to join in a global agreement. The most important, by far, is committing to significant emission reductions at home, along the lines called for in the bill before you today. The "American Clean Energy and Security Act of 2009" also includes a number of specific provisions that will be very useful in reaching an international agreement, including the use of international offsets in Title VII and the adaptation assistance in Title IV. Europe has chosen to take on more aggressive targets if other countries join in a global deal, an approach the United States could choose to emulate. Washington could also think more broadly and offer to discuss providing countries like China and India with a greater voice in global economic governance if they agree to play a leadership role on global climate change.

When it comes to an international agreement on trade-exposed carbon-intensive industries specifically, we have another piece of leverage: the allowance value required to hold our industries harmless in the absence of such a multilateral approach. Reaching agreement between major producers of carbon-intensive goods on imposing comparable costs or allowing individual countries to adjust their domestic costs at the border would enable us to phase out domestic rebates. If large emerging economies like China and India agree to bear the costs of greening their industry, we could use that revenue to assist in mitigation activities in non-tradable sectors like buildings, transport and agriculture.

Conclusion

It is critical that we get the economic issues right in crafting a domestic and international approach to climate change. Arresting global warming will be a multigenerational process requiring sustained political support. The lessons of trade liberalization teach us that generating and maintaining this support will require an understanding of and adequate preparation for the distributional effects climate policy will have on the US economy. This goes beyond ensuring that carbon-intensive industries are competing on a level playing field. Climate policy is designed to move consumers away from high-carbon goods and services toward low-carbon alternatives. That means that over time certain products and production methods will become obsolete while

others will be created. Managing this transition fairly and ensuring that US firms and workers are positioned to take advantage of the economic upside climate policy offers will be key to its long term success.

At the international level, the transition to a low-carbon economy must account for the development needs of low-income countries and address the leakage concerns of advanced economies. No single country was the ability to solve this problem on its own or the leverage to force other countries to act if they do not see it as in their interest to do so. A multilateral approach will be required and the legislation before you today takes an important step in that direction.

Thank you for the opportunity to testify before you today and I look forward to your questions.

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Mr. MARKEY. Thank you, Mr. Houser, very much.

Our next witness is Mr. Elliot Diringer. He is vice president of international strategies from the Pew Center on Global Climate Change. He has a long, very impressive history in this area.

We welcome you, sir. Whenever you are ready, please begin.

STATEMENT OF ELLIOT DIRINGER

Mr. DIRINGER. Thank you, Mr. Chairman, members of the committee, for the opportunity to appear before you today.

An essential complement to a strong domestic climate program is an effective international agreement ensuring that other major economies contribute to their fair share to what must be a global effort. U.S. domestic legislation must therefore be designed to maximize prospects for such an agreement. The Pew Center believes that, on the whole, the Waxman-Markey discussion draft provides a strong basis for effective international engagement.

I would like to highlight the draft's many strengths and suggest ways it could be further refined to help achieve a fair and effective global agreement. To facilitate strong U.S. participation in the global effort, domestic legislation must do several things.

First, the legislation must set a solid foundation for a verifiable international commitment by the United States. By establishing ambitious mandatory targets through 2050, the discussion draft would indeed provide the basis in domestic law for a corresponding U.S. commitment under international law. The United States will have greater leverage in international negotiations, however, if it has the flexibility to take additional actions that can encourage stronger commitments by others.

One way this can be done is by facilitating emission reductions outside the United States above and beyond those required for domestic compliance. The discussion draft would establish one such mechanism by using a portion of emission allowances to reduce deforestation in developing countries. We encourage the committee to consider allowing the use of allowance value to facilitate other types of mitigation action in developing countries as well.

Second, a domestic climate action must create positive incentives for emission reduction commitments by the major emerging economies, both through public finance and through market-based mechanisms. With respect to public financing, the Pew Center recommends a phased strategy providing some immediate assistance to developing countries and greater support once countries commit to effective climate policies.

The International Clean Technology Fund proposed in the discussion draft would constitute an important element of such a strategy. We believe the draft could be further strengthened in several ways.

It should authorize immediate appropriations for two purposes: first, to support capacity building activities in developing countries; and second, to fulfill the United States' pledge to fund the World Bank's new Clean Technology Fund.

For the longer term, the legislation should designate a portion of allowance value for sustained support for technology deployment. As proposed in the discussion draft, this support should be conditioned on a recipient country's ratification of an international cli-

mate agreement. With respect to market-based approaches, the Pew Center strongly supports the use of international emissions offsets both as an incentive for developing country action and as a mechanism to contain costs in the U.S. cap-and-trade system.

We believe the offset provisions of the discussion draft would provide a strong incentive for developing countries to assume reasonable climate commitments. Importantly, the draft would recognize credits issued by an international body under a new climate agreement. This would enable the United States to influence the redesign and reform of the existing clean development mechanism or the design of a new international crediting mechanism.

Third, domestic climate legislation must dedicate resources to help poor vulnerable countries adapt to the impacts of climate change. The draft would establish a stronger framework for delivering direct bilateral resistance, and importantly, it would reserve 40 to 60 percent of the support available for U.S. contributions to an international adaptation fund.

To help secure a strong climate agreement, the legislation must establish a clear predictable and sustained source of funding for these efforts. The Pew Center strongly supports designating an appropriate portion of allowance value for these purposes.

Fourth, domestic climate legislation must facilitate the linkage of the United States' emissions trading system in a global greenhouse gas market. We believe the discussion draft would lay the necessary foundation for linkage to other market-based systems. By recognizing allowances from programs establishing sectoral targets, it would provide another important incentive for stronger efforts by countries not yet prepared to take on economy-wide targets.

Finally, domestic climate legislation must include transitional measures to address potential competitiveness risks to energy-intensive trade-exposed industries. The discussion draft takes a very sound approach to managing these risks. The use of output-based rebates as proposed would address the transitional competitiveness concerns likely to arise under a cap-and-trade system while maintaining the environmental integrity of the program and providing an ongoing incentive to producers to improve their performance.

Critically, the draft contemplates the use of unilateral trade measures only as a last resort and only if the President determines that the rebate program has not been effective. This preserves trade measures as an option but defers their use to allow a reasonable period to assess the efficacy of the rebate program and to achieve effective international agreements.

In conclusion, Mr. Chairman, the Pew Center believes that with modest improvements the Waxman-Markey discussion draft would effectively position the United States to lead efforts toward an equitable and effective international agreement. I look forward to your questions.

[The prepared statement of Mr. Diringer follows:]

Testimony of

Elliot Diringer
Vice President, International Strategies
Pew Center on Global Climate Change

Submitted to
the Energy and Environment Subcommittee
Energy and Commerce Committee
U. S. House of Representatives
April 23, 2009

International Aspects of the American Clean Energy and Security Act

Chairman Waxman, Chairman Markey, Ranking Members Barton and Upton, members of the committee, thank you for the opportunity to testify on the international aspects of Waxman-Markey discussion draft of the American Clean Energy and Security Act. My name is Elliot Diringer, and I am the Vice President for International Strategies at the Pew Center on Global Climate Change.

The Pew Center on Global Climate Change is an independent non-profit, non-partisan organization dedicated to advancing practical and effective solutions and policies to address global climate change. Our work is informed by our Business Environmental Leadership Council (BELC), a group of 44 major companies, most in the Fortune 500, that work with the Center to educate opinion leaders on climate change risks, challenges, and solutions. The Pew Center is also a founding member of the U. S. Climate Action Partnership (USCAP) , a coalition of 25 leading businesses and five environmental organizations that have come together to call on the federal government to quickly enact strong national legislation to require significant reductions of greenhouse gas emissions.

For the United States to effectively address climate change, the enactment by Congress of mandatory market-based legislation to significantly reduce U.S. greenhouse gas emissions is of the utmost priority. The Pew Center commends Chairman Waxman and Chairman Markey for significantly advancing this effort with their discussion draft. An essential complement to strong domestic climate legislation is an effective international agreement ensuring that other major economies also contribute their fair share to what must be a global effort. It is in the strong interest of the United States to ensure that domestic climate legislation is fashioned in ways that maximize prospects for such an agreement. In the international negotiations now underway under the Bali Action Plan, the United States

will be best able to lead efforts toward an effective global agreement if our domestic legislation:

- Sets a solid foundation for a verifiable international commitment by the United States, and provides means for the U.S. to take additional actions that can encourage strong commitments by others;
- Creates positive incentives for stronger emission reduction actions and commitments by the major emerging economies;
- Dedicates resources to addressing the critical adaptation needs of poor and vulnerable countries;
- Facilitates the linkage of the United States' emissions trading system in a global greenhouse gas market; and
- Includes transitional measures to address the potential competitiveness risks to energy-intensive, trade-exposed industries.

The Pew Center believes that, on the whole, the Waxman-Markey discussion draft would establish a strong foundation for effective U.S. engagement in the global climate effort. In my testimony today, I would like to offer a number of suggestions for strengthening the proposed legislation to better ensure that the very considerable domestic effort it would initiate is maximally leveraged to achieve a fair and effective global climate agreement.

Foundation for a Verifiable International Commitment

An effective global response to climate change requires clear and verifiable international commitments by all major greenhouse gas-emitting nations. Countries can be expected to deliver their strongest possible efforts only if they have confidence that their counterparts and competitors are delivering theirs as well. The best means of instilling and maintaining this confidence is a treaty, or a set of international agreements, establishing mutual legal commitments with international accountability. These commitments must be measurable, reportable, and verifiable.

Given the tremendous diversity among the major economies, it is reasonable that their commitments vary not only in stringency but in form as well. In *A Blueprint for Legislative Action*, USCAP recommends a framework that would establish "binding absolute economy-wide reduction targets for developed countries while allowing developing countries a range of binding policy commitments, taking into account national capacities, circumstances, and policy approaches."

The Pew Center believes the Waxman-Markey discussion draft would create a very strong foundation for U.S. participation in such a framework. The emission reduction targets it proposes are ambitious and achievable, and would represent a very credible contribution by the United States toward the ultimate goal of safely stabilizing greenhouse gas concentrations in the atmosphere. In establishing mandatory targets through 2050, the legislation would provide the basis in domestic law for a corresponding commitment, or series of commitments, at the international level. To be meaningful, these international commitments must be legally distinct from, and in addition to, the domestic law in which they are rooted. If countries are

merely to pledge national actions – even if these actions are "binding" under domestic law – they are accountable only to themselves. International commitments create international accountability, and the willingness of the United States to assume such a commitment is the only basis on which it can expect the same of other sovereign governments.

The emission targets set under cap-and-trade legislation will fundamentally guide any U.S. targets agreed internationally. The United States will have greater leverage in international negotiations, however, if it has the flexibility to take additional actions that can encourage stronger commitments by others. One way to do this is by committing support for mitigation and adaptation efforts in developing countries, as is discussed below. Another way is through mechanisms facilitating emission reductions outside the United States above and beyond those required under domestic cap-and-trade legislation (i.e., not as international emission offsets used for domestic compliance). The discussion draft would establish one such mechanism by setting aside a portion of emission allowances to support supplemental emission reductions from reduced deforestation in developing countries. We encourage the Committee to consider broadening these provisions to allow the use of allowance value to facilitate other types of mitigation actions in developing countries, or to acquire emission credits meeting U.S. offsetting criteria, and then retire them.

Incentives for Developing Country Mitigation

To achieve an effective international agreement, the United States and other developed countries must be prepared to provide effective incentives and support for stronger action by the major emerging economies. Under the 1992 U.N. Framework Convention on Climate Change, developed countries committed to provide financial and technological assistance to developing countries. This commitment is underscored in the Bali Action Plan adopted in 2007 by the United States and other Convention parties. In framing negotiations toward a new climate agreement, the Bali plan states that future mitigation actions by developing countries are to be "supported and enabled by technology, financing and capacity-building." Early and sustained action by the United States to deliver this support will greatly enhance prospects for an effective post-2012 agreement. Broadly speaking, this support can be delivered as direct assistance, either bilateral or multilateral, and through market-based mechanisms.

Public Finance

There is broad recognition that the majority of investment for mitigation will come from private financial flows, in part through greenhouse gas markets, as discussed below. But additional public finance is needed to supplement these market flows. We believe the United States must be prepared to commit such support, and that these incentives will be most effective if: a) the support provided is adequate and predictable; and b) it is structured as a phased-in program providing some immediate assistance for capacity-building and technology deployment, and greater support for technology deployment once countries commit to effective climate policies. This assistance should be provided through bilateral programs and multilateral mechanisms, including the Clean Technology Fund recently established at the World Bank.

We believe the International Clean Technology Fund proposed in the discussion draft could be an important element of an effective funding strategy. It would allow support to be delivered through both bilateral programs and multilateral mechanisms, and would establish eligibility criteria providing a clear incentive for developing countries to adopt and commit to effective climate mitigation policies. However, we would recommend strengthening the provision in several respects.

First, it is critical that a clear, reliable, and predictable source of revenue be designated for these purposes. We believe the legislation should authorize immediate appropriations for two purposes: a) to support capacity-building activities, as discussed further below; and b) to fulfill the United States' pledge to help fund the World Bank's new Clean Technology Fund. These efforts would immediately demonstrate the United States' commitment to support developing countries and would help position those countries to undertake stronger efforts. For the longer term, the legislation should designate a portion of allowance value to provide sustained support for technology deployment. As proposed in the discussion draft, this further support should be conditioned on a recipient countries' ratification of an effective international climate agreement, or on the President's determination that it is undertaking nationally appropriate mitigation activities. The funds generated through this portion of allowance value could be held in reserve until such time as these eligibility criteria are met.

Second, we believe as a general matter that support for technology deployment should be technology-neutral, so that each dollar invested can achieve maximum return in emissions reduction. We are concerned that, as written, the discussion draft may exclude funding for more efficient coal-fired electrical generating facilities. Given the very strong likelihood that many countries will continue to rely on coal as a major energy source, and will continue building substantial new coal-fired generating capacity, we favor using technology support to ensure that these new facilities are as efficient, and least GHG-intensive, as possible. Eligibility criteria should require that supported facilities deploy the best available combustion technologies and achieve substantial efficiency improvements and emission reductions beyond business as usual.

Third, we believe the legislation should provide explicit and immediate support for a range of capacity-building activities in developing countries. These should include:

- Emissions measurement – Strengthening capacity to accurately monitor and measure GHG emissions in key sectors and, ultimately, economy-wide as a basis for policy development, crediting and other market-based responses, and assessing progress.
- Economic modeling – Strengthening capacity to project emissions and economic conditions under different scenarios, and to evaluate the costs and emission reduction potentials of alternative mitigation approaches.
- Policy development – Strengthening capacity to design, implement, and enforce nationally appropriate policies that would contribute to emission reduction and could form the basis of international commitments.
- Technology assessment – Strengthening capacity to assess available mitigation technologies and to identify those best suited to national circumstance.

Market-based Incentives

Access to the U.S. greenhouse gas market can provide another important incentive for stronger action by developing countries. The Pew Center strongly supports the use of international emissions offsets, both as an incentive for developing country action and as a mechanism to contain costs in a U.S. cap-and-trade system. EPA's recent modeling analysis of the Waxman-Markey discussion draft found that the exclusion of international offsets could increase allowance prices by 96 percent.

USCAP recommends allowing up to 1.5 billion tons of international offsets per year within the cap-and-trade system. Criteria must be established for all offsets, domestic and international, to ensure they are environmentally additional, verifiable, permanent, measurable, and enforceable. In the case of international offsets, USCAP recommends that EPA be directed to establish a process to evaluate and approve proposed offsets, and that over time developing countries be required accept climate mitigation commitments to remain eligible for GHG crediting. In addition, USCAP favors the use of emission offsets from reduced deforestation to supply a strategic emissions reserve available to covered entities to help reduce compliance costs. The overall aim of these recommendations is to encourage developing countries to move rapidly to curb their emissions, while providing verifiable emission offsets to help contain costs for U.S. emitters.

Although the discussion draft allows fewer offsets (domestic and international) than favored by USCAP, the Pew Center believes that it is in many ways consistent with these recommendations. Its offsetting provisions would provide a strong positive incentive for developing countries to undertake stronger efforts and to assume reasonable climate commitments. By allowing crediting on a sectoral basis, the proposed legislation would help mobilize larger-scale reduction efforts in key sectors, while the provisions on reduced deforestation would establish the safeguards needed to ensure the integrity of forest-based offsets.

Importantly, the draft would allow for the recognition of credits issued by an international body under the UN Framework Convention, or a new climate agreement, provided they meet U.S. offsetting criteria. A well-functioning international crediting mechanism is important to the efficiency of the global greenhouse gas market. By potentially allowing offsets from an international mechanism, Congress would help position the United States to strongly influence the restructuring of the existing Clean Development Mechanism or the design of a successor mechanism.

Supporting Adaptation Efforts

As noted in the discussion draft, the United States committed under the UN Framework Convention and the Bali Action Plan to provide "new and additional" resources to help poor and vulnerable countries adapt to climate change, and such assistance must be predictable and sustainable. Consensus among governments on the appropriate means and levels of adaptation support will be critical to achieving a comprehensive climate agreement.

Conceptually, the discussion draft would provide a sound basis for significantly enhanced U.S. support for adaptation efforts in the least developed countries, small island states, and other especially vulnerable countries. It would establish a stronger framework for delivering direct bilateral assistance, and importantly, it would reserve 40 percent to 60 percent of the support available for U.S. contributions to any international adaptation funds established or designated under a new climate agreement.

To be effective, and to help secure a strong climate agreement, the legislation must establish a clear, predictable, and sustained source of funding for these international adaptation efforts. The Pew Center strongly supports designating an appropriate portion of allowance value for these purposes.

Linking Trading Systems

Emission reduction efforts in the United States and elsewhere will be more cost-effective if linked through a global greenhouse gas market. It is critical, therefore, that domestic U.S. legislation anticipates and facilitates the linkage of a U.S. cap-and-trade system to existing and emerging market-based systems in other countries and regions, provided they are of comparable environmental integrity.

The discussion draft appears to lay the necessary foundation for linkage to other market-based systems. It would establish sound criteria for determining qualifying programs, including the requirement of absolute emission limits, and of comparable stringency with respect to compliance, enforcement, and offset quality. By also allowing the recognition of allowances from programs establishing sectoral targets, the draft would provide another strong incentive for stronger efforts by countries not yet prepared to take on economy-wide targets.

Addressing Competitiveness Concerns

In recent testimony before the Energy and Environment Subcommittee, Pew Center President Eileen Claussen outlined our views and recommendations concerning potential competitiveness impacts on trade-exposed, energy intensive industries.[1] In brief, our analysis indicates that these potential competitiveness impacts are modest and manageable through a range of policy options.

We believe that in the long term, concerns over competitiveness and associated emissions leakage are best addressed through effective international climate commitments, and that the overriding objective should therefore be to facilitate their establishment. In the interim, we favor the use of transitional measures such as output-based emission allocations or rebates to vulnerable industries, and transition assistance to affected workers and communities. We strongly discourage the use of unilateral trade measures. Such measures

[1] "Competitiveness and Climate Policy: Avoiding Leakage of Jobs and Emissions," Testimony of Hon. Eileen Claussen, President, Pew Center on Global Climate Change, submitted to the Energy and Environment Subcommittee, Energy and Commerce Committee, U. S. House of Representatives, March 18, 2009.

would not fully counter competitiveness risks; as they would apply only to imports to the United States, they would not help "level the playing field" in the larger global market where U.S. producers may face greater competition from foreign producers. Further, they risk retaliatory trade measures, and put climate relations on the path to confrontation rather than cooperation.

On the whole, we believe the discussion draft takes a very sound approach to addressing competitiveness concerns. As we favor, it relies primarily on an output-based approach to compensate firms in qualifying sectors for the direct and indirect costs of greenhouse gas regulation. Also consistent with our recommendations, the draft would: structure the compensation so as to provide an incentive for investments in energy efficiency; phase down the level of compensation over time; provide for Presidential review to slow this phase-down if necessary; and end compensation if 70 percent of global output is subject to commensurate greenhouse gas regulation. We believe this approach addresses the transitional competitiveness concerns likely to arise under a mandatory cap-and-trade program, while maintaining the environmental integrity of the program and providing an ongoing incentive for producers to improve their GHG performance.

Critically, the draft contemplates the use of trade measures against other countries only as a last resort if the President finds that, despite the rebate program, regulatory costs have harmed production or employment by energy-intensive U.S. manufacturers, or that emissions from competitors in countries without commensurate climate obligations have increased. This approach preserves trade measures as an option, but defers their use to allow a reasonable period to assess the efficacy of the rebate program and to achieve effective international agreements.

In conclusion, the Pew Center believes that the Waxman-Markey discussion draft would provide the foundation for a strong U.S. contribution to the global climate effort, and that with further refinements, the proposed legislation would well position the United States to lead efforts toward an equitable and effective international agreement. We appreciate the opportunity to provide our input on the discussion draft, and look forward to working with the Subcommittee and the Committee as this critical legislation moves forward.

Mr. MARKEY. Thank you, Mr. Diringer, very much.

We have been notified that there are seven roll calls on the floor of the House. We have 3.5 minutes for the members to go over to make these votes. So what we will do is we will take a 1 hour recess until 1:45 so that the Members can make these votes and our witnesses, if they would like, can grab a bite to eat. But we will recommence at that point in time. And we apologize to all concerned. We have no control over the floor schedule.

So we will take a 1 hour recess.

[Recess.]

Mr. MARKEY. Thank you all so much for being here.

This is a little bit like the 1950s when your mother was still home so you went home for lunch as a break in school and you came back all energized, ready for those final two classes before you went out into the schoolyard.

So we thank you all for being here.

And our next witness is Lee Lane, who is a resident fellow at the American Enterprise Institute and is codirector for AEI's Project on Climate Engineering. Mr. Lane was previously a consultant to Charles River Associates International where he produced analysis of climate and energy issues.

Welcome, Mr. Lane, whenever you are ready, please begin.

STATEMENT OF LEE LANE

Mr. LANE. Thank you very much, Chairman Markey.

It is a pleasure to be here this afternoon to discuss with you a piece of legislation that is obviously quite ambitious and important. I refer, of course, to the American Clean Energy and Security Act.

The draft bill is an ambitious effort to grapple with what I believe is a very serious challenge posed by rising levels of greenhouse gases in the atmosphere. With climate change, though, there are no easy solutions, and many purported solutions are actually likely to amount to costly errors.

If enacted, this legislation would work far-reaching changes on the American economy, yet the bill's approach appears to be based on assumptions that clash with what I think are four basic realities of current climate policy, and my statement focuses on these, and let me just summarize them briefly if I may.

First, the costs of the proposed emissions cutbacks would very probably exceed their benefits. Rapid emission cuts, like those called for in the bill's cap-and-trade provisions, will lead to needlessly high costs. Furthermore, the draft bill's regulatory mandates are likely to raise costs without adding benefits. You heard some allusions to the problem of a duplicative system this morning in some of the testimony from the first panel. I suspect that this is potentially a serious problem.

Secondly, deep unilateral U.S. emissions cuts will not improve the prospects for reaching an effective global accord and may actually harm them. I suspect this is a place where there are some disagreements on the panel, but I think it is an issue worth discussing. Greenhouse gas control as an issue is 85 percent about striking a global bargain. It is only about 15 percent a matter of domestic energy and emissions control policy.

Enacting this bill in its current form would amount to giving away America's biggest stack of bargaining chips, its willingness to incur costs in domestic greenhouse gas controls. And it would amount to giving it away for free and before the serious bargaining has really even begun. The U.S. has not used this kind of strategy in its bargains on trade negotiations or arms controls or other important negotiations and I think for very good reasons.

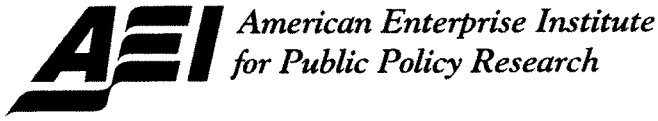
Third, with the legislation or without it, the conditions that would be required to reach an effective global greenhouse gas control accord are, in fact, absent. For many key nations, the costs of a greenhouse gas control agreement exceeds its perceived benefits. Globally, the benefits are both very unevenly distributed and highly uncertain. These same factors have defeated previous attempts to reach agreement. My greatest fear is that this bill could become a step toward another agreement that is like the Kyoto protocol, both costly and ineffectual.

Fourth, the U.S. can and should take action on climate change. My answer to Mr. Inslee's question earlier today is that, yes, I take climate change quite seriously. But realism about climate change demands a serious but patient approach to greenhouse gas curbs. A combination of gradual emissions cuts, basic science research and adaptation can, I think, protect U.S. national interests without incurring excessive costs and without causing undue conflict with other global powers like China, India, Japan, and Russia.

Some features of the draft bill reflect what I believe are valuable insights. For example, I believe that it is right to stress adaptation and the need to advance technology. These are crucial aspects of climate policy. In these areas, my statement offers a few suggestions about how its efforts, the bill's efforts, in these directions might be made more cost effective. I hope those suggestions are useful and that, as the bill evolves, it does so in ways that will increase its benefits and decrease its costs.

Thank you very much.

[The prepared statement of Mr. Lane follows:]



Statement before the Subcommittee on Energy and the Environment
On 'The American Clean Energy and Security Act of 2009'

ACESA 2009 and the U.S. National Strategy for Dealing with Climate Change

Lee Lane

Resident Fellow

American Enterprise Institute

April 23, 2009

The views expressed in this testimony are those of the author alone and do not necessarily represent those of the American Enterprise Institute.

Introduction

Mr. Chairman, Mr. Upton, other members of the subcommittee, thank you for the opportunity to appear before you today. I am Lee Lane, a Resident Fellow at the American Enterprise Institute. AEI is a non-partisan, non-profit organization conducting research and education on public policy issues. AEI does not adopt organizational positions on the issues that it studies, and the views that I express here are mine, not those of AEI.

The draft bill that is the subject of this hearing, The American Clean Energy and Security Act of 2009 (ACESA), is an ambitious attempt to meet the very real challenges posed by rising amounts of greenhouse gases (GHGs) in the atmosphere. Some of the draft bill's goals are unquestionably valid. With climate change, solutions will take time, and hurried action can lead to costly errors. The subcommittee and its members are, therefore, to be commended for their efforts to explore the discussion draft's complex implications.

The ACESA discussion draft is an extremely complex piece of legislation. It is likely, if enacted, to work far-reaching changes on many segments of the American economy. I have not been able to analyze the bill's provisions in detail, nor have I as yet seen modeling results of the kind that would allow an assessment of its economic impacts. My statement, therefore, does not attempt a detailed assessment of ACESA's provisions; rather, it seeks to assess the realism of the main assumptions that seem to underlie the bill's structure and goals. It concludes that the draft bill's approach clashes with four basic realities of current climate policy.

1. **The costs of ACESA's proposed GHG emission reductions would probably exceed their benefits.** The draft bill's many regulatory mandates are, at best, entirely redundant to its cap-and-trade provisions. In other cases they are likely to add costs without adding to the bill's social benefits. Further, the cap-and-trade program is designed to cut emissions deeper and faster than appears to be optimal.

2. **In the short and medium term, the U.S. can do little to bring about an effective global accord on GHG controls.** Simple math reveals that GHG control is better viewed as the subject of a global bargain than as a domestic pollution control issue. ACESA's approach amounts to giving away one of this country's biggest bargaining chips, its expenditures on domestic GHG controls – and to giving it away before the hard bargaining has even begun. The U.S. has not used this approach in previous negotiations on trade, arms, or other important matters – and for very good reasons.

3. **The conditions required to achieve an effective global GHG control accord are, in fact, unlikely to emerge in less than several decades.** The bargaining, monitoring, and enforcement costs of an agreement are high compared with the perceived benefits. The latter are both unevenly distributed and highly uncertain. The repeated failures that have so far marked efforts to reach a climate accord testify to the scale of these difficulties.

4. **The U.S. can and should take action on climate change, but, as in other policy areas, it should tailor its steps to fit its limited resources.** One key to realism is to adopt a patient but serious approach to GHG control. Another is to pay close attention to options that can protect the nation from whatever harmful effects of climate change may unfold. A combination of these approaches can do a good job of protecting U.S. national interests without incurring excessive costs or causing undue conflict with other global powers such as China, India, Japan, and Russia.

Some features of ACESA reflect valid insights. For example, the draft bill is certainly right to place a new stress on adaptation and on advancing technology. My statement will also offer a few suggestions about how these efforts might be made more cost-effective.

The high net costs of the draft bill's GHG reductions

The structure of ACESA virtually assures that it will impose higher than necessary costs to achieve the climate benefits for which it aims.

The needless costs of a combined system

ACESA will consume more resources to achieve its projected GHG reductions than would be required through its cap-and-trade system alone. Several of the bill's provisions apply to activities that are also directly or indirectly subject to the proposed GHG cap. At a minimum, these include the renewable electricity standard, the coal-fired power plant performance standard, and the energy efficiency resource standard.

In some instances these standards may have no effect on emissions. The cap might, by itself, motivate the actions needed to meet the standard. In that case, the standard merely wastes regulatory and compliance costs on purely redundant regulatory mandates.

It is also possible, though, that the mandates could, in some cases, go beyond the actions that the cap-and-trade would motivate. That is to say, the regulations might require steps that would cost more than would the cap-and-trade alone. The GHG cap sets total national emissions; so, if a mandate requires more GHG abatement in one area, less will occur in another. Therefore, society will reap no environmental gain, but the costs of reaching the cap will exceed those which would prevail with only the cap-and-trade in place.

Problems with the cap

While ACESA would be more efficient without its regulatory provisions, the design of the cap-and-trade program is also troubling. Namely, the emission reductions are more stringent and faster than most economic analysis recommends.

The high value that society derives from the use of fossil fuels implies that the costs of making deep and rapid GHG cuts could well exceed the benefits.[1] Although some

controversy remains on this point, most studies have confirmed that this is the case.[2] If so, the best available option would be to tolerate a quite substantial build-up in GHG concentrations. Comparing costs with benefits argues that a modest limit on GHG emissions makes economic sense, but a very stringent one does not. The draft bill is completely at odds with this conclusion.

The draft bill would force tough emission cuts on a fast schedule. This haste flies in the face of a great deal of economic analysis of how GHG reductions should be timed in order to get the most benefit from a given expenditure of resources. That analysis teaches that, for carbon dioxide (CO_2) controls, "a more gradual departure from the [emission] baseline is preferable to a more rapid departure."[3] Yet, in this respect, ACESA's controls are more abrupt than those of even President Obama's cap-and-trade plan.

Moreover, high expectations about the rate of future innovation should imply smaller GHG cutbacks in the program's early years.[4] The more one believes that innovation will lower future control costs – and without dramatically lower costs the bill's 2050 target is wholly fanciful – the larger the share of the total GHG cutbacks that should be deferred until the program's later years. In short, ACESA misses a chance to lessen total abatement costs by spreading them through time in a smarter way. Two prominent economists have recently made the broad point that should be heeded in this regard, "...the climate change problem is a marathon, not a sprint, and there is little environmental justification for heroic efforts to meet a short-term target. Such heroic efforts might not only waste resources, they risk souring our appetite to confront the more serious long-term problem."[5]

These steep reductions have another drawback. If the U.S. adopts GHG controls that are more stringent than those of one or more other major economic powers, its efforts will be partially offset by emissions leakage. Leakage is the flight of GHG-intensive activities to other nations that impose no controls or controls that are laxer than those in the U.S. Leakage can occur either through increased imports or decreased exports. One recent study found that leakage would offset between 14 percent and 25 percent of the Obama cap-and-trade plan's U.S. GHG reduction.[6] In effect, leakage will cancel out 14-25 percent of each tonne of GHG discharge avoided by domestic GHG limits. Because of this, the cost of avoiding a tonne of GHG emissions under a unilateral American program will be 16-33 percent greater than that reflected in the domestic abatement cost.

Limits on U.S. influence on global GHG control

ACESA considers the problem of leakage and proposes a number of measures in Title IV, Part 2, Section 412. In the next section, Section 413, the draft wisely concludes, "Congress finds that the purposes described in Section 412 can be most effectively addressed and achieved through agreements negotiated between the United States and foreign countries." Actually, that finding should be applied to the entire scope of Title IV. That is to say, effective GHG control regime, by its very nature, requires international agreement. Yet ACESA, as domestic legislation, can mandate only U.S. action.

GHG control, predominantly a foreign policy problem

Unless ACESA causes other nations to adopt GHG limits, it is focused on what is, in fact, the much smaller and shrinking part of the total problem. Effective GHG control depends far more on inducing controls abroad than it does on imposing them at home. When all greenhouse gases are considered and all sources, including land use changes, are counted, the U.S. is contributing only about 15 percent (and falling) of global GHG emissions.[7] The other 85 percent is beyond the control of the U.S. government.

China and India pose a great challenge to efforts to deal with the 85 percent of the task that lies beyond direct U.S. control. Their governments refuse to shoulder the costs of limiting GHG emissions. That decision is rational; their governments are largely free from domestic pressures to adopt controls.

As long as they continue to practice what is, in effect, climate *Realpolitik*, the U.S. has only four options for attempting to construct a global GHG control pact. None of them is likely to have a more than marginal impact on emissions. ACESA seems to draw, in varying degrees, on all four approaches.

Unilateral action and moral suasion

First, the U.S. could enact go-it-alone GHG controls and trust the moral appeal of its example to sway other nations.[8] While it is clearly true that the U.S. could not expect China and India to bear the costs of curtailing their GHG discharges unless it were willing to do the same, it is quite another thing to leap from that statement to the assertion that the U.S. should act without firm pledges that other states will respond in kind.

The audacity of this leap has often been missed, but it merits real scrutiny. Does the United States conduct any other negotiation in this way? Did Congress, for example, as a prelude to the Uruguay or Doha Rounds, drop all U.S. tariffs and farm subsidies to zero? Did the U.S. win the withdrawal of Soviet conventional forces from Europe by first pulling its own troops out of Germany? Why, then, would we consider taking the functional equivalent of these steps in the area of GHG control? Or, to pose the same question in another way, how would ACESA's GHG reductions differ from the just-mentioned bargaining moves in trade or arms control?

No one can claim that the answer is that the Chinese and Indian governments have signaled their readiness to respond in kind to U.S. GHG curbs. To the contrary, they continue to insist that the developed countries must commit to pay them for any control costs that they incur.[9] The Chinese and Indian governments' statements are consistent with their behavior. These countries are clearly more interested in dodging the costs of GHG curbs than in capturing the gains from a global control regime.

ACESA could only harden their resolve. As other countries adopt GHG limits, China and India will make competitive gains by simply standing pat against controls. Over time, energy-intensive industries will migrate to the nations that reject controls. The growth in these states of energy-intensive capital and jobs will add to the political costs of any

future move toward controls.[10] This outcome is the very opposite of the one that the U.S. should be seeking.

Trade sanctions

Second, many proponents of U.S. GHG controls have proposed to allow the U.S. government to clap trade sanctions on countries that fail to cap their GHG discharges. ACESA also follows this strategy, albeit somewhat hesitantly. There are better grounds for the bill's hesitancy than there are for believing that trade sanctions will change Chinese and Indian policy.

One country adopting trade sanctions, or a few countries doing so, will merely change the geographic pattern of trade flows. It would do little net harm to China and India. As GHG controls raised U.S. production and transport costs, countries like Japan with low-carbon processes for producing steel, aluminum, or other energy-intensive goods would raise their exports to the U.S. At the same time, these countries could boost their own imports from China and India to fill the gap left by their higher exports. The Chinese and Indians would be largely indifferent to the change. The threat of U.S. action will, therefore, put little pressure on them.[11]

Paying China and India for GHG abatement

Third, the U.S. could offer to pay for China's GHG reductions as well as its own. Although some ACESA provisions amount to paying other nations to reduce GHG emissions, the bill does not appear to envision the kind of very large transfer payments that the China/G-77 group is demanding. In their view, past U.S. emissions are a kind of historical guilt, and contemporary Americans should pay to expiate our ancestors' sins.[12]

The case for this demand is hollow. It rests, in part, on the false proposition that developing countries have added almost nothing to current atmospheric GHG stocks. The reality is quite different. The group of currently poor countries and the group of currently rich countries have each placed about the same amount of GHGs in the atmosphere.[13]

Confusion about this point stems from three mistakes. First, many studies consider only industrial sector emissions. Most of the poorer countries' emissions stem from land use changes, agriculture, and animal husbandry, so they are not counted. Second, studies often look only at CO_2. Poorer countries tend to have large methane emissions; again their contribution is missed. Third, many studies have lumped those poor countries with high emissions with the many poor countries that have virtually none. The regional averages mask the true state of affairs. Cumulatively, these errors have created a badly distorted impression of the origins of today's atmospheric GHG stocks.[14]

Furthermore, the situation is changing rapidly. The balance ten years from now will be much different than that which prevails today. The latter is simply irrelevant to decisions about who should pay to reduce future emissions. To the contrary, attempting to interject claims about the historical record is more likely to lead to stalemate and endless

wrangling than it is to build consensus. It is hard to see why the U.S. would want to give credence to this approach.

Exaggerating the extent of other nations' GHG reductions

Fourth, some may be tempted simply to pretend to believe that a mix of Chinese or Indian "no-regrets" policies constitutes serious action on GHG controls. (No-regrets policies are those that would be rational to adopt even in the absence of concerns about climate change.) China and India, for reasons unrelated to climate, are very likely to adopt such policies. Their economies exhibit very low energy efficiency. They enjoy many options for making energy savings that will be cost-beneficial quite independently of concerns about climate.[15] Chinese and Indian actions to reduce this waste are, therefore, properly regarded as corrections to the estimates of their baseline GHG growth; as such, they are welcome. They are, however, not done in response to U.S. action, and they will affect GHG growth paths only at the margin.

An effective global deal on GHG control is unlikely

The conclusion seems inescapable. The U.S. can have little impact on when China and India become willing to bear the costs required to control GHG discharges. This limit on America's options reflects a basic reality: Conditions are not yet ripe for forging an effective global accord on GHG controls. To understand why this might be so, we might want to consider the economic roots of the GHG control issue.

Open access property rights and GHG emissions

Excess GHG emissions are an example of a fairly common kind of market failure, a failure often called the "tragedy of the commons". It can arise when property rights allow open access to a valuable resource. Instances include open access to grazing land or fishing grounds or to oil and gas reservoirs. Open access can cause under-investment in the resource and too much consumption of it.[16]

In the case of climate, the open access resource is the atmosphere's capacity to absorb GHG discharges. Those who gain from the actions that release GHGs reap the full benefit of using the atmosphere in this way, but they incur only a negligible percentage of the total costs, *i.e.* their personal share of any harm done by their increment to global climate change.

Because of this mismatch of private and social costs, agents maximizing private net benefits will overuse the atmosphere's GHG disposal capacity. Cumulatively, emission levels exceed those at which the additional risk of climate change would just balance the value of the gases' disposal. And investments in carbon 'sinks' like forests or carbon stored in soils are falling below optimal levels.

Limiting open access property rights is difficult

To reach an agreement on collective action, the parties must believe that the new distribution of property rights offers them benefits that will exceed the sum of the new arrangement's costs to them plus the costs needed to negotiate, monitor, and enforce the agreement. (Economists call the latter "transaction costs.") By inference, high transaction costs can scuttle agreements on readjusting property rights in ways that, were it not for the transaction costs, could yield net benefits for all parties. It is precisely this problem that has caused the failure of many attempts to curtail exploitation of the common-pool resources.[17]

The record of collective action on other open access problems

In principle, collective action could solve the problem by changing property rights to limit access. In practice, such collective action has often not materialized, or it has done so only after much harm has taken place.

For example, wild ocean fish stocks are being seriously depleted. Even within national territorial waters, restraints on over-fishing have often been eroded over time. Curbs on over-pumping of oil and gas resources have sometimes worked, but often they have only done so after a great deal of economic waste had already occurred.[18]

The frequency of failures to replace open access property rights is suggestive. Open access arrangements are notoriously prone to wasteful overuse. If they remain in place, the transaction costs of changing the property rights regime must be quite high relative to the value of the resource.

The record of collective action on GHG controls

The record of GHG controls has been no more effective than attempts to control over-fishing and other similar problems. Global emissions of CO_2, the most important industrial greenhouse gas, currently exceed the 1988 level by over a third.[19] The IPCC and NOAA report that, through the last several decades, the rise in atmospheric concentrations of CO_2 has sped up.[20]

Many Europeans blame the United States for this lack of progress. In Europe, the social demand for action on climate appears to be stronger than it is in the United States.[21] Yet, even in Europe, GHG reductions have not been nearly as sharp as those stipulated by the Kyoto Protocol.[22] European leaders harshly criticized America's rejection of the Kyoto Protocol. Economically, though, for the U.S., the Protocol's costs would have more than outweighed its benefits.[23] Politically, its high costs clearly exceeded the rather low U.S. national willingness to pay – a mismatch that doomed its chances for acceptance.[24] The experience raises a question about whether the conditions that would permit a better outcome are yet in place.

Features of GHG controls that impede collective action

Unfortunately, GHG control seems to have many of the features that complicate efforts to restrict open access to resources, and these features raise real doubts about when an effective agreement might be expected.

Diverse interests raise the transaction costs of reaching agreement

In problems of this kind, the more diverse are the interests of the parties, the poorer are the prospects for success.[25] Contrasting value judgments often cause conflict.[26] With GHG controls, the differing interests of rich and poor nations have emerged as especially problematic.[27]

While some governments regard GHG control as high priority, others have concluded that paying to curb domestic GHG discharges is not, at least for now, in their interest. For many poorer nations, economic development offers better protection from harmful climate change than do GHG limits. This choice makes sense. Industrialization can boost the ability to adapt to climate change. Of course, it can also relieve many other more acute problems. For these countries, slowing growth in the name of GHG control may simply be a bad investment.[28]

Then too, the governments of China and India may lack the popular support that they would need to be able to bear the political costs of GHG controls. Their governments have often gone to great lengths to hold energy prices *below* world levels.[29] To now drive domestic energy prices above world market levels would be a daring political gamble.

Many participants make agreement more difficult

Sheer numbers also matter. All else remaining equal, the more parties that must agree, the more complex the negotiation is likely to be. That is one reason that the wider the geographic extent of the open access resource, the harder it will be to restrict access to it.[30] With GHG control, the resource is literally the sky – not something to which access is very easy to limit. All nations, however unequal in other regards, have access to the sky.

Today, counting the E.U. as a single entity, perhaps fifteen to twenty nations around the world are major sources of GHG discharges. Agreement is already difficult, but the real test lies in the future. Economic growth will swell the number of major sources. Eventually, participation has to be nearly universal, or countries without controls are likely to become magnets for GHG-intensive activities.[31] Essentially, a great many nations have, or will eventually gain, an effective veto over global GHG control efforts.

The limited net benefits of GHG controls

As already discussed, for GHG controls to yield net benefits at all, they must be fairly moderate. In that case, the total benefits of controls, although positive, are also modest. In this regard, GHG controls contrast sharply with the control of ozone-depleting chemicals. With the latter, optimal controls yielded quite large net benefits. The much smaller net gain available from GHG control restricts the range of options for deal making.[32]

The cost of information about the benefits of agreement

Costly information – or information that is not available at any price – can exacerbate the problem posed by thin net benefits. Continuing uncertainties about the impacts of climate change clearly discourage agreement on GHG controls. Not only do large uncertainties persist about the global costs and benefits of GHG controls; even more doubt obtains on a nation-by-nation basis.[33] These uncertainties impede action, and they are likely to do so for as long as they remain at their currently high level.[34] The progress of climate science may over time dispel these uncertainties, but, so far, the process has been a slow one.

Climate science, moreover, will do nothing to dispel doubts about whether an agreement would be enforced. Such doubts clearly diminish the perceived value of reaching agreement.[35] And the grounds for such doubts are solid. They are especially so with respect to the developing countries.[36] Today, China's government has a strong economic motive to assure the safety and purity of its exports. The U.S. government is also concerned, and yet the safety of toys and food imported from China clearly remains problematic.

In GHG control, the Chinese government would have no real interest in transparency. Could the U.S., especially in that case, accurately determine how much coal China is burning? Could it know if a carbon tax has been enforced on state-owned enterprises in Qinghai? Could it ensure that such a tax had not been offset with concealed subsidies? Neither China's record, nor America's, reassures on these points.

Climate policy realism

To all appearances, then, GHG control requires action on a global scale, and most of what we know about efforts to restrict open access property rights tells us that a strong global GHG control pact will be an especially difficult challenge. Yet climate change is a threat, even if assessing its severity and timing remains difficult. U.S. climate policy can do no better than to make the best of the options that are actually available, even if they fall far short of offering final solutions.

Putting a modest price on GHG emissions

The high costs of GHG abatement are a major source of the difficulty in reaching consensus on GHG control. New technology can lower these costs. Fostering the relevant kinds of innovation, therefore, should be a top priority. Implementing a modest carbon tax or, perhaps, a hybrid cap-and-trade system, would be an important step toward this goal. A price on GHG discharges would encourage the private sector to develop new lower-cost ways of curbing GHG emissions.[37]

At the same time, as already discussed, many factors constrain the level of the price on GHG emissions. The price should, therefore, be a modest one, and it should replace regulatory mandates, not supplement them. In order to keep the proper focus on the global nature of the climate problem, the price should be linked to GHG prices in China

and India. At least in the early years, the U.S. price may have to slightly exceed those in China and India, which are likely to be zero, but the gap should be small and, in order to avoid creating perverse incentives for other nations, it should not be permitted to increase.

The need for funding basic energy science

While a price on GHG emissions would encourage some helpful kinds of innovation, it will not generate other kinds. Coping with climate change will require major breakthroughs in basic science.[38] Such breakthroughs are often elusive, and seeking them is an inherently high-risk venture. The private sector finds it difficult to capture the economic rewards of funding basic science, and placing a price on GHG emissions will not correct this bias. As a result, the private sector usually does not make large, sustained investments in basic science; yet that kind of investment is the key to achieving the breakthroughs needed in climate policy.[39]

Some form of government funding will be necessary to call it forth.[40] Government, though, has often short-changed basic energy science in favor of large demonstration projects. It has also found it difficult to avoid wasteful stops and starts in funding.[41] There may be a productive role for properly structured demonstration projects, but the premature move to that stage has often been associated with costly failures. Making large public investments in plug-in vehicles before it is clear that carbon capture and storage can be economic has at least the appearance of just such a rush to demonstration. There is also a serious risk that the high costs of demonstration projects will generate budget pressures that will cause the politically less appealing basic research to be starved for resources.[42]

The ACESA provisions on technology forcing should be reviewed in light of the findings of a recent conference on climate and technology conducted at Stanford University. Among these findings attendees agreed: "The single greatest impediment to an R&D program that is directed at achieving a commercial objective is that it will be distorted to deliver subsidies to favored firms, industries, and other organized interests. The best institutional protections for minimizing these distortions are multi-year appropriations, agency independence in making grants, use of peer review with clear criteria for project selection, and payments based on progress and outputs rather than cost recovery."[43]

Limit international agreements to areas where agreement exists

The United States should engage other nations on climate change. More than a few opportunities for agreement may exist. A global pact on GHG caps with full trading of allowances is almost certainly not among them, nor, in my opinion, would it be desirable.

Trying to push China and India into going much beyond their current no-regrets policies will almost certainly prove futile, and it might well be counter-productive. On the one hand, it is possible that Chinese and Indian societies are destined to evolve in ways that will awaken internal demands for GHG controls. If they are, U.S. incentives could easily delay that progress. Sanctions could provoke resentment; bribes could induce a sense of

entitlement and incentives for strategic behavior. On the other hand, if China and India are not destined to develop an indigenous demand for GHG controls, or if they will do so only very slowly, the U.S. can do even less to change the course of events. Climate is clearly an instance to which the president's call for a more humble U.S. foreign policy should be taken to heart.

In the meantime, a negotiation that allows countries to make and trade-off a wide variety of relevant actions might make far more sense than one in which all transactions have to take place in the coin of emission caps. Some countries with strong green lobbies might still wish to offer caps. Others might pledge R&D spending, sectoral GHG caps, aid to poor nations for adaptation, or more funding for climate science.

This approach, much like a trade negotiation, would make monitoring compliance with nations' pledges easier. It would also make penalties of failing to perform agreed actions more credible.[44] At the same time, one must admit that such a negotiation would not produce the dramatic GHG reductions craved by the green groups, but, then again, no other form of negotiation is likely to produce that result. It makes no sense to condemn modest real progress because it does meet an unrealizable ideal.

On other aspects of climate policy, prospects for technology cooperation may also be good. The U.S. may wish to coordinate with other industrialized nations to help to boost the adaptive capacity of poorer states. There is no reason to forego progress in these areas while waiting for a global deal on GHG caps, a deal that may be decades away.

Give priority to adaptation

A sizeable amount of climate change is at least possible. There is no good reason not to seek to minimize its net costs.

ACESA is correct to stress adaptation

ACESA makes a valuable contribution in highlighting the importance of adaptation. Fortunately, much can be done to minimize the social costs that climate change might otherwise cause. Indeed, for the next century, adaptation to climate change is likely to do more to reduce its costs than will GHG controls.[45] America is especially well-endowed with the human and other capital required to make the needed adjustments.

The prompting of the federal government will not be necessary for the private sector and state and local governments to undertake many of the needed adjustments.[46] Generating and diffusing this kind of scientific knowledge should be a top priority of the federal government. In this regard, too, ACESA has found the right priority.

Need to research geoengineering as a possible means of adaptation

A family of technologies, known collectively as 'geoengineering', might provide an added tool for adaptation. The idea behind them is simple. When sunlight strikes the Earth's surface, greenhouse gases in the atmosphere trap some of the heat that is generated. A slight decrease in the amount of sunlight reaching the Earth's surface could,

in principle, offset this warming. Scientists estimate that deflecting a small portion of the total sunlight that strikes the Earth back into space would be enough to cancel out the warming effect of doubling the pre-industrial levels of greenhouse gases.[47]

Scattering this amount of sunlight may be fairly easy. Past volcanic eruptions have shown that injecting relatively small volumes of matter into the upper atmosphere can scatter enough sunlight back into space to cause discernable cooling. The 1991 eruption of Mt. Pinatubo reduced global mean temperature by about .5 degrees Celsius. This temperature reduction was apparent in just a few months and persisted for about three years.[48]

Some scientists propose, therefore, to use modern technology to create a carefully engineered analogue to this effect. Proposals to seriously study geoengineering are gaining adherents among climate policy experts. In late 2006, NASA and the Carnegie Institution jointly sponsored a high-level expert workshop on the subject. Scientists such as Ralph Cicerone, Paul Crutzen, and Tom Wigley and prominent economists such as Scott Barrett, William Nordhaus, Thomas Schelling, and Lawrence Summers have argued that the concept warranted further exploration.[49] Recently, an expert conference conducted at Stanford added the voices of several more distinguished economists to this list.[50] John Holdren, the president's new science advisor, recently added his voice to this cause while also noting the many uncertainties that still surround these approaches.

Conclusion

In sum, ACESA represents an ambitious attempt to grapple with a real problem. The draft bill's recognition that more is needed to tackle the problem than just GHG controls is welcome. In principle, the bill is certainly correct to stress the importance of technology in seeking a long term solution to climate change. In practice, the rush into multiple demonstration projects is likely to carry real risks.

The bill's stress on adaptation, and on the science needed to unleash action in this area, is commendable. Geoengineering may greatly extend the capacity to adapt to climate change. Research into its potential and its possible risks should be part of a well-designed effort on adaptation.

The primary weakness of ACESA is its GHG reduction program. The U.S. should, indeed, put a modest price on GHG emissions, but ACESA's abatement costs are likely to be far too high. Its regulatory mandates can only increase the net costs, and ACESA's goals are at odds with the strategic logic of the GHG control problem, which is essentially the subject of an international bargain about cost sharing.

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Mr. MARKEY. Thank you, Mr. Lane, very much.

Our next witness is the Reverend Douglas Smith. He is the executive director of the Virginia Interfaith Center for Public Policy. He was formerly on the staff of the World Council of Churches in Geneva.

Welcome, sir.

STATEMENT OF REVEREND C. DOUGLAS SMITH

Mr. SMITH. Good afternoon Mr. Chairman.

Thank you so much, members of the committee.

I am Doug Smith, the executive director of the Virginia Interfaith Center for Public Policy, an organization that seeks to address hunger, poverty, and the care for God's creation through the development and adoption of sound policy. While the faith community is so diverse that no one can really claim to represent it completely, I would like to share with you the perspective of many of us, including the National Council of Churches and a number of our ecumenical and interfaith organizations.

First and foremost, we applaud the inclusion of strong international adaptation assistance measures in the draft of the American Clean Energy and Security Act. We see this as a necessary component of any U.S. legislation, particularly as we work to ensure strong and robust responses to a post-Kyoto agreement.

I would like to speak to the importance of this section as understood by the faith community. We must ensure that generations know that we acted in good faith to protect all people from the impact of global climate change. Because of the interconnectedness of God's creation, we share not only the need to provide adaptation funding for developing countries but also the responsibility as people of good conscience and, for many of us, of common faith.

Our best scientists and global security analysts tell us that climate change will impact hunger poverty and war very nearly. By the middle of this century, 1 billion people will likely face significant water shortages. And with 75 percent of persons in developing countries subsisting on agriculture, they can be assured of a famine-filled future. And sadly, we could be assured of an unstable geopolitical future if we do not act with boldness, act with compassion, and act with immediacy.

In the faith-based NGO community, we are already witnessing how climate change is complicating our capacity to serve others internationally. The Evangelical Lutheran Church in America and the Virginia Interfaith Center recently sent one of my staff to Nicaragua. Mr. Rinn tells the story of Santa Marta, an ancient east coast indigenous Miskito community whose language has never needed a word for hurricane, and yet, in 2007, Felix, a category five hurricane, practically wiped Santa Marta off of the map.

As weather patterns shift as a result of global climate change, people like the citizens of Santa Marta are struggling to adapt to emerging realities for which they are unprepared. This is why it is so important that we provide adaptation funding to developing countries. It is because the international consequences of global climate change are already today impacting millions of people.

And that leads the faith community to be united in our call to provide for international adaptation assistance to protect the most vulnerable communities around the world.

We urge the committee to support the language included in the American Clean Energy and Security Act, but we do ask for the following legislative priorities to find their way into any final bill:

Number one, the funds should be appropriately targeted in terms of recipient countries. They should go to the most vulnerable developing countries, and no more than 10 percent should go annually to any one country.

Two, local communities must be engaged in a participatory process with adequate monitoring, evaluation, and transparency.

Number three, the funds provided should be in addition to current funding levels of official development assistance.

Number four, the funds should be appropriately targeting adaptation around climate impacts, around drought, natural disasters, disease and migration.

And number five, legislation should also enhance developing country efforts to reduce greenhouse gas emissions by reducing deforestation, encouraging reforestation, and by transitioning to cleaner energy technologies.

We in the U.S. have a moral responsibility to those in need during this global crisis. I would say that loving our neighbors includes equipping them to protect themselves from climate change, and I would like to ask you today to commit to providing substantial financial support annually of no less than $7 billion per year. That is the minimum that we should be able to do for those in desperate need.

I thank you for this opportunity to testify on these important matters and for your time this afternoon.

[The statement of Reverend Smith follows:]

Testimony of
Reverend C. Douglas Smith
Executive Director
Virginia Interfaith Center for Public Policy

Before the
Subcommittee on Energy and Environment
Committee on Energy and Commerce
U.S. House of Representatives
On
Ensuring U.S. Competitiveness and International Participation
April 23, 2009

Introduction

Good morning Mr. Chairman and Members of the Subcommittee.

I am Doug Smith, Executive Director of the Virginia Interfaith Center for Public Policy. The Virginia Interfaith Center is a unique partnership among Virginia's mainstream faith community that seeks to address hunger, poverty, and the care for God's creation through the development and adoption of sound policy. While the faith community is so diverse that there is no one who can claim to represent it completely, I would like to share with you the perspective of many of us including the National Council of Churches and a number of our ecumenical and interfaith partners relevant to the issue of international adaptation funding.

First and foremost, we applaud the inclusion of strong international adaptation assistance measures in the draft of the American Clean Energy and Security Act. We see this as a necessary component of any US legislation, particularly as we work to ensure a strong and robust post-Kyoto agreement.

I would like to speak to the importance of this section as understood by the faith community.

Statement

There is a reality that is becoming clearer: The days of addressing shifting climate patterns, rising sea levels and rising global temperatures in ways that pit the interests of businesses against workers, and the needs of a growing human race against the sanctity of the Earth, must now end. We must act today to ensure that future generations – our children, their children, and their children's children -- remember that we acted today in good faith to protect all people from the impact of global climate change tomorrow. The interconnectedness of what I refer to as God's Creation – or more plainly people, plants, animals and the climate we live in -- now forces us to reconcile ourselves not to the past, but to a compassionate future that includes providing support to developing nations for adaptation as part of international aid and security priorities.

There are shifting climate realities taking hold all around us. Our best scientists and global security analysts tell us that the impacts of climate change will soon include increased hunger, poverty, and war. By the middle of this century, just four short decades from now, one billion people will likely face significant water shortages. With 75% of persons in developing countries subsisting on agriculture, they are assured of a famine-filled future and we of an unstable geo-political future if we do not act with boldness and compassion. If these shifting climate realities before us are not addressed it will be almost impossible to keep hundreds of millions of people alive, much less able to participate in emerging global markets or resist extremist factions.

CNA Analysis and Solutions recently issued a report where a number of retired military leaders refer to global climate change as a "threat multiplier," and the United States and potentially a dozen other national states will face increased security risks as a result of climate change. While these concerns are focused on the assets of the US government, and among our allies around the world, in the NGO community we are also seeing a multiplying threat. The desperation of those facing poverty is threatening our aid workers, our ongoing development projects, and creating emerging needs for security in almost every developing country in which we work. This situation has manifested itself in kidnappings and even assassinations. At this rate, additional threats resulting from climate change may complicate our capacity to fulfill our mission to serve others to the point where vulnerable people at risk are not efficiently served and humanitarian disasters are exacerbated.

As an example, groups that I am connected to including the National Council of Churches of Christ, Church World Service, and Action by Churches Together have spent the last decade working with internally displaced people as a result of ethnic conflicts in Africa, Eastern Europe, and Asia. As peoples are displaced, they move into heavily populated areas where an already strained infrastructure struggles to handle additional consumers of food and other already scarce resources. One only needs to look to the country of Zimbabwe, once referred to as the breadbasket of Africa. Hunger and disease are widespread as the result of agricultural mismanagement. When I worked in Zimbabwe 10 years ago, the country was beginning to realize some food shortages. Today, "Africa's breadbasket" is better known as an area where famine grows at an alarming rate. According to one report [1] almost 5 million Zimbabweans struggle with starvation, 66% of children are no longer in school, and diseases like cholera are rampant. As conditions deteriorate, the competition for dwindling resources creates an explosive cocktail of civil unrest, regional instability, and economic disruption. If we factor in the additional complications related to water and food access as a result of global climate change, we will most certainly see exacerbated conflicts that are more and more difficult and expensive to address as an international community. The desertification of once fertile lands in Zimbabwe would most certainly tip the country to a point of no return and reverberate throughout the continent.

[1] http://www.upi.com/Top_News/2008/10/14/Severe-famine-overtaking-Zimbabwe/UPI-43951224001005/

Testimony of Rev. C. Douglas Smith, Virginia Interfaith Center for Public Policy
April 24, 2009

The Evangelical Lutheran Church in America and the Virginia Interfaith Center recently sent a staff person, Ryan Rinn, on a fact-finding mission to Nicaragua. Mr. Rinn tells the story of Santa Marta, an ancient east coast Miskito community whose language had never before needed a word for hurricane. They had never known a hurricane landfall. But in 2007, Felix, a category five hurricane, slammed into the small village of Santa Marta almost wiping it out. Felix's fury was felt further south than any storm of its magnitude before. As weather patterns shift as a result of global climate change, the people of Santa Marta, and other indigenous peoples, are grappling to adapt to new realities for which they are unprepared. For the Miskito people, they could not even describe the new situation because their ancient language had never needed to before. If support for these communities to adapt to the changing weather patterns had been available it could have saved lives, property, and helped to alleviate the suffering that continues today.

The international consequences of global climate change are impacting millions of people, and the faith community is united in our call to provide international adaptation assistance to protect and provide for the most vulnerable communities around the world. We urge the Committee to support the language included in the American Clean Energy and Security Act and ask for the following related legislative objectives to be included in this or any climate bill:

(1) The funds should be appropriately targeted in terms of recipient countries; they should go to the "most vulnerable developing countries" and no more than 10% should go to any one country in any single year.

(2) Local communities must be engaged in a participatory process through transparent mechanisms with adequate monitoring and evaluation.

(3) The funds provided should be in addition to current funding levels of official development assistance.

(4) The funds should be appropriately targeted to adapting to climate impacts, including impacts related to drought, natural disasters, diseases, and migration.

(5) Legislation should also enhance developing country efforts to reduce greenhouse gas emissions by reducing deforestation (and encouraging reforestation) and by transitioning to clean energy technologies.

We in the U.S. have a moral responsibility to those in need in this global crisis. I would like to ask you to commit to providing substantial financial support of no less than $7 billion per year to this desperate need.

Thank you for the opportunity to testify on these important matters, for your time and for your consideration.

Mr. MARKEY. Thank you, Reverend, very much.

The Chair now turns to recognize the gentleman from Washington State, Mr. Inslee.

Mr. INSLEE. Thank you.

Mr. McMackin, Michael and I have been working on an effort to provide some security against job leakage for some time. We introduced our bill in October. It has just been the last week or two we have heard about concerns from the oil refineries, which surprises me, frankly, that this is now arising. Have the oil refinery folks attempted to join your coalition or asked to be involved in your efforts?

Mr. MCMACKIN. No, Mr. Inslee.

In some ways I guess I am not surprised in that it has always been seen as a unique case. The witness from ConocoPhillips yesterday I think said it right. There were two studies. Those two studies may be outdated, but they indicated that the oil industry might be able to pass along these costs, unlike the other energy-intensive industries in our coalition. I do think it is a special case, and it ought to be treated specially, different than the provision for the energy-intensive trade-exposed industries.

Mr. INSLEE. I think there is good cause to believe they are in a different situation. That doesn't mean we shouldn't think about that, particularly small refiners. But I do think there is a different case.

I want to ask Dr. Houser about this. You have written a book about this. And I think that there is a concern about treating them the same where they are different. Do you think that petroleum refineries are different from other energy-intensive manufacturing industries from a job-leakage perspective?

Mr. HOUSER. Sure. Thank you very much.

First, I would say, in our analysis of the criteria as you have laid it out in the Inslee-Doyle provision, refineries do not qualify under either the energy-intensity or the carbon-intensity metric. So, in our assessment, energy cost as a share of shipment value for refineries is about 2.5 percent, and the cutoff line is 5 percent. At 2.5 percent, there are a lot of other industries that no one would think of as being energy-intensive that are at that same line.

The refineries have suggested that we look at still gas, which is not included in the purchase value, in the surveys that are outlined in the Inslee-Doyle provision. We did that, and even including a fairly high-priced assumption for still gas does not put refineries over the threshold to qualify.

As Mr. McMackin said, the empirical studies that have been done in Europe ex-post looking at the impact of phase two of the EU emissions trading scheme on refineries found no evidence of leakage there. I guess the additional point that I would make is that the output-based nature of the rebating program that you have developed with Representative Doyle is to try to ensure that these goods that we need for a low-carbon future, like steel and glass, can still be manufactured here in the U.S.

The goal of climate policy is to move away from fossil fuels. And so we don't want an output-tied allowance for fossil fuels. It goes against the goal of the program.

Mr. INSLEE. So the bottom line, even though we are all justifiably concerned about job leakage in any sector of our economy, you think there is a significant reason to distinguish the oil refineries from the energy-intensive manufacturers. Is that your statement?

Mr. HOUSER. I think that is right. There may be legitimate competitiveness concerns that refineries face. I think that if they can demonstrate that, it should be dealt with under a separate provision, not the output-based rebate.

Mr. INSLEE. Right. And I would suggest that if those special provisions have specific proposals, we hope they will come forward. Actually, there is an ad hoc coalition for small business refiners that have made a proposal. We are happy to look at these proposals, but I think it is going to be a unique case, and it would require a specific criteria in that regard. So we will be looking forward to any suggestions in this regard.

I want to appreciate Reverend Smith's comments. Reverend, just from a non-ecumenical standpoint, is there any faith that you are aware of, Buddhist, Hindu, Baptist, Catholic, for the full spectrum of human faith, is there any faith that you think non-action dealing with climate change would be really consistent with the sort of stewardship views of those faiths?

Mr. SMITH. Sir, I would say that I am unaware of any faith community who would not want action taken to protect the one earth that we have. And I am aware of only concern within the faith community about climate change.

Mr. INSLEE. So this is one that, by taking action, fair to say, we might unite all the Creator's children on this one. Is that about a fair statement?

Mr. SMITH. It is a fair statement.

Mr. INSLEE. We hope to do that. That will be another good reason to pass this bill. Thanks a lot.

Mr. BUTTERFIELD [presiding]. Thank you very much, sir.

At this time, the Chair recognizes the gentleman from Michigan, Mr. Upton.

Mr. UPTON. Thank you, Mr. Chairman.

And I apologize for not being here for the testimony of all the witnesses. I do have a couple of questions, and hopefully the time won't expire before I am done.

Mr. Conway, I have two nuclear plants in my district, and we are hoping to add some reactors, thus adding jobs, in the future. And it is my understanding that the steelworkers are very supportive of additional nuclear across the country.

And as you know, our energy needs are going to grow by about 30 to 40 percent by the year 2030. Nuclear has no greenhouse gas emissions, thousands of jobs. When my two plants were built, 85 percent of the components came from within the United States. Today they are looking at a new plant in Congressman Dingell's district at the Fermi plant on the other side of the State from where I live. If they are successful in getting that reactor approved by the NRC, it is likely that 85 percent of the components are going to come from someplace else other than the United States.

They are currently repairing a steel turbine at one of my facilities, 500 and some jobs while they are repairing it. It was made in Germany. Would the steelworkers support—this bill, as you may

know has nothing on nuclear in it. Would the steelworkers support adding a title to try and streamline the process to bring back nuclear in maybe a little faster way than not, knowing that it will add lots of jobs?

Mr. CONWAY. As you know, we have workers in that industry and work hard on behalf, on their behalf as well as everyone else. And we don't believe that a comprehensive energy policy going forward excludes nuclear. And like everyone else, I guess we struggle with storage and issues like that. But we are not naive about that. So we would support anything that does that.

More importantly, your discussion about the supply chain that centers around that facility and the manufacturing facilities that are around and located to it, we think that has been lacking in a lot of the discussion in creating a renewable sector in this country and that the country hasn't built out the manufacturing supply chain. So we would welcome it, and we would be glad to work with you on that.

Mr. UPTON. As much as I would like to see the issue of the disposal of high-level nuclear waste addressed in this bill, I confess that we probably—that is not a doable thing.

Mr. CONWAY. I understand.

Mr. UPTON. But we can in fact streamline the process and I think switch the light from red to green. And your support would be helpful. And I think that it would be strongly bipartisan as we embark on that issue.

I don't know if you saw last week's Washington Post, but there was a headline: "India Rejects Calls for Emissions Cuts. Officials Say Growth Will Be Compromised."

It goes on to say, no way that they are not going to participate.

I know that it is in the interest of a number of members, I believe Mr. Inslee and Mr. Doyle have an amendment that is going to be part of this that calls for a border adjustment so that we would, in essence, be able to have a tax on imported goods, steel is an example, from countries that don't have a cap-and-trade program. If, however, the WTO rules that that is not compliant, would the steelworkers support an off-ramp or in essence the jettison of that provision?

Mr. CONWAY. Look, we believe it is compliant with the WTO provisions. And I guess we would cross that bridge when we get to it. But we think that border adjustability doesn't come into play if you are going to make your product the right way. And so, the way we view it, it is sort of like severance pay. You ask a company for severance pay. If they are going to fight about it, they intend to lay off some people. If people are going to fight about border adjustability, you have to sort of worry about what their intents are going to be and the way they intend to make it.

Right now they face steal expansion in China, 400, 500 million tons over the last decade. And If you think about it, it is the newest steel production that has gone on in the planet, but still China emits 2.5, 3 times the U.S. steel industry. So it is easy to deduce that the best of statements may not match up with intentions.

And one way to make sure that people are honest in a time of growth in nations like China and India is that there is a border adjustability. And if you make it the right way and you make it

clean, you don't have to worry about it. But if you don't, you would pay for it as if you had, and we—

Mr. UPTON. But if they rule it out, and Susan Schwab sent a letter last year to our committee saying that she didn't think it would be WTO compliant, so let's say the jury is out today; you have got evidence on both sides, but ultimately if they say thumbs down—

Mr. CONWAY. Look, we are not particularly thrilled with everything the WTO says anyway.

Mr. UPTON. I know.

Mr. CONWAY. I would not look to posit a position on that until we hear from them.

Mr. UPTON. I know my time has expired.

Thank you, Mr. Chairman.

Mr. BUTTERFIELD. Thank you.

The Chair recognizes the gentleman from Oregon.

Mr. WALDEN. Thank you, Mr. Chairman. I appreciate it.

Mr. BUTTERFIELD. We have run out of Ds. Can you believe it?

Mr. WALDEN. That is fine with me if you run out of Ds. Maybe we could do that more often, maybe when we vote. I am just kidding.

Mr. UPTON. Is it possible now to call up the bill? We can dispense with the bill quick. We can all catch our planes going home today and not worry about——

Mr. WALDEN. I am staying for tomorrow. I am reclaiming my time.

Mr. Lane, would border tariffs and other trade measures motivate China to go along and impose stiff emission cuts?

Mr. LANE. Sir, I don't believe that they will, nor do I think that the prospect of updating subsidy provisions will have that effect. I think there is every reason for thinking that China and India will continue to resist imposing on their economies the cost of significant restrictions on greenhouse gases. And frankly, I don't believe that there is anything that the United States and its government is able to do at reasonable cost to us, to ourselves, that will change their attitudes on that point.

Mr. WALDEN. And do you think they are big enough and capable enough that they would just pay the tariffs anyway and probably just move on?

Mr. LANE. They probably wouldn't even have to. My own assessment would be that they would simply increase their exports to countries like Japan.

Mr. WALDEN. Oh, and work around——

Mr. LANE. And change the geographic pattern of trade flows rather than actually reducing their exports at all.

Mr. WALDEN. So your point is that these countries who don't participate in a cap-and-trade scheme could get very creative and work around the tariffs anyway.

Mr. LANE. Yes, very easily.

Mr. WALDEN. Putting our workers at a disadvantage.

Mr. LANE. I believe so.

Mr. WALDEN. Costing us manufacturing jobs.

Mr. LANE. And eliminating most of the point of greenhouse gas controls, because if they——

Mr. WALDEN. Is it true that China is building two coal-fired plants basically a week?

Mr. LANE. I have heard numerous figures. I don't know whether it is one, two, or more, but they are clearly rapidly increasing their coal-fired electric capacity.

Mr. WALDEN. I am going to ask this panel like I have I think every other panel that has been here.

Have you all read the bill? Simple yes or no.

Mr. Lane.

Reverend Smith.

Mr. SMITH. No not in it is entirety.

Mr. WALDEN. Mr. Diringer.

Mr. DIRINGER. Not in its entirety.

Mr. WALDEN. Dr. Houser.

Mr. HOUSER. I read it.

Mr. WALDEN. You are a good man.

Mr. Conway.

Mr. CONWAY. Not in its entirety.

Mr. WALDEN. Mr. Wells.

Mr. WELLS. Not in its entirety.

Mr. MCMACKIN. All of the cap-and-trade title.

Mr. WALDEN. I am talking about the whole bill.

Mr. MCMACKIN. No, sir.

Mr. WALDEN. I guess I would ask you a question on page 527 of the bill, they have inserted a private right of action so that any individual can sue anybody for enforcement, even for fairly de minimis emissions of carbon.

And I am going to flip to that real quick because I want to know whether you support that provision of the bill because they define a harm that would include any effect of air pollution, including climate change currently occurring or at risk of occurring, and the incremental exacerbation of any such effect or risk that is associated with a small incremental emission air pollutant, and then it goes on from there. And the person would only have to say they might be affected in the future. Do you support that private right of action in this legislation?

Mr. DIRINGER. Mr. McMackin.

Mr. MCMACKIN. Yes, Congressman, our group is focused solely on the anti-leakage provisions. But I probably wouldn't be going too far out on a limb to say we would have considerable problems with a private right of action that is that robust.

Mr. WALDEN. Mr. Wells.

Mr. WELLS. As you have described it, no, I would not.

Mr. CONWAY. No, I would need to read it more and understand it.

Mr. WALDEN. Dr. Houser. Mr. Diringer.

Mr. HOUSER. I would need to——

Mr. DIRINGER. I understand this is similar to standard provision and in many environmental statutes have played an important role in the enforcement of those statutes over the years.

Mr. WALDEN. So you would support it?

Mr. DIRINGER. I would have to look at the language.

Mr. WALDEN. Reverend Smith.

Mr. SMITH. I am not familiar with the language.

Mr. WALDEN. Mr. Lane.

Mr. LANE. Let me withhold final judgment while saying I am extremely skeptical about anything that has so much potential for generating litigation.

Mr. WALDEN. All right. I appreciate that.

I want to go on to one of my favorite topics which is hydropower. I represent a district that has lots of dams along the Columbia River and gets most of its power, a good percentage of it at least, from the hydro system.

Mr. Conway, I know steelworkers used to have aluminum plants in my district, or there were aluminum plants that had many of your members who relied very much on that hydropower for the production of aluminum. Those plants now are closed and gone. Does anybody on this panel think hydropower should not be considered as a renewable energy source, Mr. Lane?

Mr. LANE. No.

Mr. WALDEN. Reverend Smith.

Mr. DIRINGER. No.

Mr. WALDEN. Dr. Houser.

Mr. Conway.

Mr. CONWAY. No.

Mr. WALDEN. Mr. Wells.

Mr. WELLS. No.

Mr. WALDEN. Mr. McMackin.

Mr. MCMACKIN. No.

Mr. WALDEN. So you all believe hydro should be considered as renewable. Okay. Good.

Now, Mr. Wells, Dow Chemical, I want to ask you this question, if I vote and we enact a cap-and-trade system which necessarily raises energy costs, everybody else has testified that it will, will your company guarantee me you won't chase cheaper energy for your manufacturing offshore?

Mr. WELLS. If the competitive provisions I have testified to are included in the cap-and-trade, and energy prices for trade-exposed and energy-intensive manufacturers stay competitive, no, we will not. We will go where the energy is competitive. And as the provision——

Mr. WALDEN. So you will go where the energy is competitive. And China and India would not be involved. Are you saying China and India have to be involved in this same scheme?

Mr. WELLS. For this bill to make sense for a trade-exposed and energy-intensive manufacturing, you would have to have those provisions that allows us to stay competitive from an energy perspective with them.

Mr. BUTTERFIELD. The gentleman's time has expired.

At this time, the Chair recognizes the Chairman emeritus of the full committee, Mr. Dingell.

Mr. DINGELL. Mr. Chairman, I thank you for your courtesy.

I want to continue on the questions my colleague just finished. Going across, starting at your right and my left, if you please, gentlemen. Yes or no, are you content with the provisions of the bill that deal with countries such as India or China which do not have a cap of their own? Yes or no, please.

Mr. LANE. No.

Mr. SMITH. I believe the United States needs to be a leader.

Mr. DINGELL. I am sorry.

Mr. SMITH. I believe the United States needs to be a leader in this realm.

Mr. DINGELL. So you think it is good that they should not have a cap, and we should?

Mr. SMITH. No, Mr. Chairman. That is not at all what I say. I think the United States should be a leader.

Mr. DINGELL. Just yes or no. I don't want a lot of toe dancing. Are you content with the provisions that deal with the United States but don't deal with India and China?

Mr. SMITH. I am. Yes, sir.

Mr. DINGELL. You are.

And you, sir.

Mr. DIRINGER. Yes.

Mr. DINGELL. And you.

Mr. HOUSER. I think they come pretty close.

Mr. DINGELL. And you, sir.

Mr. CONWAY. No, not entirely.

Mr. DINGELL. Why?

Mr. CONWAY. We think there is a transition period where our industries who have to come up to speed ought to be rebated the full cost of compliance for a period of time and then go to an average sector. And so we think eventually it is there, but there is an initial time period where we need it phased in and protect the jobs that we have.

Mr. WELLS. We are supportive of, again, the transition that it protects those industries that would be in competition with those places that do not have a cap.

Mr. DINGELL. And after the competition?

Mr. WELLS. Excuse me.

Mr. DINGELL. And after that time?

Mr. WELLS. If the transition—those protections would have to stay in place until places like China, India would have a similar situation.

Mr. DINGELL. Do you know that, or do you just hope?

Mr. WELLS. Through working with people like Mr. McMackin, we are comfortable with that, yes.

Mr. DINGELL. And you, sir.

Our next panel member, please, are you satisfied with the provisions that deal with countries such as India and China which may or may not have a cap of their own, yes or no?

Mr. MCMACKIN. Yes, Mr. Chairman.

Our group has been focused exclusively on perfecting the anti-leakage provisions to the extent possible. We believe those have to be a bridge to an agreement that leads to a situation where we have equalized costs with foreign producers.

Mr. DINGELL. Thank you.

Now going across, same direction again, yes or no, is there any more that you would like to see in terms of protections for American industry included in the legislation, yes or no, if you please?

Mr. LANE. My answer would be yes. Principally in the form of controls on the overall costs of the bill.

Mr. DINGELL. And you, sir.

Mr. SMITH. I would say, sir, that I am not familiar with those provisions within the bill because I am here specifically to speak about international adaptation.

Mr. DINGELL. Thank you.

And you.

Mr. DIRINGER. I would like to reserve judgment as I focus particularly on the bill's relation to international negotiations, and there may be other aspects of the bill with respect to your question that I would want to look at.

Mr. DINGELL. Next panelist.

Mr. HOUSER. I feel like the phaseout portion of the bill could use a little bit more clarification.

Mr. DINGELL. And again, sir.

Mr. CONWAY. We think it needs a border-adjustability provision at its onset and remains in place during the life of the understandings.

Mr. DINGELL. Thank you.

Next panelist.

Mr. WELLS. We would like to see the feed stock exemption for the chemical industry perfected a bit more.

Mr. DINGELL. And you, sir.

Mr. MCMACKIN. And, Mr. Chairman, we think the leakage provision needs strengthened and some of the other provisions, as Dow has testified, like the non-emissive provisions, need better definition.

Mr. DINGELL. Thank you.

Gentlemen, I happen to think that Mr. Doyle and Mr. Inslee have done a good job of directing their attention to protecting trade-exposed industries in this legislation.

Do you feel that the draft bill does an adequate job of protecting those industries, starting again if you please, sir, on your far right?

Mr. LANE. I would say that it probably does a better job of protecting those industries than it does of leveling the playing field for the U.S. economy as a whole.

Mr. DINGELL. Next panelist, please.

Mr. SMITH. I would say, sir, that that is not my specialty within the bill.

Mr. DINGELL. Thank you.

Next panelist.

Mr. DIRINGER. We are very comfortable with the general framework laid out in the bill.

Mr. DINGELL. Next panelist.

Mr. HOUSER. Yes.

Mr. CONWAY. Not quite. We think it is close. It needs some more refinement, as we have discussed earlier, on the border adjustability in the 100 percent rebate on compliance.

Mr. DINGELL. And our next panelist.

Mr. WELLS. As long as the protection stays in place until such time as there is an international level playing field, yes, we are comfortable.

Mr. MCMACKIN. It is an excellent structure, Mr. Chairman. A lot will depend on whether it is adequately funded with allowances. We think that would require between 850 and 900 million allowances a year.

Mr. DINGELL. Mr. Chairman, you have been very courteous. Thank you.

Mr. BUTTERFIELD. Thank you, Mr. Chairman.

At this time, the Chair is going to recognize a member of the full committee. She is not a member of the subcommittee, but certainly she is welcome and recognized at this time for 5 minutes, the gentlelady from Tennessee.

The members of the subcommittee will, obviously, have priority.

At this time, the Chair recognizes the gentleman from Louisiana.

Mr. SCALISE. Thank you, Mr. Chairman.

We have heard some testimony from a few of you about operations you have in other countries. I think, Mr. Wells, you talked about maybe 50 percent of Dow Chemical's workforce is out of the country. What are some of the factors in deciding whether or not you are going to build a plant or expand a plant in the United States versus going to another country?

Mr. WELLS. Certainly the implications of the cost to the region, and for us, a large part of that is energy, as I have testified today and testified in front of this group before, and then certainly the closeness of the market; where is the market developing? When you apply those two things together, when you look at what has happened to our industry, the U.S. chemical industry over the last say 8 years, and you look at what energy prices have done, natural gas from 2002 to 2008 has gone up by nearly 500 percent. Chemical industry has gone from being very positive, from a trade perspective, one of the highest in the country, to now we have a trade deficit.

Mr. SCALISE. So what are some of the top countries that you go to when Dow goes to another country as opposed to here?

Mr. WELLS. From an energy perspective, certainly the Middle East, where we can get our feed stocks, which are byproducts of the energy process, natural gas, byproducts of oil, so the Middle East is where we can get low cost, and of course, we are moving into the expanding markets, places like China, India.

Mr. SCALISE. Do any of those countries that you have just mentioned, do any of those have any kind of cap policy on greenhouse gases, specifically carbon?

Mr. WELLS. Not the ones that I mentioned, no.

Mr. SCALISE. And so, you know, some of us look at the bill, and of course, there are a lot of details that are left out. But one of the things, if we go back to President Obama's actual budget that was passed by the House just a few weeks ago, his budget envisions raising about $640 billion from a cap-and-trade energy tax. So, clearly, whether or not the details are in the bill, and of course many of the details are not, on how this whole trading mechanism would work and who would get these free allowances, ultimately the President's own budget says that they have got to come up with some kind of mechanism that raises $646 billion in new taxes, in essence.

And so if a bill is going to come out of this committee, I hope a bill like the one presented does not, as I talked about earlier, the American Energy Act is a true alternative bill that we have proposed for comprehensive national energy policy that will fund the alternative sources of energy, create those new jobs, while also not running off the existing jobs we have and encouraging things like

clean coal, encouraging more nuclear power, which emits no carbon.

So there is another alternative out there, but the bill that we are discussing today clearly has a big cost, $646 billion. How would a company like Dow react if these new conditions come on, and you are not given the allowances you think you might be getting, and then you have got to make a business decision, as you have in the past, to keep those jobs in the United States or to move them to one of the countries that doesn't emit or that doesn't control emissions? Ultimately have y'all started making any of those decisions, or are you waiting for this bill to come out to see what you are going to do?

Mr. WELLS. If the bill—a bill that comes out is not looked at such things as carbon leakage, doesn't handle such things as carbon leakage, the feed stock exemption is extremely important to the U.S. chemical industry, and then avoiding the dash to gas, as we have talked about many times; if a bill does not have those things, and it is safe to say what you have seen happen because of the rising energy prices over the last decade would continue to happen, we would be exasperated by the climate change bill.

Mr. SCALISE. Mr. Conway, in relation to the steelworkers, I am familiar with a steel plant that is proposed to be built. Right now it is proposed to be built in the United States, in fact in south Louisiana, but they are looking at two sites, they are looking at the United States, the south Louisiana facility, or Brazil, and they have made it clear now—a few months ago they pulled back on any decisions until they see what happens with cap-and-trade energy tax bill. And they said basically if this bill passes, they are going to build that plant, but they are going to build it in Brazil.

And we are talking about a $2 billion investment, 700 good jobs, steelworkers, that would be created and that will be created, and the question is, will they be created in the United States, which has environmental controls already in place that are much better than Brazil, or will it be built in Brazil where they will not have the same controls and, in fact, if somebody is concerned about carbon emissions, more carbon will be emitted if that plant is built in Brazil, yet passage of this bill will dictate whether those 700 jobs and the $2 billion investment go to Brazil; do you, when you are looking at that, especially as your workforce issues are going to become more concerned by legislation like this that would run some of these companies off, what are your thoughts on how that would affect employees in your industry?

Mr. CONWAY. Congressman, we think there is much of that going on anyway, and if, in fact, the purpose of the bill is to try and reduce carbon on a global basis, we understand that this leads to a global sectoral agreement where people across the world agree on what emissions ought to be in a sector.

Mr. SCALISE. Of course, countries like Brazil and, as we have heard earlier, China and India will not comply.

Mr. CONWAY. A company in Germany, a German company, who is moving into Alabama, who intends to put up half a steel plant because it intends to run the other half of the plant in Brazil where it can emit a lot of carbon, and it will import slabs there; that doesn't solve the carbon problem. And if what we are here to do

is try and solve the problem of carbon emissions, then we need that global sectoral agreement. And our position is, simply, until we reach it, we ought to treat the steel made in Brazil as if it were made the right way and the clean way, and that is what the——

Mr. SCALISE. Of course, we know it has not, and those remedies are not in this bill, unfortunately.

So I appreciate the gentleman's time. I yield my time.

Mr. BUTTERFIELD. At this time, the Chair will recognize himself for 5 minutes.

Let me just take a moment to join my colleagues who have been discussing this today and say that I agree that it is critical that we must protect our industry and manufacturing base in this legislation. Without question, we must do that.

And so I want to go on the record publicly thanking my colleagues Jay Inslee and Mike Doyle for their hard work in developing a plan. And to make sure that these jobs stay right here in America.

In my district down in the eastern part of North Carolina, there are a number of different energy-intensive trade-exposed industries, such as Nucor Steel, which is in a small town named Winton, North Carolina. That industry employs nearly 500 people, good-paying jobs, produces $2.8 million tons of steel plate from recycled scrap each year. These are the kinds of jobs that we can ill afford to lose in a district where 21 of 23 counties have more than double-digit unemployment.

And so I want to thank these two gentlemen for their work as well as the other members of the committee. I also want to thank all of you for your testimony today. Specifically, I want to address this to Mr. McMackin.

Do I understand from your testimony, sir, both your testimony today and back in March, that you think that allocating 15 percent of allowances should be sufficient to support the eligible trade-exposed industries?

Mr. MCMACKIN. Yes, Congressman, with this footnote: That 15 percent, which was the same number that was in the original Inslee-Doyle bill, same number which by the way was in the Senate in the Brown-Stabenow amendment, was based upon the number of allocations in the Lieberman-Warner bill, about $5.7 billion. The annual allocations in this bill are a little lower, so, actually, I think the math comes out to about 16 percent.

Mr. BUTTERFIELD. I understand that you believe that the problem at hand can adequately be solved with using free allocation to eligible trade-exposed industries and that, as you write in your testimony, the draft has adopted a structure that can really work. Is this correct?

Mr. MCMACKIN. That is right, Congressman.

Mr. BUTTERFIELD. Let me now speak briefly to Pastor Smith.

Thank you for your testimony and for your work in general. Thank you so very much.

Can you, Pastor, briefly paint a picture for us about how money to a country like Zimbabwe provides security for that country as well as our country?

Mr. SMITH. Sir, many of us are aware of the situation in Zimbabwe currently where we have millions of people now that

face famine. We have civil unrest in places. It is really a dangerous cocktail when you mix famine and poverty with a government which is nondemocratic. When we add the issue of climate change in that, it really becomes quite difficult because what was previously the breadbasket of Africa then creates an unstable situation continent-wide in this kind of a situation, because what ends up happening is the investments that we have made in the past in development essentially gets wiped out.

And so when we create opportunities for international adaptation through funding through this Congress, what we do is we ensure an investment today helps us keep countries like Zimbabwe able to continue to feed their people, able to participate in a global economic system, able to resist nefarious groups that may try to go in and co-op a very difficult situation in the country. And ultimately, it also helps to secure the investments that we have made through the NGO community and USAID in the past years in order to lift that country out of the desperate situation it finds itself in.

Mr. BUTTERFIELD. Thank you.

Finally Mr. Wells, do you concur with the 15 percent assessment by your colleague to the left, you think that would be sufficient?

Mr. WELLS. Yes, as a member of his organization, yes.

Mr. BUTTERFIELD. So 15 percent, you want to go on record saying——

Mr. WELLS. With the caveat that he has already talked about, yes.

Mr. BUTTERFIELD. Thank you.

The Chair yields back the balance of his time.

Now we will go to the gentlelady from Tennessee, a member from the full committee, Mrs. Blackburn.

Mrs. BLACKBURN. Thank you, Mr. Chairman, and I will try not to take all 5 minutes.

I do appreciate being recognized, and I appreciate that you all would be here.

I tell you it is fascinating listening to your responses. I think I would like to hear from you on some questions after you all have had an opportunity to read the bill and weigh back in with us at that point.

Dr. Houser, I wanted just to ask you, my district, I have got, I am in Tennessee, have a lot of rural area, ag offsets that EPA would be able to structure under this bill. They would had have pretty broad discretion on structuring those ag offsets, and when we talk about competitiveness and global competitiveness, I am curious what your opinion is on how EPA should go about handling the agricultural offsets that they will be able to put in place, and also if you think that the imposition of cap-and-trade will diminish the competitiveness of the American agricultural community.

Mr. HOUSER. I think it is an important point to bring up, to think about how this bill impacts competitiveness more broadly. And agriculture is obviously an important sector there.

Offsets, domestic agricultural offsets, are important for several reasons, primarily because they will help reduce the cost of the bill. The EPA assessment of the Waxman-Markey bill that came out earlier this week shows that international offsets and domestic offsets will have a lot of the same cost benefits, reduce the cost for

compliance for the climate bill by half. So domestic agricultural offsets will play an important role there.

To the extent that agricultural entities are not capped themselves, so they don't face direct domestic compliance costs, but are recipients of offset investments, then that agricultural industry will have a competitive advantage vis-a-vis its counterparts in other countries, because it has no direct compliance cost but is receiving some offset——

Mrs. BLACKBURN. But do you see this driving up the cost of our domestic food supply, of our domestic yarn and clothing supply?

Mr. HOUSER. Fossil fuels in the economy will—the price of fossil fuels will certainly increase. The increase in the EPA economic assessment was fairly modest, but it will certainly increase. So then the question is, how quickly can we improve efficiency so that an increase in energy prices doesn't translate into an overall increase in energy costs?

Dow Chemical has spoken to how, over the past 18 years, they have reduced the energy intensity of a unit of production 38 percent. That type of improvement in agriculture and manufacturing is possible and is spurred on by a carbon price. So we can have higher energy prices and not higher energy costs. It just all comes down to efficiency.

Mrs. BLACKBURN. How long do you think it takes us to get to the efficiency that would allow them to be competitive.

Mr. HOUSER. I think that the rate of improvement that companies like Dow and the U.S. steel industry has demonstrated over the past decade, they have improved efficiency faster than the current bill would reduce emissions, so just on a business-as-usual trend, they are outpacing what the increase in energy price would be. So I am optimistic that other sectors of the economy have that ability as well.

Mrs. BLACKBURN. Okay. Thank you.

I will yield back.

Mr. MARKEY [presiding]. Great. I thank the gentlelady.

Let me give each one of you 30 seconds, tell us what you want us to know as we are putting together this legislation over the next several weeks. You have got 30 seconds each, give us your closing point that you want us to remember.

We will begin with you, Mr. Lane.

Mr. LANE. Thank you, Mr. Chairman.

I guess the single point that I would emphasize is that, as long as the cost of the bill is so high because of the speed of the emissions reductions, it is bound to have a negative impact on the U.S. economy.

Mr. MARKEY. Thank you, Mr. Lane.

Thirty seconds a piece.

Reverend Smith.

Mr. SMITH. Mr. Chairman, I think the one thing that I would want to leave the committee with is the need to have very realistic numbers within the bill specifically on international adaptation funding and knowing that any funding we put today towards adaptation is investment in the future. And I believe and many of our coalition believe that $7 billion is the very minimum where we need to start.

Mr. MARKEY. Okay. Thank you.

Mr. Diringer.

Mr. DIRINGER. The prospects for an agreement in Copenhagen will be greatly enhanced if Congress can provide some certainty as to the U.S. ability to help fund technology deployment and adaptation efforts internationally.

Mr. MARKEY. Thank you.

Dr. Houser.

Mr. HOUSER. That the competitiveness issues that we are talking about here today are manageable and can be dealt with affordably in the context of an economy-wide cap.

Mr. MARKEY. Thank you.

Mr. Conway.

Mr. CONWAY. That we would be naive to believe that the rest of the world that produces products will voluntarily reduce their carbon on their own without a border-adjustability mechanism.

Mr. MARKEY. Thank you.

Mr. Wells.

Mr. WELLS. We have the ability here to do a real win-win. We can work on solving this problem at the same time maintaining the competitiveness of U.S. manufacturers.

Mr. MARKEY. Mr. McMackin.

Mr. MCMACKIN. On the leakage problem for energy-intensive trade-exposed industries, the bill has an excellent structure by adopting the Inslee-Doyle structure. The key will be adequate funding of that provision through allowances. We think that would be about 850 to 900 million allowances a year.

Mr. MARKEY. Thank you, Mr. McMackin.

Thank you to all of you. I subscribe to Mr. Conway's philosophy here that we must act in ways that deal with human nature, even as it is reflected in other nations' behavior, and we must ensure that as we act in a way that is responsible, that we don't expose ourselves to other actions which will be irresponsible. And we must ensure that we construct this legislation in a way that guarantees that American workers are not affected adversely because we have not dealt with the reality of the fact that nations and human beings think the same and the proper protections must be built in to ensure that there are no innocent victims that we are creating.

So thank you so much. We will now, with thanks from the committee, request that you remain available over the next several weeks so we can continue to consult with you.

And we will then move on to the final panel. Thank you.

Welcome, ladies and gentlemen, to our third panel today. This is a very, very important set of issues we are about to discuss.

We will begin with our first witness, Dr. Howard Gruenspecht. He is Administrator of the U.S. Department of Energy's Energy Information Administration. He has worked extensively on electricity policy issues and economy-wide energy modeling for 25 years. He is a friend of this committee, a source of information on an ongoing basis.

We welcome you back, Doctor. If you could move that microphone in, we would appreciate it. And whenever you are ready, please begin.

STATEMENTS OF HOWARD GRUENSPECHT, ACTING ADMINISTRATOR, UNITED STATES ENERGY INFORMATION AGENCY; DAN W. REICHER, DIRECTOR, CLIMATE CHANGE AND ENERGY INITIATIVES, GOOGLE; DIAN M. GRUENEICH, COMMISSIONER, CALIFORNIA PUBLIC UTILITIES COMMISSION; JAMES L. ROBO, PRESIDENT AND CHIEF OPERATING OFFICER, FPL GROUP; GREGORY P. KUNKEL, VICE PRESIDENT OF ENVIRONMENTAL AFFAIRS, TENASKA, INC.; DAVID G. HAWKINS, DIRECTOR OF CLIMATE PROGRAMS, NATURAL RESOURCES DEFENSE COUNCIL; EUGENE M. TRISKO, ON BEHALF OF THE UNITED MINE WORKERS OF AMERICA; JONATHAN BRIGGS, REGIONAL DIRECTOR OF THE AMERICAS, HYDROGEN ENERGY INTERNATIONAL L.L.C.; JAMES KERR, PARTNER, McGUIRE WOODS LLP, FORMER COMMISSIONER, NORTH CAROLINA PUBLIC UTILITIES COMMISSION; JAY APT, EXECUTIVE DIRECTOR, CARNEGIE MELLON ELECTRICITY INDUSTRY CENTER, ASSOCIATE PROFESSOR, CARNEGIE MELLON UNIVERSITY

STATEMENT OF HOWARD GRUENSPECHT

Mr. GRUENSPECHT. Thank you, Mr. Chairman and members of the committee. I appreciate the opportunity to appear before you today to discuss the Energy Information Administration's analysis of the renewable electricity standard, or RES, program in Title I.

Mr. MARKEY. Could I just interrupt you for one second? It is like being in Yankee Stadium, and all of a sudden in walks Lou Gehrig or in walks Mickey Mantle. And in walks Bobby Garcia, the former great Congressman from the State of New York. So it is so great to see you.

Mr. GRUENSPECHT. I grew up in New York, also.

Mr. MARKEY. So it is like being in Cooperstown when one of the all-time greats walks in.

We will start all over again.

Mr. GRUENSPECHT. Well, Mr. Chairman, thank you again.

I appreciate the opportunity to appear before you today to discuss the Energy Information Administration's analysis of the renewable electricity standard, or RES, program in Title I of the American Clean Energy and Security Act's discussion draft.

EIA is the independent statistical and analytical agency within the Department of Energy that produces objective, timely, and relevant data projections and analyses to assist policymakers, help markets function efficiently, and inform the public. We do not promote, formulate, or take positions on policy issues; and our views should not be construed as representing those of the Department of Energy or the administration.

Since I appeared before the committee 2 months ago, EIA has updated its Annual Energy Outlook reference case to reflect enactment of the American Recovery and Reinvestment Act, or ARRA, which provides significant new Federal funding, loan guarantees, and tax credits to stimulate investments in renewable energy. The potential impact of the ARRA provisions on the projected use of renewable generation is large enough that an analysis of the RES that did not include ARRA in the reference case could provide mis-

leading results, and we do include it in this analysis here that I will discuss.

The RES proposal sets a target of 25 percent of coverage sales of electricity in 2025 and beyond be provided by eligible renewable energy. However, because of exemptions provided to small sellers and to sales of electricity from certain generation sources and the possibility that credits for qualified State energy efficiency programs could be used to meet a portion of the RES requirement, the amount of eligible renewables as a share of total electricity sales required to comply with the RES would be lower than the nominal target.

EIA modeled two RES policy cases for this analysis. One case assumes that the maximum level of efficiency credits, up to one-fifth of the RES target in any given year, are claimed, while the other case that assumes that States cannot qualify for or elect not to use efficiency credits.

Turning now to some of the main results from our analysis.

Power sellers will turn to a mix of renewable fuels to comply with the RES. In absolute terms, the key fuels are projected to be biomass and wind, but other renewable fuels, including solar and geothermal, are also projected to grow significantly in percentage terms.

The higher renewable generation stimulated by the RES leads to lower coal and natural gas generation. The increased use of renewables stimulated by the RES also leads to lower electricity sector carbon dioxide emissions. Electricity sector carbon dioxide emissions in 2030 are between 7 percent and 12 percent below the referenced case level in the two RES cases.

Given the amount of eligible renewable generation projected in the referenced case, the RES is not expected to affect national average electricity prices until 2020. As the required RES share increases to its maximum value in 2025, the value of the RES credits increases and the impacts on national average electricity prices become evident.

The projected peak effect on national average electricity prices is between 2.7 percent and 2.9 percent in our two RES cases. Because of regional difference in electricity and market structure, State RES requirements, and the different availability of resources in different areas, price impacts may vary by region, as shown in my written testimony.

The quantitative results I have just discussed reflect the modeling analysis of the RES provisions on a standalone basis. We recognize that the RES could have significant interactions with other programs in the chairman's discussion draft. For example, in previous analyses, EIA has generally found that a cap-and-trade program for greenhouse gases leads to significant growth in the use of renewable energy for electricity generation, which becomes more attractive when the cost of using fossil fuels goes up.

To the extent that the proposed cap-and-trade program induces more renewable resources than required by a concurrent RES proposal, one might expect RES compliance costs to be reflected in the value of carbon dioxide allowances. Therefore, adding our standalone estimates of the cost of an RES to a standalone estimate of

a cap-and-trade program cost would overstate the project combined costs of implementing the two programs concurrently.

In contrast, an energy efficiency resource standard which can reduce or eliminate projected growth and electricity load and, therefore, the need for additional generation capacity makes it more likely that a given RES target will require that generation from new eligible renewable capacity replace generation from existing capacity rather than from other types of new capacity. The cost penalty associated with backing out existing capacity whose capital cost has already sunk is typically much larger than the cost penalty associated with backing out alternative types of new capacity.

Mr. Chairman and members of the committee, this concludes my testimony. I would be happy to answer any questions you might have.

Mr. MARKEY. Thank you, Mr. Gruenspecht, very much.

[The prepared statement of Mr. Gruenspecht follows:]

Testimony of

Dr. Howard Gruenspecht

Acting Administrator

Energy Information Administration

U.S. Department of Energy

before the

Subcommittee on Energy and Environment

Committee on Energy and Commerce

U.S. House of Representatives

April 23, 2009

Mr. Chairman, and members of the Committee, I appreciate the opportunity to appear before you today to discuss the Energy Information Administration's (EIA) analysis of the renewable electricity standard (RES) program included in Title I of the American Clean Energy and Security Act (ACESA) discussion draft issued by Chairman Waxman and Chairman Markey at the end of March 2009.

EIA is the independent statistical and analytical agency within the Department of Energy. We are charged with providing objective, timely, and relevant data, analyses, and projections for the use of the Congress, the Administration, and the public. Although we do not take positions on policy issues, we do produce data and analyses to help inform energy policy deliberations. Because we have an element of statutory independence with respect to this work, our views are strictly those of EIA and should not be construed as representing those of the Department of Energy or the Administration.

Baselines and Targets for Considering the RES in the ACESA Discussion Draft

Since I appeared before the Committee two months ago, EIA has updated its *Annual Energy Outlook 2009* (*AEO2009*) reference case to reflect the enactment of the American Recovery and Reinvestment Act (ARRA) in mid-February 2009.[1] ARRA provides significant new Federal funding, loan guarantees, and tax credits to stimulate investments in energy efficiency and renewable energy. The potential impact of the ARRA provisions on the projected use of renewable generation is large enough that an analysis of the RES program in the ACESA discussion draft that did not include ARRA in the

[1] Several other changes, including updates to near-term world oil prices, reinstatement of the Clean Air Interstate Rule, and final action on Corporate Average Fuel Economy standards for model year 2011, are also incorporated in the updated reference case.

reference case could provide misleading results. The updated reference case, which is documented in a report and model results available on EIA's website, is therefore used as the baseline for EIA's analysis of Title I of the ACESA discussion draft. **Figure 1** compares the projected use of nonhydro renewables in the updated reference case and the reference case published in March 2009, which does not include ARRA.

Because of provisions in the discussion draft that exempt small electricity sellers and sales of electricity from certain generation sources, such as existing hydroelectric power and municipal solid waste (MSW), from coverage by the RES, as well as provisions that may allow credits for qualified State energy efficiency programs to satisfy up to 20 percent of the RES requirement, the share of eligible renewables required to comply with the RES will be lower than the nominal target. **Figure 2** illustrates the derivation of the amount of renewables as a share of total electricity sales required when these exemptions and credits are taken into account. While the nominal share in 2025 is 25 percent, exempting the small retailers lowers the effective target to 22 percent of total electricity sales. The effective target is lowered further to 21 percent when the generation from hydroelectric power and municipal solid waste is removed from the sales baseline. If States are able to, and elect to, take full advantage of the energy efficiency credits, the effective share of renewables required could drop to approximately 17 percent of total electricity sales. Figure 2 also shows the use of RES-eligible renewables in the updated reference case, illustrating that the RES program targets in the ACESA discussion draft do not exceed the projected use of renewables until about 2020, with the exact date when the program is expected to become binding depending on the extent to which efficiency credits are used for compliance.

Since the baselines for and details of the yet-to-be-established Energy Efficiency Resource Standard (EERS) program are unknown, the extent to which States would have access to efficiency credits for purposes of the RES is not clear. In order to assess how different outcomes regarding the application of efficiency credits might affect the projected impacts of the RES, EIA modeled two RES policy cases. The RES with Full Efficiency Credits (RESFEC) case assumes that the maximum level of efficiency credits, up to one fifth of the credits in the target in any given year, are claimed. This is reflected as a 20-percent reduction in the applicable target for eligible renewable generation. The RES with No Efficiency Credits (RESNEC) case assumes that States cannot qualify for, or elect not to use, efficiency credits.

The quantitative results discussed in this testimony reflect modeling analysis of the RES provisions in the ACESA discussion draft on a standalone basis. Other proposed measures in the ACESA discussion draft, notably the EERS and a cap-and-trade program for greenhouse gas emissions, could interact with the RES and significantly alter its incremental impacts. A qualitative discussion of these linkages is provided following the discussion of the standalone RES modeling results.

Impact of an RES on the Generation Mix and Electricity Prices

Power sellers will turn to a mix of renewable fuels to comply with the RES, as shown in **Figure 3**. In absolute terms, the key fuels are projected to be biomass and wind, but other renewable fuels including solar and geothermal are also projected to grow significantly in percentage terms.

Most of the projected increase in wind generation is due to existing State RES programs and the passage of ARRA. This occurs in both the reference case and the RES cases. Total wind generation in the two RES cases is projected to increase from 32 billion kilowatthours in 2007 to between 208 billion kilowatthours and 249 billion kilowatthours in 2030. Total biomass generation increases from 39 billion kilowatthours in 2007 to between 438 billion kilowatthours and 577 billion kilowatthours in 2030 in the two RES cases.

The higher renewable generation stimulated by the RES leads to lower coal and natural gas generation. In the two RES cases, coal generation ranges between 182 billion kilowatthours (8 percent) and 257 billion kilowatthours (11 percent) below the reference case level. Similarly, natural gas generation in the two RES cases in 2030 is between 55 billion kilowatthours (6 percent) and 150 billion kilowatthours (15 percent) below the level projected in the reference case.

Given the amount of eligible renewable generation projected in the reference case, the RES is not expected significantly to affect national average electricity prices until after 2020. As the required RES share increases to its maximum value in 2025, the value of RES credits increases and impacts on national average electricity prices become evident. The peak effect on national average electricity prices is 2.7 percent in the RESFEC case and 2.9 percent in the RESNEC case. The effect on national average electricity prices then falls, as the impact of the RES requirement on the cost of coal and natural gas, fuels whose use is reduced by added renewables, is increasingly reflected in electricity prices. By 2030, electricity prices are projected to be little changed from the reference case in both RES cases, with 2030 prices less than 1 percent higher than in the reference case.

There may be significant regional variation in price impacts, resulting from both differences in renewable resource availability and cost, as well as differences in how those costs are allocated to consumers. Projected regional price impacts are discussed later in the testimony.

Because of the level of renewables projected in the reference case, renewable credit prices are zero in the early years of the RES program. Credit prices turn positive around 2020, rise to the 5-cent-per-kilowatthour cap in 2024, and then start to fall a few years before 2030.

Impact of an RES on Carbon Dioxide Emissions

The impact of an RES on carbon dioxide emissions largely depends on the fuels and generators being displaced--carbon dioxide reductions are significantly larger when coal is displaced than when natural gas is displaced. Certain renewables, such as biomass co-firing at existing plants, directly displace coal use. Other increases in renewable generation will generally displace the marginal (most costly) generation source that would otherwise be used to meet customer load whenever the renewable generation source is available. In EIA's standalone analysis of the RES program included in the ACESA discussion draft, the increased use of renewables stimulated by the RES leads to lower electricity sector carbon dioxide emissions. Electricity sector carbon dioxide emissions in 2030 are between 195 million metric tons (7 percent) and 306 million metric tons (12 percent) below the reference case level in the two RES cases.

Regional Impacts of an RES

Compliance with RES targets can vary significantly by region. Although all regions provide some significant fraction of their required renewable generation from in-region sales, some tend to over-comply, and thus are able to sell credits to other regions, and other regions tend to under-comply, and need to purchase credits to achieve compliance. Several factors contribute to a region's overall tendency to be a net Renewable Electricity Credit (REC) importer or exporter, including:

- Cost and availability of renewable resources – regions with low-cost and/or abundant resources may be able to comply more economically or to a greater extent than other regions. Some regions may also be able to access lower cost resources in an adjacent region, with additional investment in transmission improvements.
- Cost of alternative generation options – regions that rely on more expensive conventional generation options, such as natural gas, will see reduced compliance costs, even with relatively expensive or limited renewable resources, since REC prices are a function of the spread between the cost of the renewable and the cost of the displaced generation.
- State incentives for renewable generation – some regions may have state RES requirements in excess of the net Federal requirement for that region, and as a result will necessarily over-comply with the Federal RES.

Because of regional differences in electricity market structure, state RES requirements, and ability to utilize resources, regional compliance surpluses or deficits may have differing price impacts, as shown in **Figure 4** for the RESNEC case. (A map of the

regions is shown in **Figure 5**.) There is a similar distribution in rate impacts across regions for the RESFEC case. In regions dominated by traditional cost-of-service regulation, the net cost increases or decreases from RES compliance are generally passed through to consumers; in regions with more open electricity market structures, these changes in costs will only be passed through to consumers to the extent that market forces allow, and will otherwise by absorbed by the industry. In cases where one region may be building dedicated renewable energy resources in an adjacent region, costs and benefits may be shared between the two regions, since the host region will realize the local economic benefits such as employment and land-owner payments – but also local costs such as any undesirable land-uses. The ownership region will receive any net proceeds from the operation and sale of renewable energy credits, and price impacts will tend to be in the ownership region.

Interactions Between the RES, the EERS, and the Cap-and-Trade Program for Greenhouse Gas Emissions in the ACESA Discussion Draft.

EIA's modeling of the RES in the ACESA discussion draft was a standalone analysis that did not consider interactions with other key programs in the ACESA discussion draft. While EIA cannot develop an integrated analysis until we are able to develop clearer insights into how some of the other ACESA programs would actually be implemented, interactions among the elements of ACESA could be significant.

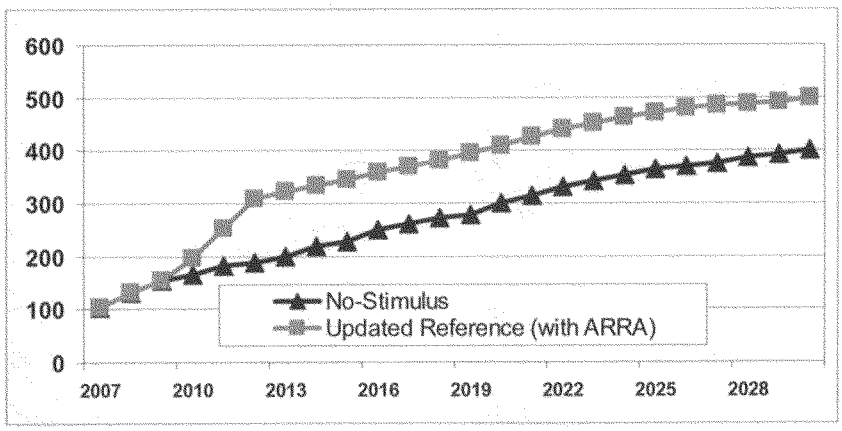
In previous analyses of economy-wide policies to limit or reduce emissions of greenhouse gases, EIA has generally found that a cap-and-trade program leads to significant growth in the use of renewable energy for electricity generation, which becomes more attractive when the cost of using fossil fuels goes up Where there are

multiple targets that can be satisfied with the same energy resources and projects, the target that drives the highest use of those particular resources will generally absorb all of the incremental costs from those resources, making compliance with the non-binding target appear to be costless. To the extent that the proposed cap-and-trade program induces more renewable resources than required by the concurrent RES proposal, one might expect a reduction in incremental RES compliance costs, since those costs would already be reflected in the value of carbon dioxide allowances.

In contrast, an EERS, which reduces or eliminates projected growth in electricity load,, and therefore the need for additional generation capacity, makes it more likely that a given RES target will require that generation from new eligible renewable capacity replace generation from existing capacity rather than from other types of new capacity. The cost penalty associated with backing out existing capacity, whose capital cost is already sunk, is typically much larger than the cost penalty associated with backing out alternative types of new capacity. The EERS in the ACESA discussion draft calls for a 15 percent reduction in load relative to the EERS baseline between 2012 and 2020, with further reductions beyond 2020 to be established through a rulemaking process. Although the relationship between the EERS baseline and the updated *AEO2009* reference case is far from clear, projected electricity demand growth in the updated *AEO2009* reference case, before application of an EERS, is only about 1.0 percent per year from 2008 through 2030. If the EERS program in fact leads to a significant reduction in projected demand growth relative to the updated *AEO2009* baseline, many regions would likely have little if any need for new capacity, so new generation from eligible renewables required to meet the RES target would be backing out generation from existing capacity.

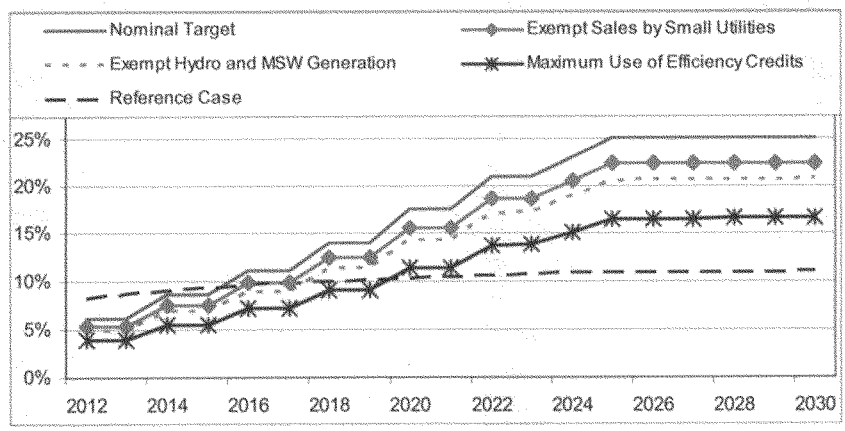
Mr. Chairman and members of the Committee, this concludes my testimony. I would be happy to answer any questions you may have.

Figure 1. Non-Hydroelectric Renewable Generation
(billion kilowatthours)



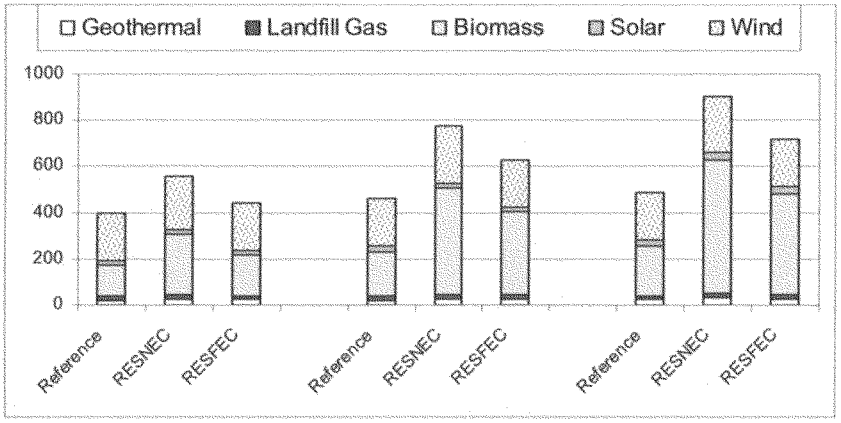
Source: Energy Information Administration, National Energy Modeling System runs STIMULUS.D041409A and NOSTIMLS.D041409A.

Figure 2. Share of Renewables Required Under the RES in the ACESA draft
(Share of total electricity sales)



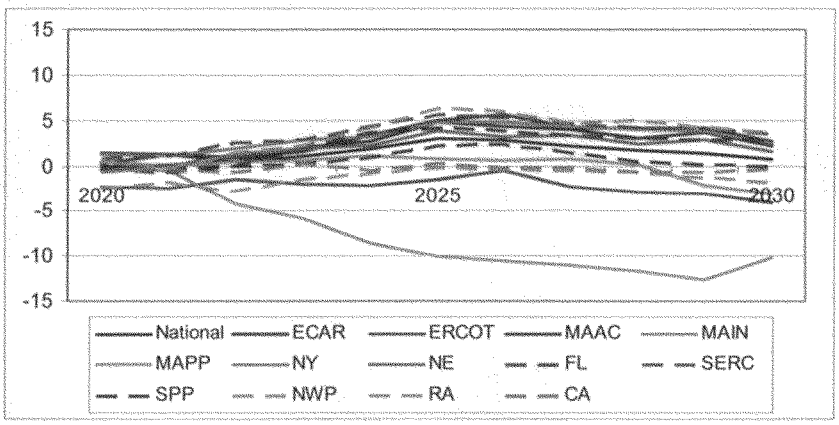
Source: Energy Information Administration calculations.

Figure 3. Generation by Fuel
(billion kilowatthours)



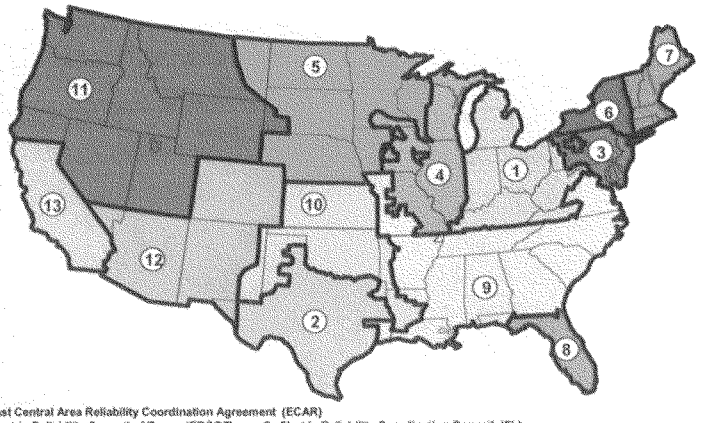
Source: Energy Information Administration, National Energy Modeling System Runs, STIMULUS.D041409A, WAXRPS.D041609A, AND WAXRPSNE.D041609A.

Figure 4. Percent Change in Electricity Price by Region – RESNEC Case Relative to Reference Case
(percent change)



Source: Energy Information Administration, National Energy Modeling System Runs, STIMULUS.D041409A AND WAXRPSNE.D041609A.

Figure 5. National Energy Modeling System Electricity Regions



1 East Central Area Reliability Coordination Agreement (ECAR)
2 Electric Reliability Council of Texas (ERCOT)
3 Mid-Atlantic Area Council (MAAC)
4 Mid-America Interconnected Network (MAIN)
5 Mid-Continent Area Power Pool (MAPP)
6 New York (NY)
7 New England (NE)
8 Florida Reliability Coordinating Council (FL)
9 Southeastern Electric Reliability Council (SERC)
10 Southwest Power Pool (SPP)
11 Northwest Power Pool (NWP)
12 Rocky Mountain Power Area, Arizona, New Mexico, and Southern Nevada (RA)
13 California (CA)

Source: Energy Information Administration

Mr. MARKEY. Our next witness is Dan Reicher. He is Director of Climate Change and Energy Initiatives at Google. He was previously cofounder of the New Energy Capital Corporation and served as Assistant Attorney General for Environmental Protection for Massachusetts. So we thank you for being here.

STATEMENT OF DAN W. REICHER

Mr. REICHER. First, I want to applaud the subcommittee's work on this path-breaking and comprehensive bill.

I will make three points in my opening statement related to the renewable energy standard, energy project finance, and energy information.

First, Mr. Chairman, the renewable energy standard in the bill is technically and economically achievable. Our Nation has more than adequate renewable energy resources to meet the RES. With continued technological advances and policy support, they become more cost effective every day; and by implementing the RES in conjunction with the energy efficiency resource standard, we can dramatically cut the need to add additional generation.

In my testimony, I highlight what may be the sleeping giant of renewable energy. Enhanced geothermal systems, or EGS, uses a common technique in the oil industry to fracture hot rock deep below the Earth's surface. Water is injected into the rock, where it is heated to produce steam and then piped to the surface to generate electricity. A 2007 MIT study found that just 2 percent of the heat below the Continental U.S. between 3 and 10 kilometers is equivalent to over 2,500 times total U.S. annual energy use.

At Google, we have mapped the EGS resource State by State; and I would like to submit the 50-State map for the record, Mr. Chairman.

Our calculations show that just 2 percent of the EGS generation potential in South Carolina is almost two-thirds of current generating capacity. In Texas, it is double. In Arkansas, it is triple. In Maine, it is quadruple. In Oregon, it is nine times; in Idaho, 32 times its existing capacity. And, Mr. Chairman, only half jokingly, if the Big Dig in Boston had been vertical instead of horizontal, we might be powering a good chunk of Massachusetts using EGS.

The beauty of EGS is that it provides baseload generation 24 hours a day. The U.S. once led in EGS technology, but leadership is now in Australia, where commercial projects are under construction, and Europe, where demonstration projects at the megawatt scale are already operating. We have a chance to catch up, thanks to $400 million for geothermal in the stimulus legislation.

In addition to adopting an RES, the House should look at providing a credit multiplier for baseload technologies like EGS. The House should also authorize and appropriate significant Federal support for EGS for R&D beyond the stimulus. I would also suggest, Mr. Chairman, an oversight hearing on this potentially transformational technology.

Turning to my second point, the legislation we are considering does not directly address a critical issue in advancing our clean energy economy, increasing access to capital for the deployment of literally trillions of dollars worth of clean energy products that will be essential to meeting our climate and energy goals, including an

RES and EERS. Last week, Senators Bingaman and Murkowski jointly released the discussion draft of a bill that would create the 21st Century Energy Technology Deployment Administration, or CEDA. I know Congressman Inslee has also been advancing this concept, and Congressman Van Hollen introduced a separate proposal.

The mission of CEDA would be to encourage wide-scale deployment of clean energy technologies, particularly those that are perceived as too risky by commercial lenders but with high potential to address our environmental, economic, and security challenges.

Moving a technology from small pilot project to full commercial-scale plan is often the point at which many promising energy technologies die. We call it the "Valley of Death". I urge the committee to consider incorporating the CEDA approach into the legislation we are considering today in order to address this critical problem.

My third and final point involves improving access to energy information. With a national RES and EERS, Congress should also ensure that electricity consumers, large and small, have a more accurate picture of their electricity usage as well as the source and mix of their power. Congress should work to ensure that utilities provide consumer access to energy information through smart meters and other dividers and as near real-time as possible.

President Obama has talked about how the smart grid funding in the stimulus bill could support the installation of as many as 40 million smart meters. However, draft guidance issued by the DOE on the smart grid program may discourage large-scale smart meter deployments. Congress should push DOE to support large investments in smart meter deployments and ensure consumer access to data.

Finally, I would like to urge the subcommittee to work with the new administration to determine how the Energy Information Administration could play a much more vital role in providing consumers and businesses with critical energy information.

For example, with a national RES and EERS, the Federal Government will need to collect data at an unprecedented level in order to ensure compliance. Congress should ensure that EIA has timely access to critical data to gauge progress on key clean energy programs. This will require an extension of EIA's role and an increase in its funding.

Thank you very much.

Mr. MARKEY. Thank you, Mr. Reicher, very much.

[The prepared statement of Mr. Reicher follows:]

Statement of Dan W. Reicher
Director, Climate Change and Energy Initiatives
Google
to the Subcommittee on Energy and Environment
United States House of Representatives
Legislative Hearing on the American Clean Energy and Security Act of 2009
April 23, 2009

Chairman Markey, Ranking Member Upton and Members of the Subcommittee, my name is Dan Reicher and I am pleased to share my perspective on the discussion draft of the American Clean Energy and Security Act of 2009 (ACES).

I serve as Director of Climate Change and Energy Initiatives for Google.org, a unit of Google which has been capitalized with more than $1 billion of Google stock to advance technology, policy and investment in the areas of climate change and energy, global poverty and global health. At Google we have been working to lower the cost and increase the deployment of renewable energy through our Renewable Electricity Cheaper than Coal (RE<C) Initiative and also to accelerate the deployment of plug-in vehicles through our RechargeIT Initiative. We are also developing a smart grid product called PowerMeter which will facilitate near real-time monitoring of home energy use. Additionally, we have been working to increase energy efficiency and use of clean power at Google data centers and offices in the US and other countries.

Recently I served on President Obama's transition team where I helped with the development of the stimulus package for clean energy.

Prior to my position with Google, I was President and Co-Founder of New Energy Capital, a private equity firm funded by Vantage Point Venture Partners and the California State Teachers Retirement System to invest in clean energy projects. New Energy Capital has made equity investments and secured debt financing for ethanol and biodiesel projects, cogeneration facilities, and a biomass power plant. Prior to this position, I was Executive Vice President of Northern Power Systems, one of the nation's oldest renewable energy companies. Northern Power has built almost one thousand energy projects around the world and also developed path-breaking energy technology.

Prior to my roles in the private sector, I served in the Clinton Administration as Assistant Secretary of Energy for Energy Efficiency and Renewable Energy, the Acting Assistant Secretary of Energy for Policy, and Department of Energy Chief of Staff and Deputy Chief of Staff.

I have been asked by the Committee for my views on two aspects of ACES: the proposed national Renewable Energy Standard and the smart grid section of the bill. I also will provide my thoughts on two critical aspects of advancing our clean energy economy: how to improve access to capital for clean energy projects and access to energy information for consumers.

A. National Renewable Energy Standard

Google strongly supports the adoption of a significant national renewable energy standard (RES), following the lead of 28 states that have already set such requirements. Title I of the ACES legislation mandates that 25% of electricity sold by U.S. retail electric suppliers will be supplied by renewable energy and energy efficiency by fiscal year 2025. Qualified renewable energy technologies include geothermal, wind, solar, biomass, marine, hydrokinetic, landfill gas, and qualified hydropower. For every megawatt hour generated from qualified technologies, the retail electric supplier receives one Federal Renewable Energy Credit (REC). Distributed generation sources receive three RECs for every megawatt hour generated. Retail electric suppliers must meet RES percentage requirements starting at 6% in 2012 ramping to 25% by 2025. Federal energy efficiency credits can count for 20% of the mandated quota in any year. The act also mandates the Secretary of Energy establish Federal Renewable Energy and Energy Efficiency Credit Trading Programs.

We believe that the ACES RES provision, implemented well and in conjunction with other policy measures, should be relatively practical and cost-effective to achieve. The Google energy team developed a more aggressive scenario last fall called "Clean Energy 2030," which provides a potential path to generating about two-thirds of US electricity from renewables, while cutting oil use for cars by 44%. The remainder of electricity generation would be provided by nuclear and natural gas generation. Importantly, under the Google scenario, investment in energy-efficient technology would keep electricity demand (including an increase due to plug-in electric vehicles) flat at the current level rather than it growing 33%.

According to our estimates, such a massive build-up of capacity (including additional transmission lines and back-up generation) would cost about $2 trillion over 22 years, but there are significant savings in avoided fuel costs and new fossil generation capacity. Together, these changes would reduce CO2 emissions by 2,800 million metric tons in 2030, nearly half of today's total energy-related emissions from all sectors. Additional savings would be garnered by improving the efficiency of the personal vehicle fleet. Altogether, the Clean Energy 2030 proposal reduces US CO2 emissions 49% below the baseline projection, while creating nearly 9 million jobs and saving the US economy $800 billion.

Google believes that the proposed RES is an important tool for accelerating renewable energy technology development, lowering energy costs for consumers, reducing harmful carbon emissions, and improving energy security. Portfolio requirements like the RES provide clear market signals for policy makers, utilities, investors, researchers and entrepreneurs. Existing state requirements have definitely promoted renewables but a national standard - designed and implemented well - could do much more to increase renewables deployment and do so at lower cost by taking a comprehensive and long-term approach.

For the RES to have the maximum desired carbon impact, it must be designed and implemented to reflect the realities of how energy is produced and consumed in the United States. Today, coal fired power represents over 50% of U.S. electrical generation and 84% of greenhouse gas emissions from the entire electric power sector. Nearly 70% of U.S. electrical generation is what is known as "baseload power" -- generated primarily from coal as well as nuclear facilities. Baseload power is the minimum generation that utilities must constantly keep online to meet demand. Baseload technologies need to be highly reliable, be available most of the time (i.e. "high capacity factor"), and low cost.

One of the biggest challenges in moving from our current electricity infrastructure - built largely on baseload fossil-based electricity - to one largely based on renewables, is

managing the increased variability inherent in a system with large-scale reliance on wind and solar power. We believe this transition can be successfully accomplished. First, geothermal and biomass power provide baseload energy output. Hydropower does as well during large periods of the year. Solar energy is not baseload but its output closely follows the daily demand curve in most areas, and with a few hours of thermal storage to provide some dispatch control, concentrating solar can be made to follow the afternoon peak load almost exactly. Wind, while less predictable than other forms of renewable power, can be made less variable by combining outputs from several geographically dispersed locations. Predictive weather modeling can also make it easier to integrate wind into generation planning. And the grid itself can be made more responsive to changing levels of generation capacity through the use of advanced demand management, electricity storage, and other elements of a smart grid infrastructure.

1. Credit Multiplier for Baseload Technologies - Incentivizing Green Baseload Power

Providing a credit incentive in the RES for baseload technologies could directly address the baseload challenge and enhance the carbon reduction impact of the RES. One approach might be to allow qualified baseload technologies to receive additional renewable energy credits. The ACES proposal already includes a credit for distributed generation, with sources such as roof-top solar receiving three RECs for every megawatt-hour generated. To ensure the baseload credit has the desired impact of bringing more megawatts of baseload renewable power online, but does not unduly dilute the RES, it might be capped at a specific level.

A baseload incentive would increase the value of the renewable baseload megawatt-hour for utilities when entering into power purchase agreements with project developers, thereby improving the business case, especially for earlier stage technologies. This credit could also increase the carbon reduction impact of the RES by incentivizing technologies with good capabilities to replace coal-fired power, such as biomass, geothermal, solar thermal with multi-hour storage, and wind with storage. Additionally, the credit could ease adoption of the RES in regions with higher cost baseload renewable options.

If structured properly, an RES can incentivize renewable baseload electricity. For instance, "capacity credits" are already established products which allow generators to directly monetize availability. One alternative could be an REC multiplier built around these capacity credits. Various alternatives should be examined more fully. Whatever the specific approach, we believe that a baseload incentive incorporated into the RES could help further reduce carbon emissions, improve grid operations, drive innovation in a key area, and increase the overall success of the RES. We urge the subcommittee to take a serious look at this proposal and we will work with the subcommittee to develop it further.

2. Energy Efficiency Resource Standard - A Critical Complement to an RES

The Chairman's draft recognizes that there is substantial opportunity to dramatically cut electricity demand and increase the efficiency of the US economy, thus driving down the need to deploy additional generating resources. ACES Title II, Subtitle D provides for an Energy Efficiency Resource Standard (EERS) which sets efficiency resource targets for electricity and gas suppliers over the period 2012-2020. An EERS would be a critical complement to an RES in advancing clean energy deployment rapidly and cost effectively.

Under an EERS, suppliers would be required to obtain energy savings from customer facilities and distributed generation installations in amounts equal to designated percentages for base year energy sales of electricity and natural gas. The requirement is phased in over time and builds on policies now in place in a number of states including

California, Texas, Vermont, Connecticut, Nevada, Hawaii, Pennsylvania, and Colorado designed to cut the growth in electricity demand through energy efficiency. Eligible energy savings measures include efficiency improvements to new or existing customer facilities, distributed energy technologies and combined heat and power systems, and recycled energy from a variety of defined commercial and industrial energy applications.

The EERS is a compelling complement to an RES. An EERS moderates demand growth so that RES targets can actually reduce fossil fuel consumption. In the Google Clean Energy 2030 Plan, energy efficiency deployment reduces projected electricity demand 33%. This is the equivalent to about 175,000 megawatts of coal generation or several hundred plants. *By moderating demand growth through an EERS and accelerating clean generation through an RES, we can slow and begin to decrease carbon emissions in the utility sector, while we work to implement comprehensive controls on climate emissions.* Congress should support this complementary EERS-RES approach as a major down payment on reducing carbon emissions. As a technical matter, we also suggest the subcommittee consider how to harmonize the requirements of the proposed EERS, with provisions of the RES that allow efficiency measures to count for up to 20 percent of the mandate.

3. Improving Support for Advanced Geothermal

There are several attractive renewable energy technologies with the potential for large-scale US deployment. Wind and solar clearly represent significant resources and there is substantial potential in the various applications of biomass. A technology with vast potential – and until recently little support - could be the real sleeping giant.

Enhanced Geothermal Systems (EGS) use hydraulic stimulation, a commonly used technique in oil and gas production, to increase the permeability of hot rock deep below the surface. Water is injected into the rock, where it is circulated and heated to produce steam, then piped to the surface to spin a turbine. With EGS, geothermal reservoirs can be "manufactured" to very large scale, thus breaking geothermal out of the traditional size limitations of naturally occurring geothermal systems. While the resource of naturally existing geothermal reservoirs is relatively limited and concentrated in the Western U.S., the resource of high temperature rock capable of supporting power production with EGS is truly gigantic and can be found nationwide. A 2007 study by the Massachusetts Institute of Technology (MIT) found EGS to be a highly promising technology. The study concluded that just 2% of the heat below the continental U.S. between 3 and 10 kilometers depth (1.8 to 6.2 miles) is equivalent to over 2,500 times total U.S. annual energy use. Estimates of generation potential from EGS in the lower 48 states range from over 500,000 megawatts (U.S.Geological Survey) to over 12,400,000 megawatts (MIT). For perspective, the total installed generating capacity of coal power in the U.S. is around 330,000 megawatts, and around 1,000,000 megawatts for all technologies.

EGS, like conventional geothermal – and coal - provides baseload generation 24 hours a day, year round. This allows EGS to directly replace coal capacity on the grid making it a particularly effective climate technology. EGS is currently in its early phase of commercialization. EGS leadership is centered in Australia and Europe where governments have provided significant research support, developed successful demonstration projects, and have established supportive policies to accelerate commercialization. The US once led in this technology and now has a chance to regain its lead as a result of $400 million for geothermal technologies, including EGS, in the recent stimulus legislation. Additionally, the Energy Independence and Security Act of 2007 (EISA) authorizes up to $95 million annually for geothermal technologies though FY09 appropriations for geothermal were set at $44 million.

Google believes this technology has such promise that we have taken several steps to help advance EGS including making maps of the EGS resource by state available in Google Earth, making over $10 million in investments in EGS-related companies, helping to advance federal policy work, and raising public awareness of the technology. We're pleased that Energy Secretary Steve Chu, prior to his appointment, helped make the compelling case for EGS in a YouTube video.

For EGS to play a major role in electricity supply, it must be demonstrated at the same or greater scale as conventional commercial geothermal. DOE's current annual appropriations and demonstration project solicitation guidelines are insufficient to support multiple demonstration projects of this scale. Congress should appropriate the amount authorized under EISA and expand that authorization in ACES to aggressively pursue EGS and other advanced geothermal technologies such as co-produced fluids and geo-pressured geothermal.

EGS presents a great opportunity in clean energy - and could be an important climate solution. Now is the moment for the United States to regain its leadership in geothermal technology.

B. Advancing the Smart Grid

Google strongly supports a national commitment to building a smart grid. At Google we are working to advance the smart grid on several fronts:

- Over the last year, our engineers have developed a simple and secure software tool called Google PowerMeter. This free product will give consumers a means to draw data from their utility via a smart meter or from in-home devices to see their own home electricity consumption in near real time, on their computer or cell phone. We expect to launch this product shortly.

- We have developed a fleet of plug-in hybrid-electric vehicles that have provided significant public data on fuel efficiency under driving conditions that simulate common US driving patterns. Lately, we have been working on "smart charging" of plug-in vehicles, with a particular focus on the software that could enable large numbers of cars to be effectively integrated into the electric grid.

- We are also exploring how we might help accelerate the integration of smart appliances and other equipment to cut energy use and reduce peak load.

- And we have launched a partnership with General Electric to advance clean energy policy in Washington with a particular focus on the smart grid.

Overall, we believe we need to develop the smart grid in a way that spurs innovation, drives competition, and supplies maximum information to consumers. We must develop and deploy smart grid technology in a manner that empowers consumers with greater information, tools and choices about how they use electricity, including access to real-time energy information. And energy information should be made available based on open non-proprietary standards to spur the development of products and services to help consumers save energy and money.

The 2007 Energy Independence and Security Act (EISA) took a number of steps to advance the development of a smarter US grid. ACES adds a couple more provisions. We have

reviewed these smart grid provisions and have the following comments:

1. Peak Demand Reduction

Section 143 of ACES requires utilities to publish peak demand reduction goals by specified dates and develop specific plans to meet the goals through various mechanisms including energy efficiency, demand response, smart appliances, smart storage devices, distributed generation, pricing mechanisms and by other means.

This provision could help to further encourage the wide-spread deployment of residential smart meters and accompanying technologies that enable users to monitor and automate power use and thereby improve the ability to cut peak demand. A study conducted by the Department of Energy's Pacific Northwest National Laboratory (PNNL) gave customers access to energy consumption information, broken down by appliance, every fifteen minutes and allowed them to program their water heaters and thermostats to respond to changes in electricity prices. Participants in the PNNL study received cash when they operated their household loads in collaboration with the needs of the grid by reducing their energy usage at times of peak energy demand. Over the year of the study, peak load on the grid was reduced by approximately 15 percent and consumers saved approximately 10 percent on their electricity bills over the previous year. Based on these results, the authors determined that if all customers nationwide engaged in reducing peak loads, peak electricity prices would be substantially reduced and approximately $70 billion in new generation, transmission, and distribution systems could be avoided, with the savings passed along to ratepayers.

2. Accelerate Smart Appliance Deployment through Energy Star Designation and Efficiency Standards Criteria

Section 142 of ACES would encourage DOE and EPA to provide Energy Star designation for products that incorporate smart grid technologies and capabilities. And ACES section 213 would allow the Secretary of Energy, in setting appliance efficiency standards, to consider smart grid technologies or capabilities incorporated into a covered product that increase energy efficiency. We support both of these provisions. Providing the Energy Star label for smart appliances and equipment would boost consumer interest in these and accelerate utility deployment of smart grid capabilities. And expanding the criteria used to set appliance efficiency standards to include products incorporating smart grid technologies and capabilities would accelerate the deployment of smart air conditioners, dish washers, thermostats, computers, and other appliances and equipment.

C. Improving Access to Energy Information

Mr. Chairman, ACES is a highly complex piece of legislation that will launch scores of new climate and energy-related programs. At the same time, recent stimulus legislation provides unprecedented funding for clean energy. Critical to the successful implementation of both of these programs will be the timely collection, analysis and distribution of energy information for consumers, business and government. We suggest the committee look at two related aspects of this imperative. First, how do we improve consumer access to energy information? Second, how could we improve the role and expand the resources of the Energy Information Administration, particularly with the backing of the new Administration and its focus on improved government transparency and advanced information technology.

1. Improve Consumer Access to Energy Information

With national performance standards for renewable energy and energy efficiency in the form of an RES and EERS, we should ensure that electricity users – large and small - have a more accurate picture of their electricity supply mix. The subcommittee should explore ways to ensure that information on electricity usage, as well as the source and mix of their power, is made readily available to electricity users, so that they may act appropriately.

To access energy information in greater detail, homes must be equipped with smart meters or consumer-installed energy monitoring devices. Smart meters are a key part of the smart grid and will enable utilities to provide better service and a more robust electricity delivery system, in addition to enabling consumer access to information. However, installing smart meters does not automatically mean that consumers will receive better information about their electricity usage. Utilities should be encouraged to ensure great consumer access to energy information in as near real-time as possible.

The recent stimulus legislation provides an opportunity to get started. The $4.5 billion included for smart grid is an extraordinary opportunity to begin transforming our electricity grid to one that empowers consumers with more information and tools to manage their electricity while creating jobs in the process. The President has indicated that these funds could support the installation of as many as 40 million smart meters. However, draft guidance issued by the Department of Energy on the Smart Grid Investment Grant (SGIG) program discourages, rather than encourages, large scale smart meter deployments. The draft guidance would cap the size of grants at $20 million, which would dilute the expenditure of the funds. Smart meter deployments on a large scale by an individual utility must be done in the hundreds of thousands or millions and can cost hundreds of millions of dollars. The price caps proposed by DOE should be raised to support large infrastructure investments. DOE should also state how it intends to meet the 40 million smart meter goal set by the White House. Finally, the subcommittee should encourage DOE to use this program to give consumers better information and tools to manage their energy use -- the draft guidance makes no mention of how the program will help consumers realize the benefits of the smart grid.

2. Improve the Role and Expand the Resources of the EIA

The Energy Information Administration could play a much more vital role in providing individual consumers and businesses with critical information that could advance our nation's economic, security and environmental goals. EIA analyses are already relied upon for everything from EPA EnergyStar benchmarking for building efficiency, to Bureau of Labor Statistics reports, to HHS/HUD distribution of low-income assistance. States and private industry are likewise dependent on these surveys for a variety of purposes.

More timely and targeted information is required not just to inform public policy decisions, but to analyze the impact of policy and technology changes on U.S. energy consumption at a level of detail not contemplated by current EIA methodologies. This is especially the case now when changes in domestic energy infrastructure brought about by a combination of market forces and technology-forcing federal initiatives may be at a tipping point.

EIA itself proposed a number of ideas that would improve the quality of its data and bolster its relevance to consumers and States in its January 2009 report to Congress. These include, for example:

- Creation of a state data Application Programming Interface (API), to provide stakeholders' more timely direct access to energy information. This initiative would require database upgrades, and allow EIA to take the first step toward developing a global energy navigator;

- User-generated state energy mapping capability. This initiative would again require additional computing capacity, but would provide for additional geospatial analysis of relevant infrastructure, renewable resource potential and other data of interest; and

- Evaluation of alternative sources of data for end-use estimates. Given the agency's perennial budget constraints, EIA could explore alternative means of data collection, including from commercial sources and via inter-agency collaboration.

This last proposal may have the most immediate potential. In coming months, the Department of Energy will provide billions in stimulus funding to state and local governments for weatherization, efficiency projects, smart grid programs and matching grants, R&D, and other clean energy efforts. These initiatives provide potentially rich sources of data on a range of clean energy projects, if EIA is enlisted to assist in tracking their efficacy. Not only would carving out a significant role for EIA enhance the transparency of stimulus spending in these areas, it might provide the agency valuable experience in tracking efficiency as a resource—a concept that has bedeviled EIA and its development of measurement tools to date.

Likewise, with a national RES and EERS, the Federal government will need to collect data at a previously unprecedented level, in order to ensure compliance. Providing EIA timely access to aggregated data of this nature could provide additional visibility over key renewable energy and efficiency-related developments. And with cap-and-trade legislation, EIA would need to model carbon allowance and offset markets, their interrelation with commodity pricing across the energy complex, and what all of this means to end-use consumers.

Congress, working with the new Administration, should expand EIA's role and increase its funding to advance these and other critical national climate, economic and environmental goals. We stand ready to help in this process.

D. Expanding Federal Support for Clean Energy Finance

The ACES legislation does not directly address a critical issue in advancing our clean energy economy: increasing access to capital for the deployment of literally trillions of dollars worth of clean energy projects that will be essential to meeting our climate and energy security goals, including the requirements of a national RES and EERS and related transmission and smart grid infrastructure.

Last week Senators Bingaman and Murkowski jointly released a discussion draft of the 21st Century Energy Technology Deployment Act (CEDA). And earlier this month Representative Van Hollen introduced the Green Bank Act of 2009. I also want to recognize the important work Representative Inslee has been pursuing on the clean energy finance front. I want to urge the committee to address the critical need for federal investment in clean energy generation, efficiency and transmission projects.

The good news Mr. Chairman is that there is a broad array of clean energy technologies that have been developed with government and private sector investment that could address our many energy-related challenges. The not so good news is that investment in the actual deployment of these technologies – "steel in the ground" as we say in the project investment world – is inadequate. And with the current economic crisis investment has been become even more challenging as companies like Lehman Brothers, AIG and Wachovia, which were active in clean energy investment, have left the field.

The federal government should provide financial support to the private sector to help move immature and often higher risk technologies to the market - and from there to commercial scale. The bill that Senate Energy Committee Chairman Bingaman and Ranking Member Murkowski recently released for public comment would be a major step in this regard.

The mission of the Clean Energy Deployment Administration (CEDA) would be to encourage deployment of clean energy technologies that are perceived as too risky by commercial lenders but with high potential to address our environmental, economic and security challenges. The problematic moment of moving a technology from a small pilot project to a full commercial-scale plant is often the point at which many promising energy technologies falter – and a significant number die. In the clean energy technology industry we call it the "Valley of Death". Bankers are generally reluctant to provide a loan for a project involving a technology that has not been proven at commercial scale. The bankers are critical, however, because a commercial-scale energy project can often cost hundreds of millions or billions of dollars, generally beyond the capacity or interest of venture capital investors who have often advanced the technology through pilot scale.

Mr. Chairman, the Valley of Death looms large. Failing to bridge it has cost us serious progress on many clean energy technologies from wind, solar, and geothermal, to biofuels and efficiency. In some cases investors from other countries have stepped into the breach and the technology has advanced but we have lost the tax and employment benefits of a company based in the U.S. CEDA would use a portfolio investment approach in order to mitigate risk to taxpayers and would work to become self-sustaining over the long term by balancing riskier investments with revenues from other services and less risky investments.

CEDA would provide various types of credit to support deployment of clean energy technologies including loans, loan guarantees and other credit enhancements as well as secondary market support to develop products such as clean energy-backed bonds that would allow less expensive lending in the private sector. CEDA would also assume responsibility for DOE's current loan guarantee program.

CEDA would be an independent administration within DOE, like the Federal Energy Regulatory Commission. It would be governed by a Board of Directors and an Administrator, all of whom would be appointed with the advice and consent of the Senate. CEDA will also have a permanent Technology Advisory Council to advise on the technical aspects of new technologies and to set goals for the administration.

The Bingaman-Murkowski proposal obviously comes in the midst of an economic crisis. But it is precisely at this moment - when clean energy projects so vital to our economy, environment and security are facing increasing difficulty getting financed - that the mechanism Senator Binagaman and Murkowski propose is so important. This is especially the case for projects involving innovative technologies with higher associated risk – the very technologies that may well hold the keys to addressing the climate crisis, our oil dependence, a deteriorating electric grid and also provide a major stimulus to the faltering economy.

I strongly urge the Committee to take a serious look at how clean energy technologies will navigate the Valley of Death and give strong consideration to the Bingaman-Murkowski proposal - and also analyze the Van Hollen bill - as it develops comprehensive climate and energy legislation. Failure to provide federal support for clean energy finance would jeopardize the development of clean energy projects on a scale and in a time-frame necessary to confront the climate crisis and our energy security challenges.

Finally, feeding all our progress on clean energy deployment must be robust R&D. The federal government has played a prominent role in decades past in launching critical technologies from fossil and nuclear to renewables and efficiency. In recent years federal support for clean energy R&D has waned and with it US leadership in key technologies. The stimulus bill provides an important boost for clean energy but only a modest fraction is oriented toward R&D. If we are to really "crack the code" on clean energy - driving it to a point where it is fully cost competitive and ready for massive deployment - we must make a renewed commitment to significant and sustained federal R&D funding. We stand ready to help with this critical task.

Mr. MARKEY. Our next witness, Dian Grueneich, has been Commissioner of the California Public Utilities Commission since 2005. She is a nationally recognized expert on energy and environmental issues. And, to be honest with you, the reason I have asked her to come here today is because she is the only witness I have ever heard who knows how to make energy efficiency sound exciting. So since I have heard her do it before, I thought I would give her another chance.

So welcome back.

STATEMENT OF DIAN M. GRUENEICH

Ms. GRUENEICH. Thank you so much. I would love to be talking on energy efficiency. I have slipped it in a little bit, but I am actually here today on transmission, renewables and——

Mr. MARKEY. Transmission needs even more work to sound exciting.

Ms. GRUENEICH. I will start with my first promo.

We are building transmission in California. We are building it to make renewables. If California, with all of our environmental rules and all of our environmental activists, can do it, everywhere in the country can do it.

This is the Tehachapi Wind Project. It is under development; and, when finished, it is going to bring 4,500 megawatts of wind into the transmission grid. So there we go, if that is exciting.

But, getting back, let me, first of all, thank you for having me today. I am speaking on my own behalf, but I also bring greetings from Mike Peevey, who is President of our Commission. He has reviewed my testimony and wanted to make sure that I passed on that he personally feels very strongly about these remarks as well and agrees with them.

Let's start with renewable energy. As Dan Reichert just said, there really is no question that the United States is blessed with renewables. This is not a question that we don't have the resources. It is not a question that we don't have the technical capability. It is a question of political will to make it happen. That is the very good news.

As of January of this year, 33 States have RPSs or renewable goals, 33 States. At the State level, what we are waiting for is the national renewable standard. It will make a dramatic difference in our ability if we can have as a Nation all the States, all the utilities moving ahead.

In California, we have a 20 percent renewable standard, but our Governor has now signed an executive order to have our State get to 33 percent renewables by 2020, and our legislature is now considering the bills to codify it. If California can set our goals at 33 percent, again, the rest of the country really can get to the levels that we are talking about in this bill.

There is some really smart flexible items in the bill on renewables. One of the items that Dan talked about was the part that you can meet your renewable provisions through energy efficiency. In a pure world, you probably wouldn't do that. You would probably just say go with renewables. But this is a bill, in my mind, that is really trying to make this workable. Every State can do energy efficiency. We need to make sure that that provision is sen-

sible, that it is not just a loophole but it lets the States that may be farther removed from renewables really come in and go after the renewables section.

Another part that I think is very creative that we frankly hadn't thought of in California, but I have now talked with our legislators and suggested they think about it, is the provision that says that you can have a credit of three times the renewables if you do local distributed generation. That is a really smart thing to put in the bill, because what it does is that when you are building renewables out to the areas like the Tehachapis, believe me, it takes years to plan and permit and finance and build those transmission lines. But when you can instead look to do renewables right in your neighborhood, I mean, you can put solar photovoltaics on the rooftops of Costcos and Wal-Marts. You can have people in the neighborhood start to say we will even make it in the our own homes on our roofs. And when you give it a three times credit, in my mind, we can have some States who have never even had renewables before start to become the leaders. And I hate to say put California and Texas to shame, but that is what we may start happening by some of these very creative provisions in the bill.

Let me turn to transmission planning quickly. The interesting thing about the bill is the most important provisions on transmission planning are not in the transmission planning section. These are the provisions that make it a sensible way to do transmission planning. They are the energy efficiency provision. They are the renewable electric portfolio standard. They are the enhancement of the smart grid. They are the focus on distributed generation. All of those are the factors that let you reduce the need for transmission. Because we don't build transmission just to have transmission lines. We build transmission because it carries electricity.

By having in this bill the fundamental building blocks that make you look at an entire system that will minimize how much transmission you need, you have got it right. This is in many ways the best way that I have seen looking at electricity in 30 years because you have put in place those building blocks that say when you are doing transmission planning you are actually doing it in the context of a very sensible approach.

The other thing that I will say about transmission is that it directs FERC to take into account all of these demand side aspects when they have an expanded role in transmission planning. That is absolutely critical. If Congress is going to give FERC or any other agency at the Federal level a larger role in transmission, and particularly in transmission planning, it is essential to have in there the provisions that they must look at the demand side. In fact, I think that the bill should go further and direct FERC in all of its decisions with regard to transmission, including approving transmission investment, that it does not discriminate against the demand side or against distributed generation.

Let me just end with the smart grid, that I think that again it has got it right. The one part that I would add would be to have some provisions that provide increased technical assistance to the States. Smart grid is going to happen, because there are thousands of decisions that government and the private sector are going to

make. What you heard from Dan about an increasing the information available, that is critical. But we are all going to need much better technical assistance, and that would help.

The very last thing that I will say is to thank you very much for letting me testify today.

Mr. MARKEY. Thank you very, very much.

[The prepared statement of Ms. Grueneich follows:]

Testimony of Dian M. Grueneich
Commissioner, California Public Utilities Commission

Before the

Subcommittee on Energy and the Environment
United States House of Representatives

Legislative Hearing on the American Clean Energy and Security Act of 2009

April 23, 2009

INTRODUCTION

Chairman Markey, Ranking Member Upton, and Members of the Subcommittee: Thank you for your invitation to testify today. My name is Dian Grueneich and I am a Commissioner at the California Public Utilities Commission. I was appointed to the Commission in 2005 by Governor Schwartzenegger and I bring over 30 years of experience in energy and environmental issues to my service on the Commission. In my four years at the Commission, I have served as the lead commissioner on a number of major transmission permitting cases, with a focus on siting transmission lines to areas of high renewable potential. I am also one of California's representatives on the Western Renewable Energy Zones (Western REZ) Initiative and a utility commission representative on the Western Interconnection's Transmission Expansion Planning and Policy Committee (TEPPC).

I currently serve on a number of energy advisory counsels, including the U.S. Department of Energy's Electricity Advisory Committee (EAC) and its Smart Grid Sub-Committee and the U.S. EPA/DOE's National Action Plan for Energy Efficiency Leadership Group. Last year I participated in the EAC's preparation of reports on both what needs to be done at the federal level to support a smart grid, and how we should move forward on transmission planning and permitting.[1]

I am speaking today in my capacity as an individual Commissioner at the Commission and my views do not necessarily reflect the views of the entire Commission.

OVERVIEW

My testimony addresses three areas of the discussion draft of the American Clean Energy and Security Act of 2009 (ACES):

1) Renewable energy;
2) Transmission planning; and

[1] Both Electricity Advisory Committee reports are available at: http://www.oe.energy.gov/eac.htm

3) Smart grid.

In my view, enactment of the ACES would be a paramount step towards addressing global warming, maintaining our environmental and economic well-being, and ensuring this country's national security. The ACES strikes an appropriate balance by setting important national policies while recognizing that the actual implementation of the transition to a clean energy economy will occur at the state and local levels. It recognizes the vital role that state agencies and others at the state level must exercise in this transition and sets forth a workable state/federal partnership, under an umbrella of key national policies. I highlight below some specific areas where the state/federal partnership can be enhanced under the ACES.

California has addressed climate change and our state's economic and environmental future through a combination of programmatic requirements and market mechanisms. Both are needed. The ACES also adopts a comprehensive approach to reducing greenhouse gas emissions. Critically, it embraces energy efficiency as a priority item, coupled with a national renewable electricity standard and development of America's smart grid. It also contains a low-carbon transportation fuel standard, support for development of carbon capture and sequestration (CCS) technologies, and a market-based cap and trade program.

In addition to expanding this nation's commitment to energy efficiency, a critical tool for transitioning the United States electricity sector into a low-carbon economy is extensive, immediate, and accelerated renewable resource development. The ACES recognizes this, and sets forth a rational approach to renewable resource development, building upon - rather than replacing - the extensive state efforts to date to support renewable development.

The discussion draft also recognizes that a time-critical component of developing renewable resources is transmission infrastructure. Most of the renewable-rich resource areas in this country are located in remote areas far from population centers and the existing transmission grid. To move those renewable resources to consumers, the ACES establishes a bottoms-up regional transmission planning process, with Federal Energy Regulatory Commission (FERC) oversight and support, to meet its renewable goals. Again, the discussion draft recognizes the key role that states currently have in transmission development and it seeks to add the support of the federal government to facilitate and enhance regional collaborative planning efforts to meet defined clean energy goals.

Finally, the ACES provisions on smart grid create a strong framework to bring the nation's electricity grid into the digital age, thereby maximizing the potential for energy efficiency, demand response, and distributed generation as well as overall efficient operation of our electricity system. Most of the smart grid decisions will be made at a local and state level, through the decisions of state regulatory commissions, utilities, and the private sector. The ACES provides a useful framework to support these decisions and

I discuss below additional technical assistance in this area that would be extremely helpful to states.

RENEWABLE ENERGY PROVISIONS

The key features of the ACES's renewable provisions are as follows:

1) Establish a national Renewable Electricity Standard (RES or renewable standard);
2) Allow energy efficiency to be used to meet the renewable standard under narrow circumstances and in limited quantities;
3) Provide a credit multiplier for renewable distributed generation used to meet the renewable standard; and
4) Create renewable credit trading systems to complement existing state and regional systems.

With regard to the renewable standard, the ACES sets renewable energy requirements that almost all entities selling electricity to the public must meet. The standards start at 6% of retail sales in 2012 and go to 25% of retail sales by 2025. These requirements are aggressive, but achievable.

There is no question that the United States has the renewable resource potential and technical ability to meet ACES's renewable standard. Using publicly available government data, the energy engineering and consulting firm of Black & Veatch projects that the United States has over 400 gigawatts of renewable resources that can be developed by 2025.[2] This amount is significantly more energy than required by the discussion draft's renewable standard, and does not even include the nation's abundant solar photovoltaic and hydroelectric resources. The Union of Concerned Scientists (UCS) similarly found in a 2003 study that "[w]ind, solar, bioenergy, geothermal, and landfill gas have the technical potential to provide more than five times the electricity currently needed by the United States. Thirty states have the potential to generate all of their electricity from non-hydroelectric renewable energy and still export clean power to others." UCS also found that "[w]hile the upper Midwest and Great Plains states have the greatest potential, every state has the potential to produce more than one-quarter of its current electricity use from renewable energy."[3]

These findings are confirmed by current events. As of January 2009, 28 states have taken it upon themselves to adopt mandatory renewable standards; 5 others have

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[2] Supporting information is not yet publicly available.

[3] *Plugging In Renewable Energy: Grading the States*, Union of Concerned Scientists (May 2003) is available at: http://www.ucsusa.org/assets/documents/clean_energy/plugging_in_renewable_energy.pdf

adopted renewable goals, some of which will become mandates.[4] Requirements range from 10% by 2015 to as high as 25% to 30% in later years. Implementation of some renewable energy standards has been so successful that states are raising the standards, or extending them to more parties. For example, in California Governor Schwarzenegger has issued an Executive Order calling upon the state to increase its 20% standard to 33% by 2020.[5] The California Air Resources Board has embraced this goal to facilitate California's climate change policies, and the state legislature is currently considering several bills to codify this requirement.

Texas exceeded its initial 2,000 MW renewable energy standard four years early and subsequently increased its standard to 5,880 MW by 2015 and 10,000 MW by 2025.[6] Connecticut increased its renewable requirements in 2003 to extend to all utilities in the state. Iowa met its standard in 1999.

The ACES takes the nation to the next level. A forthcoming study by the National Renewable Energy Lab (NREL) compares the requirements of the various renewable proposals currently pending in Congress. It finds that the proposed bills with lower renewable standards will result in little or no additional renewable generation above what state efforts will produce on their own. The renewable requirements of the ACES, however, will deliver significantly more than the current state efforts.

As I have outlined above, there is substantial renewable potential throughout the United States that can be developed in the next decade. Importantly, though, the ACES recognizes that not all states are created equal when it comes to renewable resources. Some states have extensive traditional renewable resource areas – vast undeveloped areas with high concentrations of solar, wind, or geothermal potential - others have less. The ACES addresses this issue in a sensible manner.

First, it allows a state to petition the Secretary of Energy for approval to use energy efficiency measures to meet up to 20% of the renewable standard. This provision gives providers flexibility to work towards their RES obligations. However, this flexibility must contain safeguards to ensure that renewables are maximized and the overall clean energy goals of the ACES are achieved. First, the ACES must contain strong thresholds to ensure that this provision is used only upon a solid demonstration of an inability to meet the renewable standard through generation and/or renewable electricity credits. Second in order to avoid double counting, this provision should be clarified to ensure that savings from any energy efficiency measure used to meet a

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[4] Additional information on state renewable requirements is available from the Pew Center on Global Climate Change at:
http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm

[5] Executive Order S-14-08 (November 17, 2008) is available at:
http://gov.ca.gov/executive-order/11072/

[6] *Texas Renewable Portfolio Standard,* State Energy Conservation Office, available at http://www.seco.cpa.state.tx.us/re_rps-portfolio.htm

renewable standard are in addition to savings resulting from ACES's energy efficiency performance standard.

Second, the discussion draft allows a credit multiplier for renewable distributed generation. It grants three renewable energy credits for every megawatt hour of power generated from a renewable distributed generation facility, and only one credit for power from traditional utility-scale renewable generation projects. Notably, because most distributed generation will not require transmission upgrades, these resources can be developed significantly faster than traditional utility-scale renewable generation. Thus, a state or provider committed to a distributed generation model to meet renewable requirements could quickly outperform others considered to be "renewable-rich" in the more traditional sense because of the timeframe needed to plan and construct the transmission needed to bring utility-scale renewables to market. Because of these distributed generation benefits, clarifications should be made to expressly state a national policy that prioritizes development of local renewables, which reduce transmission needs, create local jobs, and facilitate grid reliability. Clarifications should also be made to ensure that FERC's rules, including any new transmission planning policies as well as transmission investment approvals, do not discourage against investments in near-load generation.

Third, the bill requires the creation of national/regional markets where renewable electricity credits will be traded and sold. Retail providers of electricity will be able to purchase renewable electricity credits to meet the renewable standard. Market prices for credits are expected to reflect the difference between the cost of traditional power and renewable power such that a load serving entity will be agnostic between purchasing renewable power, and purchasing traditional power plus a renewable energy credit – the price should be the same.

Many states are legitimately concerned with capturing the jobs that will be created in our economy's transition from fossil-dependence to renewables. This transition will generate good jobs and these jobs will not be limited to the locations where renewable facilities are constructed and operated. There will be manufacturing jobs to produce the components for the facilities – such as solar panels and wind turbines – which will not be located where the renewable facilities are built. According to a new UCS analysis, a national standard like the one proposed in this bill would boost the economy while protecting the environment. The UCS study finds that a 25% national renewable standard would create 44,500 long-term manufacturing jobs.[7] Other studies have found that many of these jobs will likely be located in the Southeast and industrial Midwest.

Finally, with regard to the renewable requirements of the discussion draft, there are undoubtedly details that need to be addressed as this discussion draft proceeds. I urge that any necessary corrections be made:

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[7] "Clean Power: Green Jobs," Union of Concerned Scientists (2009) is available at http://www.ucsusa.org/clean_energy/solutions/renewable_energy_solutions/clean-energy-green-jobs.html

- To avoid double counting of renewable energy credits;[8]
- To ensure that states are not unfairly penalized if renewable energy credit markets do not materialize in a timely fashion, or do not provide credits at the anticipated price; and
- To ensure that state efforts to exceed federal renewable requirements are not discouraged.

These issues are being addressed by other state/federal organizations as so I will not explore them in detail here.

TRANSMISSION PLANNING

The second major area I will address is the transmission planning section of the discussion draft. The ACES contains three fundamentally important elements that will encourage the collaborative process necessary for successful regional transmission planning and the ultimate development of new transmission lines:

1) A national renewable electricity standard that will provide the framework for regional transmission planning;
2) Federal policy objectives to guide regional planning; and
3) A bottoms-up transmission planning structure with FERC providing oversight and support.

The renewable electricity standard set forth in the ACES is the most important transmission planning provision of the bill – even though it is not in the transmission planning section. Regional transmission planning has been factionalized, in part, because there is no consensus on the ultimate goal. Adopting a specific and mandatory national renewable electricity standard, in addition to strong state and national commitments to energy efficiency, support for development of local renewables, and performance standards for new coal-fired power plants,[9] will provide the necessary context and goals for transmission planning.

The federal transmission planning policy objectives set forth in the ACES require, for the first time, that transmission planning consider demand-side options, including energy efficiency, distributed generation, smart-grid technologies, and demand response, as well as renewable energy on the supply-side. This statement of policy objectives is critical. In requiring that these resources be considered in transmission planning, the ACES optimizes transmission investments by greatly reducing the possibility of unnecessary transmission infrastructure and stranded investments. As mentioned above, these policy objectives should be clarified to require regional planning efforts, as well as FERC planning and investment rules, to make maximization of these resources a priority.

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[8] Thus, for example, it may make sense to issue a single credit for each megawatt-hour (MWh) of distributed generation but count three credits for compliance purposes only.
[9] ACES § 116.

The ACES establishes a timeframe for action on regional grid planning and requires FERC to support and encourage regional planning collaboration with funding, technical expertise, and conflict resolution resources. The ACES requires FERC to adopt national grid planning principles consistent with the federal policy objectives within one year of enactment. It requires regional planning entities willing to adopt FERC's planning principles to identify themselves to FERC within three months of FERC's adoption of the planning principles. It then requires those regional planning entities to submit initial regional transmission plans to FERC 18 months after FERC's adoption of the planning principles. Based on my experience, this structure and its timeframes are appropriate. The discussion draft properly recognizes the role of the states and regions in planning to respond to their energy infrastructure needs. However, it provides the critical national policy framework previously missing from these planning efforts, and FERC resources to use when needed.

There is a significant issue with transmission development that must be addressed. In my experience, federal government agencies have often been a primary reason for significant delay in processing transmission line permits. It is almost impossible to build a line in the Western Interconnection without crossing federal land, often triggering the need for review under the National Environmental Policy Act – NEPA. In these circumstances, it is the California Public Utilities Commission's standard practice to sign memorandums of understanding (MOUs) with the federal agency that shares joint permitting responsibility. These MOUs include commitments to a detailed schedule of events. Nevertheless, the federal agencies routinely fail to meet these deadlines by multiple months, in one case causing an 18 month delay in the construction of a renewable resource transmission project.

To address this issue, the ACES should include provisions requiring one federal agency to be the lead agency responsible for all federal agency participation in transmission planning and permitting efforts. Federal agencies expected to process renewable transmission line applications should also be provided sufficient financial and staff resources to make this permitting a priority and to engage in pre-application activities that streamline the permitting process.

SMART GRID

The smart grid – by which I mean the broad range of technology solutions to optimize the reliability, security and efficiency of the electric system and to maximize the potential of demand side resources – presents huge opportunities but faces substantial challenges. The key question is how to bridge the gap between the promise and the reality of the smart grid.

The 2007 Energy Independence and Security Act (EISA) laid a strong foundation by requiring the development of an interoperability framework for smart grid protocols and standards, providing for research, development and demonstration of technologies, ensuring the free flow of information to end users, requiring states to review state policies

on grid related investments and cost recovery, establishing a smart grid task force to coordinate the work of the multiple federal agencies, and directing DOE to form a national smart grid advisory group – on which I sit - to advise in the development of the national smart grid. The ACES builds on this foundation by requiring that:

1) States set peak demand reduction goals for load serving entities (LSEs) and requiring LSEs to develop a plan to reach those goals;
2) FERC develop a methodology to calculate baseline peak demand and DOE to develop a system of measurement and verification of demand reductions, thereby ensuring that the benefits from the smart grid are real; and
3) The federal Energy Star program be expanded so that end users can easily identify products which will bring the benefits of the smart grid into homes and businesses.

Thus, the overall federal program will: (1) set standards and incentives for infrastructure development by electricity providers; (2) set minimum goals to ensure that smart grid infrastructure investments produce real peak demand reductions; and (3) set standards for, and encourage end users to, make purchasing decisions that will benefit not only the individual, but also the system as a whole.

These provisions are an excellent foundation for developing the smart grid. However, two additional items should be included:

1) Expansion of federal technical resources to assist states and others in the cost-effective deployment of smart grid technologies; and
2) Provisions to address the overlap between the peak demand goals and the energy efficiency resource standard.[10]

Developing an integrated system requires a multi-year, phased installation of devices and other technologies, some of which do not yet exist. It also depends on a substantial investment of electric ratepayer funds, taxpayer funds, and private investment, which will be made through multiple decisions by a number of government agencies and private entities with little coordination. While EISA and the ACES provide for standards and protocols for smart grid interoperability as well as measurement and verification of usage reductions, neither Act requires an overall national effort focused on technical assistance to guide the thousands of regulatory and business decisions that will impact smart grid deployment. The ACES does require FERC to facilitate, to the extent practicable, coordination between the federal smart grid program and state demand response and other peak load programs. However, ACES does not provide guidance on the qualitative standards and policies that states should aspire to.

The Smart Grid Subcommittee of the DOE Electricity Advisory Committee recently issued a report on the smart grid which recommended additional technical

[10] ACES § 231 *et seq.*

assistance that DOE can provide to the states (EAC Report).[11] Such assistance will be particularly valuable to state regulatory commissions, which will be on the frontline in decision-making regarding smart grid development. As set forth in the EAC Report, this technical assistance should include:

- A description of the essential components under a smart grid.
- A prioritization for the development of these components.
- Identification of smart grid subsectors that particularly need further investment.
- A timetable for smart grid investments necessary by utilities and other stakeholders throughout the United States.
- Identification of the areas in the electrical grid that need to interact seamlessly.
- Identification of appropriate standards to facilitate the rapid development and utilization of smart grid technologies.

Finally, Section 143(c) of the ACES requires states to establish peak demand reduction goals for 2012 and 2015 and requires LSEs to prepare peak load reduction plans to meet the goals. LSEs can employ any combination of specified demand reduction measures to meet the goals, including "energy efficiency measures with reliable and continued application during peak demand periods."[12] However, it is unclear whether and how the energy efficiency measures employed as peak demand reductions in accordance with Section 143(d)(1) will interact with the energy efficiency measures employed to meet the Section 231(d)(2) electricity savings requirement.

The potential for double counting by using a single set of measures to meet both sets of goals is substantial. Many energy efficiency measures, such as insulation, efficient air conditioners, and refrigerators, also provide reliable peak demand reductions. If the peak demand reduction goals set by a State are low enough, it is possible that no additional savings from those already achieved under Section 231(d)(2) would be needed to meet the peak goals in the smart grid provision. Under this scenario, the massive investment in smart grid infrastructure may not yield equivalent benefits for consumers.

Further, as noted above, states may also meet up to 20 percent of the renewable electricity standard with energy efficiency measures. Theoretically, a single measure could be used to meet all three requirements.

Clarification is necessary to define the interrelationships among peak demand reductions, efficiency savings, and the renewable standard. Ideally, in order to maximize benefits from all three resources the ACES should prohibit any overlap. If some double-

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[11] *Smart Grid: Enabler of the New Energy Economy*, A Report by the Electricity Advisory Committee (December 2009) available at: http://www.oe.energy.gov/eac.htm

[12] ACES § 143(d)(1).

counting is allowed, then additional language should be added to ensure that benefits from smart grid investments are maximized. Some possible measures include:

1) A numerical limit, similar to the cap on the use of efficiency measures to meet the renewable standard, on the overlap between measures used to meet the electricity savings requirements, and measures used to meet the smart grid goals, coupled with strong standards on the circumstances in which such overlap is permitted; and/or
2) A requirement that the peak demand measures set forth in Section 143(d)(2) (e.g., direct control appliances and equipment, dynamic electricity storage) are maximized before employing energy efficiency measures to meet the goals.

CONCLUSION

The ACES is a pivotal step on the path to a vibrant, green economy and the reduction of greenhouse gas emissions. It recognizes the key role of states as partners with the federal government in developing our clean energy future. Thank you for the opportunity to provide these comments on this extremely important piece of legislation. It has been an honor to appear before you on these critical matters.

Mr. MARKEY. Our next witness is James Robo. He is the President and Chief Operating Officer of Florida Power and Light, or FPL, Group. Mr. Robo previously served as Vice President at that company.

We thank you so much for testifying today.

STATEMENT OF JAMES L. ROBO

Mr. ROBO. Thank you, Chairman Markey, Ranking Member Upton, and members of the committee. I am the President and Chief Operating Officer of FPL Group, North America's largest producer of renewable energy; and it is my pleasure to be here today to talk about the importance of enacting a renewable electricity standard this year.

FPL Group is the Nation's number one producer of electricity from the wind and from the sun. Our wind fleet can power approximately one and a half million homes and makes up a quarter of the entire U.S. wind energy market. Our solar power plants in California's Mohave Desert are the largest in the world.

In Florida, we are building 110 megawatts of solar power, enough to vault the State into second place in the Nation in solar production in the span of only 18 months. And just this week, FPL announced Energy Smart Miami, one of the country's largest implementations of smart grid technology to improve energy efficiency and reduce carbon emissions.

We are proud that FPL Group has one of the lowest CO_2 emissions rates of any electric power company in the Nation. In fact, if every utility were as clean as FPL Group, CO_2 emissions from the power sector would be reduced by nearly 50 percent. Total U.S. carbon emissions would be reduced by 20 percent, which is the equivalent of removing 209 million cars from the road, roughly 80 percent of the Nation's vehicles.

Renewable energy holds tremendous potential for the United States. Each year, enough solar energy strikes a 90- by 90-mile patch of the Mohave Desert to meet the annual electricity needs of the entire country, and enough wind power sweeps across the Dakotas to meet more than half our electricity needs. We have barely begun to tap this nearly unlimited resource.

To do so, it is vital that Congress enact a renewable electricity standard this year; and here is why. First, an RES will help create a clean energy economy. Many countries are betting that the world of the future will thirst for low-carbon energy in the way it thirsts for oil today. We can't afford to remain on the sidelines while the renewables industry and jobs that go along with it are created elsewhere. We are already falling behind even Europe in this regard. In fact, nearly every one of FPL Group's largest renewable energy competitors is from outside the United States.

Second, an RES will give the renewable energy industry certainty and will give utility decisionmakers a sense of urgency. In the electricity power sector, we make capital decisions with a 30-year time horizon. We can't spend billions of dollars to build a clean energy economy without confidence that demand for low-carbon power will remain strong.

A Federal RES with timelines extending to 2039 will send the clearest possible signal to investors that demand for renewables

will continue, and the targets that utilities must meet along the way will provide the urgency needed for prompt action. The best incentive to ensure timely and proactive utility decisionmaking around renewables is a reasonable yet firm target.

Third, a Federal RES will drive down the cost of renewables. Make no mistake, in many markets today renewables such as wind are competitively priced, despite the fact that they are disadvantaged versus fossil fuels due to the lack of a price on carbon. The cost of wind power has fallen by roughly 25 percent over the past decade even as the average electric bill in the U.S. Has risen by nearly 50 percent. By stimulating demand, an RES will continue to drive down the cost of renewables over time.

Fourth, a Federal RES will ensure that only the most cost-efficient renewables get built. The current patchwork of more than 30 different State regimes is cumbersome, costly, and creates incentives for bad decisions. For example, many States require utilities to buy only in-State renewable energy even if it costs more than renewable energy purchased from elsewhere. That is like forcing grocery stores in Maine to buy oranges grown only in Maine. It makes no economic sense.

And, finally, an RES is essential to address the threat of climate change. That is, threat isn't just environmental; it is economic. Those who say the cost of addressing climate change is too high assume that doing nothing is free. On the contrary, unchecked climate change could cost the United States tens of billions of dollars over the next two decades.

But no matter what your beliefs are about climate change, investing in renewable energy makes sense for America. It will replace finite fossil fuels with the infinite energy of the wind and the sun. It will result in cleaner air; it will conserve precious water; it will strengthen our energy security in a volatile world; and, finally, it will keep us competitive in the race to build a clean energy economy.

Mr. Chairman, thank you for the opportunity to testify this afternoon.

Mr. MARKEY. Thank you, sir, very much.

[The prepared statement of Mr. Robo follows:]

Testimony of James L. Robo
President and Chief Operating Officer, FPL Group

Before the
Subcommittee on Energy and Environment,
Committee on Energy and Commerce,
U.S. House of Representatives

Hearing On
"The American Clean Energy and Security Act of 2009"
April 23, 2009

Chairman Markey, Ranking Member Upton and Members of the Committee:

Good afternoon. My name is Jim Robo, and I'm the president and chief operating officer of FPL Group, the largest producer of renewable energy in North America. It is my pleasure to be here today to talk about why it is imperative to enact a federal Renewable Electricity Standard this year to accelerate the growth of the renewable energy industry.

FPL Group, which was just named No. 1 on Fortune magazine's list of the "most admired" electric power companies for the third year in a row, has two main subsidiaries. NextEra Energy Resources, our competitive energy company, has operations in 25 states and Canada and leads the U.S. in the production of electricity from the wind and sun. We have invested nearly $10 billion to build the largest wind and solar energy business in the nation. At nearly 6,400 megawatts, NextEra Energy Resource's wind fleet can power approximately 1.5 million homes and makes up a quarter of the entire U.S. wind energy market. NextEra Energy Resources is also the global leader in solar energy production, operating the largest solar power plants in the world in California's Mojave Desert.

Florida Power & Light Company, our utility subsidiary, serves 4.5 million customer accounts in Florida and is one of the country's largest rate-regulated electric utilities. FPL has the No. 1 energy efficiency program in the nation, and within the past year has announced plans to build 110 megawatts of solar power in Florida, enough to vault the state into 2nd place in the nation in total solar production. Just this week in Miami, FPL announced one of the country's largest deployments of smart meters on the way to upgrading all 4 million residential customers in the state within five years. This initiative will make FPL a national leader in deploying the "smart grid" technology needed to improve energy efficiency and reduce carbon emissions.

Together, the FPL Group companies have one of the lowest CO2 emissions rates in the nation. In fact, if every utility were as clean as FPL Group, carbon dioxide emissions from the electric power sector would be reduced by 49 percent and total U.S. carbon emissions would be reduced by 20 percent. This would be equivalent to removing 209 million cars from the road, roughly 80 percent of all of the vehicles in the United States.

Despite its tremendous growth over the past decade, renewable energy's potential remains astounding. Each year, enough solar energy strikes 8,000 square of miles of the Mojave Desert to meet the annual electricity demand of the entire United States. Similarly, enough wind sweeps across the Dakotas each year to meet more than half of the nation's electricity needs. The United States has barely begun to tap the potential of this vast – indeed, nearly limitless – energy supply.

And we must tap it, for renewables are the only energy source that can directly and quickly address the energy and environmental challenges facing America. To that end, it is vital that Congress enact a federal Renewable Electricity Standard as outlined in "The American Clean Energy Security Act of 2009," and that it do so this year.

A Renewable Electricity Standard, or RES, is essential to address the threat of climate change. That threat is not just environmental. It is economic. Those who say the cost of addressing climate change is too high often assume that the alternative – doing nothing – is free. On the contrary, unchecked climate change could saddle the United States with economic losses of $271 billion by the year 2025, according to a Natural Resources Defense Council study. That would amount to $2,000 for every American family. As the only renewable forms of energy that produce zero greenhouse gas emissions with no waste, wind and solar power are essential to countering the worst potential effects of climate change.

A Renewable Electricity Standard will also help create the clean-energy economy of the future. Many countries are making bets that the world of the future will thirst for low-carbon energy the way it does for oil today. The United States cannot afford to remain on the sidelines while the renewable energy industry and jobs are created elsewhere. We are already falling behind Europe in this area – for example, nearly every one of FPL Group's largest competitors in renewable energy development is from outside the United States.

As a company, FPL Group has made a significant commitment to renewable energy as well. We have built our wind and solar business from fewer than 500 megawatts a decade ago to more than 6,800 megawatts today, a more than 10-fold increase. Our renewable energy investment has grown from less than $1 billion to more than $10 billion over the same period of time, and we are prepared to expand it further.

But in order for that expansion to occur, the renewables industry needs certainty and utility decision-makers need a sense of urgency. In the electric power industry, we make capital expenditure decisions with a 30- to 40-year time horizon. We cannot spend the billions of dollars necessary to build a clean-energy economy without assurance that demand for low-carbon electricity will remain robust. As Energy Secretary Stephen Chu said in *The New York Times* this past Sunday, "In the case of a more mature technology

like wind, what the government can best do is provide some stability so the companies can make long-term investments that will develop the wind industry and the wind turbines."

A federal RES with timelines extending to 2039 is the clearest way to signal to the investment community that demand for renewables will continue and to create the certainty needed for investment. Moreover, the targets that utilities must meet along the way will provide the sense of urgency that is needed to prompt action. The best incentive to ensure timely and proactive utility decision-making around renewables is a reasonable yet firm target.

A federal RES is also essential to help drive down the cost of renewables over time. Make no mistake: renewables are becoming more competitive every day, despite the fact that they are at a competitive disadvantage to fossil fuels whose environmental impacts are excluded from their price. For example, the cost of wind power has fallen by roughly 25 percent over the past decade, even as the average electric bill in the United States has risen by nearly 50 percent. In addition, FPL Group has seen the cost of installed photovoltaic solar power fall by more than 20 percent in the last year alone. We firmly believe that renewables can ultimately achieve grid parity with fossil-based generation. But for that to happen, it will take a dramatic expansion of the industry of the kind that an RES would spark.

Paradoxically, this expansion will have a positive effect on the price of fossil fuels as well. Every kilowatt hour of electricity generated by renewables is a kilowatt hour not generated from coal and natural gas, and that reduction in demand at the margin will exert downward pressure on the price of fossil fuels.

Another advantage of a federal RES is that it will ensure that only the most cost-efficient renewables get built. The current patchwork of 30 different state RPS regimes is not only cumbersome and costly, but it also creates incentives for bad decisions. For example, many states require only in-state renewables to be used, even if they are far more expensive than renewable energy purchased from elsewhere. It's the equivalent of forcing grocery stores in Maine to sell oranges grown only in Maine. This kind of protectionism between the states has been passé since the Constitution replaced the Articles of Confederation more than 200 years ago.

A federal RES is also an essential step in the creation of a truly national transmission grid that can carry emissions-free energy from the plains and deserts where it is generated to the cities where it is consumed. Just as renewable energy developers need the certainty of demand that a federal RES would provide to build more wind farms and solar projects, transmission developers need that same certainty in order to invest in new high-voltage lines.

Let me close by emphasizing the urgency to act. I am not one to claim that renewables are the only solution to America's energy and environmental challenges. Carbon capture and storage (CCS) and nuclear power are both legitimate ways to produce emissions-free electricity. The problem is one of timing. Additional nuclear energy is probably a decade away, and it is uncertain when CCS can be commercialized in a

cost-effective way. That leaves renewables, along with enhanced efficiency, as the best near-term solutions to the challenges we face.

I know that not everyone agrees that climate change is a serious threat. But even if they are right and the prevailing science is wrong, investing in renewable energy still makes sense for America. It will replace a finite source of energy – fossil fuels – with the infinite energy of the wind and sun. It will result in cleaner air. It will conserve precious water resources. It will strengthen our energy security in a volatile world. And it will stimulate the development of a clean-tech industry poised to become an important engine of future economic growth given the global shift toward low-carbon energy.

Last month President Obama said that his Administration "will be pursuing comprehensive legislation to finally end our addiction to foreign oil and prevent the worst consequences of climate change, while creating the incentives to finally make clean energy the profitable kind of energy in America." Mr. Chairman, "The American Clean Energy and Security Act of 2009" is an excellent blueprint for action, and we look forward to working with the Committee to ensure prompt passage this year.

Thank you for the opportunity to testify. I would be pleased to answer any questions you might have.

Mr. MARKEY. Our next witness is Gregory Kunkel. He is the Vice President of Environmental Affairs at Tenaska. Mr. Kunkel directs environmental compliance, permitting, and water resources issues at that company.

We welcome you, sir.

STATEMENT OF GREGORY P. KUNKEL

Mr. KUNKEL. Thank you, Chairman Markey, Ranking Member Upton—and happy birthday, by the way—and members of the subcommittee, for this opportunity to discuss Tenaska's two commercial-scale electric generation projects using carbon capture and storage technologies, Trailblazer in Texas and Taylorville in Illinois.

My name is Dr. Greg Kunkel; and I am Vice President of Environmental Affairs of Omaha-based Tenaska, one of the largest independent power producers in the United States. Tenaska currently employs nearly 700 people and has developed approximately 9,000 megawatts of natural gas-fired electric generating capacity across the United States.

Our affiliates market natural gas, electric power, and biofuels and also are involved in private equity funds and acquisition management focused on energy space, including renewable energy, infrastructure development, natural gas pipelines and storage, and electric transmission.

The Natural Resource Defense Council benchmarks Tenaska's power plants as having the lowest carbon footprint of any of our peers, less than half the national average emission rate of greenhouse gases. However, as clean as our fleet is, like a number of our peers in the independent power sector, our older long-term contract did not explicitly anticipate the cost of carbon control. To ensure that these clean, efficient facilities can keep operating, we urge the committee to provide a mechanism to hold these contracted facilities harmless for the duration of their contracts.

Now, with regard to carbon capture and storage, Tenaska's current initiatives, Trailblazer and Taylorville, may give the subcommittee some sense of the CCS projects that we believe can be built with today's proven technologies.

When Tenaska embarked on developing these utility scale CCS projects, natural gas prices were high and volatile, and there was a glut of gas generation. This encouraged us to consider coal for baseload power facilities. However, we recognized that new Federal, regional, and State greenhouse gas emission controls were very likely during these plants' 50-year life. Of course, just last week, EPA issued its endangerment finding and is considering comprehensive rulemaking to regulate carbon emissions; and now Congress is taking up the issue in earnest.

Tenaska's objective has been to find ways to develop the baseload resources required for the electricity market, but we weren't willing to invest in solid fuel projects without addressing the climate change issue. So the question before us was how to reduce greenhouse gas emissions in the design of projects today. To that end, we needed to assure ourselves that carbon capture technologies are ready for a utility scale project, a secure home was available for

captured carbon dioxide, and the economics and long-term financing arrangements for such projects could work.

On February 19, 2008, Tenaska announced the Trailblazer Energy Center, a 760 megawatt gross and 600 megawatt net output supercritical pulverized coal electric generation facility with the capability to capture 85 to 90 percent of its carbon dioxide. The site is near pipelines to the world's largest market for carbon dioxide, Permian Basin Enhanced Oil Recovery. Two railroads serve the site, and the electrical interconnection also nearby.

The comment period on Trailblazer's draft air permit closed on April 17, and the Texas Commission on Environmental Quality will be working toward a final permit over the next months. We have received competitive proposals for the facility's design and construction and are working on detailed engineering studies to support the financial closing and a construction start in 2010. Commercial operation could be as early as 2015.

Through our work with leading EPC contractors and equipment manufacturers, Tenaska is increasingly confident that we can finance the project and negotiate suitable terms for the plant's construction. Local and State governments have provided tax incentives for building the plant and are encouraging oil producers to use the facility's CO_2. We still need some form of Federal incentive participation to make the project work, but that seems increasingly likely.

Trailblazer's significance is that it will demonstrate post-combustion capture technology for existing power plants that today contribute 2 billion tons to the U.S. emission inventory and 10 billion tons to the worldwide emission inventory. By locating near a viable CO_2 market, Trailblazer can pioneer this technology at a reduced cost.

The Taylorville Energy Center is a Hybrid Integrated Gasification Combined-Cycle electric generation facility being developed by Christian County Generation with Tenaska as the managing partner. The project will manufacture pipeline-quality substitute natural gas, or methane, from Illinois bituminous coal. SNG will fuel the power block.

The amount of SNG produced will significantly exceed our requirements, annually freeing up 10 billion cubic feet of SNG for eventual sale offsite. The facility will employ 1,500 construction workers and create hundreds of permanent jobs in the coal and power sectors.

Taylorville will capture 50 to 60 percent of the carbon dioxide that would have otherwise been emitted, remove moisture and sulfur compounds, and compress the carbon dioxide stream for pipeline transport either to nearby geologic sequestration wells or for use in EOR operations elsewhere. The power island will have criteria pollutant emissions equal to those of a combined-cycle natural gas generation facility. No electric generation facility utilizing coal-derived fuel operating anywhere approaches the proposed emission performance of Taylorville. Yet the project relies exclusively on proven technologies for coal gasification, gas processing, and power generation.

The one important thing for all these types of projects—and we think that they are real projects that can come off in the near fu-

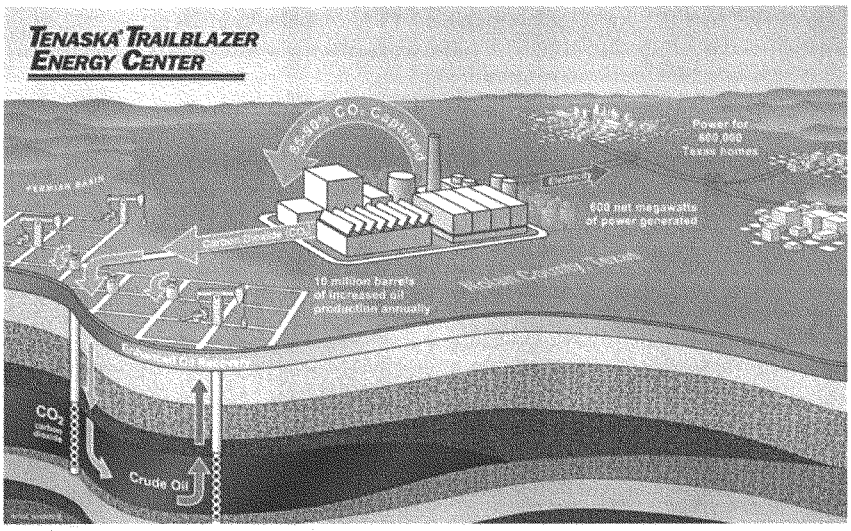
ture and begin construction as early as next year—is providing some sort of regulatory framework and certainty for these projects. We have provided specific comments on aspects of the ACES draft in our testimony, and we look to those provisions. But there is a whole variety of ways that the bill could support these types of projects.

Mr. MARKEY. And how much CO_2 can you take out of the coal?

Mr. KUNKEL. The Trailblazer project in Texas would take 90 percent.

Mr. MARKEY. Thank you. I appreciate it.

[The prepared statement of Mr. Kunkel follows:]



Testimony of
Dr. Gregory P. Kunkel, Ph.D.

Vice President of Environmental Affairs
Tenaska, Inc.

Before the United States House of Representatives
Committee on Energy and Commerce
Subcommittee on Energy and the Environment

Thank you, Chairman Markey, Ranking Member Upton and Members of the Subcommittee for the opportunity to discuss Tenaska's two commercial-scale electric generation projects using carbon capture and storage technologies – Trailblazer in Texas and Taylorville in Illinois

My name is Greg Kunkel. I am Vice President of Environmental Affairs for Tenaska, Inc.

Tenaska Background

Tenaska, headquartered in Omaha with offices in Dallas, Denver and Calgary, is one of the largest independent power producers in the United States. Guided by conservative business practices - which include securing long-term contracts for our generation facilities, Tenaska has developed approximately 9,000 megawatts (MW) of natural gas-fired electric generating capacity across the United States. Tenaska affiliates also market natural gas, electric power and biofuels, with Tenaska's natural gas marketing affiliate recently ranked as one of the top ten natural gas marketers in North America. Tenaska's affiliates are also involved in private equity fund and acquisition management focused on the energy space, including renewable energy, infrastructure development, natural gas pipeline and storage, and electric transmission.

The company currently has nearly 700 employees and 2008 gross operating revenues were $16 billion. Tenaska has grown steadily and now ranks among the top 25 largest privately-held U.S. companies based on revenues.

In recent years, Tenaska has expanded beyond its traditional power producer base.

- Tenaska Solar has invested in Soltage, www.soltage.com, a Jersey City, New Jersey-based full-service renewable energy company that develops and operates solar energy stations at client sites across the U.S. These PowerStations supply a significant portion of client long-term energy needs at below retail rates.

- Tenaska's employee-owners have invested in the Nebraska Elkhorn Ridge Wind project, which consists of 27 wind turbines with just under 80 MW of electric generating capacity, enough to provide renewable energy for about 25,000 Nebraska homes.

- Tenaska Power Fund owns InfrastruX Group, a leading national provider of utility infrastructure construction and maintenance service which is well-positioned to assist in strengthening U.S. energy infrastructure. InfrastruX, www.infrastrux.com, is headquartered in Seattle, Washington, with offices in New Mexico, New York, Pennsylvania, Wisconsin and Texas.

In recognition of Tenaska's modern electric generation fleet, the Natural Resources Defense Council ranks Tenaska as having the lowest carbon footprint of any of our peers – less than half of the national average emission rate of greenhouse gases.

As developers, rather than researchers or inventors, Tenaska is focused on environmentally-friendly power projects that use available, reliable, cost-competitive equipment and attract conservative investors requiring a reasonable assurance of success. However, I should point out, that as clean as our fleet is, like a number of our peers in the independent power and cogeneration sector, our older long-term contracts did not explicitly anticipate the need to internalize the cost of carbon control. In order to insure that these clean, efficient facilities can keep operating, we urge the Committee to provide a mechanism for holding these facilities harmless for the duration of their contracts.

With this context in mind, I now turn to carbon capture and storage (CCS) and Tenaska's Trailblazer and Taylorville projects.

Carbon Capture and Storage in General

Commercial-scale CCS, utilizing geologic sequestration and enhanced oil recovery (EOR) technologies, has four important benefits:

(1) The U.S. leads the world in proven coal reserves, and 49% of U.S. electricity is powered by coal. Continued use of coal with CCS is necessary to meet U.S. environmental, economic and national security objectives.

(2) Use of American coal by the power sector in an environmentally-friendly way decreases overall demand for natural gas--helping both hard-pressed manufacturers facing foreign competition that use natural gas as a feedstock and consumers in both coal-dependent and non-coal-dependent areas who choose clean-burning natural gas for heating their homes and other purposes.

(3) EOR technology boosts oil and gas production from existing U.S. fields – strengthening U.S. energy security and, on the margin, decreasing the need

to open up new fields in environmentally sensitive onshore and offshore areas.

(4) Commercial-scale CCS is the only way to curb greenhouse gas emissions in China, India and other coal-dependent developing countries, and its widespread adoption here in the U.S. will make it possible for the U.S. to lead the world in deployment of this technology.

President Obama summed up the case for CCS last year –

> *"... I am a big proponent of clean-coal technology and I want us to move rapidly in developing those sequestration technologies .... We're not going to immediately move off coal. A huge percentage of our electricity is generated by coal. What we need to do though is to put clean-coal technology on the fast track and that means money. ... We're the Saudi Arabia of coal, and the sooner we can figure out how to burn it cleanly, not only are we going to benefit but we can license that technology to countries like China and India that are putting up new coal facilities every week."*
>
> "Obama, Clinton Make Closing Arguments as Montana Primary Looms," Flathead Beacon, May 29, 2008

Tenaska's Carbon Capture and Storage Projects

I am pleased to be here to describe two electric generation projects Tenaska has in advanced development – Trailblazer in Texas and Taylorville in Illinois.

Trailblazer is a 600 MW (net) coal-fired, baseload power facility that, unlike any currently in operation anywhere, would capture 85 to 90 percent of its potential carbon dioxide (CO_2) emissions and deliver that CO_2 for use in enhanced oil recovery operations and geologic storage. Taylorville is a 500 MW (net) hybrid Integrated Gasification Combined-Cycle (IGCC) facility that will convert coal to methane and ultimately to electricity. In the process, the project will capture 50 to 60 percent of the CO_2 that would otherwise be emitted.

These projects may give the Subcommittee some sense of the CCS projects that we believe can be built with today's proven technologies.

When Tenaska embarked several years ago on the process of developing these utility-scale CCS projects, high and volatile natural gas prices, combined with oversupply of natural gas generation facilities, encouraged us to consider the developing needs for baseload power facilities fueled by coal. At the same time,

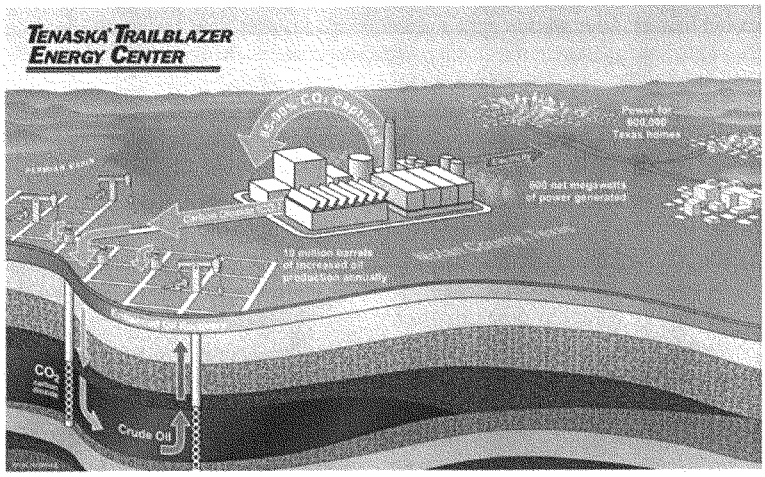
our leadership recognized that new federal, regional and state laws and regulations to control emissions of greenhouse gases from power facilities were certainly very likely during the 50-year life of these facilities. Given that new CCS projects cost as much as $3-4 billion, we decided that we would only be comfortable if we tackled the climate issue directly.

While Tenaska has been working on its development projects, other proposed coal-fired facilities advanced to some stage of development with a handful built or under construction, but many more have encountered costly postponements and cancellations due to various combinations of escalating costs, environmental opposition, utility owner and commission concerns about long-term investment in coal, and uncertainty about future environmental and climate change-related requirements. As we all know, just last week, the Environmental Protection Agency (EPA), in the wake of *Massachusetts v. EPA* and EPA's ensuing endangerment finding, began a comprehensive rulemaking to regulate carbon emissions. Now, Congress is taking up the climate issue in earnest. The challenge becomes clearer and clearer.

Tenaska's objective has been to find ways to develop the baseload resources that the market for electricity requires. We were not willing to invest in solid fuel projects without addressing the climate change issue, so a question before us was how to reduce greenhouse gas emissions in the design of projects today. To accomplish this, we needed to assure ourselves that carbon capture technologies are ready for a utility-scale project; a secure home is available for captured CO_2; and the economics and long-term financing arrangements for such projects can work. I can report progress in each of these areas.

Trailblazer Energy Center

On February 19, 2008, Tenaska publicly announced the Trailblazer Energy Center, a 765 MW gross output and 600 MW net output supercritical pulverized coal electric generation facility with the capability to capture and deliver to the Enhanced Oil Recovery (EOR) markets 85 to 90 percent of CO_2 produced in the boiler. On the same day, we closed the site property transaction, filed an air permit application with the Texas Commission on Environmental Quality, and submitted a transmission interconnect request with the Electric Reliability Council of Texas (ERCOT). The Trailblazer idea is all about neighborhood. The site is near pipeline infrastructure that can connect the facility to the world's largest market for CO_2 – Permian Basin enhanced oil recovery. Two railroads serve the site, and the electrical interconnection is also nearby.



The Tenaska Trailblazer Energy Center would be the first coal-fueled power plant to capture the carbon dioxide it produces and transport it via pipeline for use in enhanced oil recovery and geologic storage.

The public comment period on Trailblazer's draft air permit closed on April 17, and the Texas Commission on Environmental Quality will be working toward issuance of a final permit over the next few months. We have received competitive proposals from engineering and construction companies for design and construction of the facility. We are working on detailed engineering studies to support financial closing and initiation of construction in 2010. Construction requires about four and half years, so commercial operation could be as early as 2015.

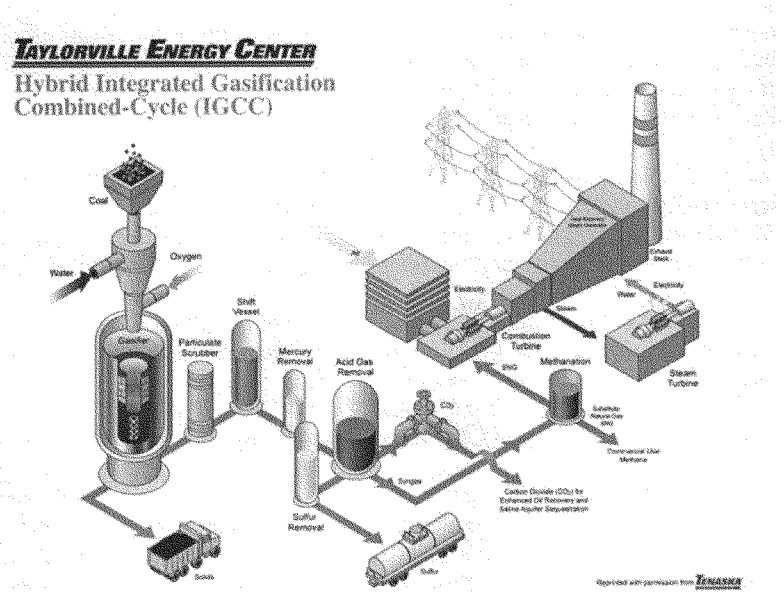
Through our work with leading Engineering, Procurement and Construction (EPC) contractors and equipment manufacturers, Tenaska is increasingly confident that we can negotiate suitable terms for the construction of the plant and that we can finance the project. Local and state governments have provided tax incentives for building the plant in West Texas, and are encouraging use of the CO_2 from the facility by oil producers. Still needed is some form of federal incentive participation to make the project work, but that also seems increasingly likely.

The central importance of a project like Trailblazer is that it will demonstrate, on a utility scale, post-combustion capture technology that could be applied to the 5,000 existing coal-fired power stations worldwide currently contributing 10 billion metric tons CO_2 annually to global emissions. In addition, projects like Trailblazer will help the U.S. maximize domestic oil and gas production from existing fields.

On a local level, Trailblazer will boost the economy with more than $2 billion in construction spending out of a total estimated project cost of more than $3 billion, provide 1,500 to 2,000 jobs at peak construction, and create more than 100 well-paying permanent positions to sustain operations.

Taylorville Energy Center

The Taylorville Energy Center is a Hybrid Integrated Gasification Combined-Cycle (IGCC) electric generation facility. The developer is Christian County Generation, LLC (CCG) and Tenaska is the managing partner. The project will manufacture pipeline-quality Substitute Natural Gas (SNG), or methane, from Illinois bituminous coal. SNG will fuel a power block with two combustion turbines, two Heat Recovery Steam Generators (HRSGs), and one steam turbine. The amount of SNG produced will significantly exceed the requirements of the power block, annually freeing up 10 billion cubic feet (bcf) of SNG for transport offsite via natural gas pipeline for eventual sale to commercial and residential natural gas customers. The facility will use 2.5 million tons per year of Illinois coal, employ 1,500 construction workers, and create hundreds of permanent jobs in the coal and power sectors.



The Taylorville Energy Center will use hybrid Integrated Gasification Combined-Cycle (IGCC) technology to convert coal into methane, either to sell into the natural gas pipeline or to fuel power production.

Taylorville will capture 50 to 60 percent of the carbon dioxide (CO_2) that would otherwise have been emitted, remove moisture and sulfur compounds, and compress the CO_2 stream for pipeline transport either to nearby geologic sequestration wells in the Mt. Simon geologic formation (within Christian County, Illinois) or for use in EOR operations elsewhere (a pipeline to the Gulf Coast is proposed by others). The power island will have criteria pollutant emission levels equal to those of a combined-cycle natural gas generation facility. No electric generation facility utilizing coal or coal-derived fuel operating anywhere in the world approaches the proposed emission performance of the Taylorville Energy Center, yet the project relies exclusively on proven technologies for coal gasification, gas processing and power generation.

The Hybrid IGCC process of producing marketable SNG (methane) will result in greater operational flexibility than a more typical IGCC model, in which only synthesis gas is produced exclusively for consumption on site. In contrast, the project's SNG production will enable its power generation function and gasification processes to operate more independently, creating the means to manage fluctuations in electricity demand and commodity price volatility, and thereby improve the overall viability and success of the project. By making CO_2 available for EOR, the project offers important contributions to oil as well as electric and natural gas energy supplies. Demonstrating the technical and economic feasibility of coal-based power generation with carbon capture and storage technologies, the project provides a model that can be replicated in support of the domestic energy strategy of the United States.

Tenaska has a loan guarantee application pending with the U.S. Department of Energy (DOE) to finance a portion of Taylorville's $3.5 billion total capital cost. DOE has provided $66 million in funding for the Midwest Geological Sequestration Consortium, and Tenaska looks forward to being part of this effort.

Taylorville has a broad range of supporters, including the Illinois AFL-CIO, the American Lung Association, the Clean Air Task Force, the Illinois Citizens Utility Board, and the Illinois Coal Association.

Impact of Federal Polices on CCS Development Projects

Perhaps the most important thing Congress could do to facilitate the development of Trailblazer or Taylorville is to provide **regulatory certainty**, and in particular, a regulatory framework within which a market can develop that values greenhouse gas emission reductions. In the absence of this regulatory certainty, we foresee an EPA rulemaking process with ensuing lengthy litigation that will neither address greenhouse gas emissions nor provide the certainty necessary for CCS projects, as

well as wind, solar and other innovative projects and related transmission necessary for our nation to move ahead.

The Waxman-Markey ACES discussion draft addresses many of the key uncertainties facing the CCS developer:

- Allowance allocation. Not yet detailed in the draft, allocation of emission allowances to pioneering or early adopter generation units with carbon capture and storage could potentially provide a stable source of funding if structured properly.

- Bonus allowances. The bonus allowance provisions of the draft legislation circulated last Congress by Reps. Dingell and Boucher attempted to address the commodity price risk of granted allowances by adjusting the number of allowances granted each year based upon current allowance pricing in order to maintain more predictable revenue to the project. We believe that such measures to remove commodity risk and assure steady revenues will aid in financing the project.

- Auction proceeds. Cap-and-trade proposals may produce governmental revenue by auctioning greenhouse gas emission allowances to regulated entities. Auction proceeds could assist construction of early CCS projects via performance payments for demonstrated sequestration. Along the same lines, Tenaska has supported modifications to existing Internal Revenue Code section 45Q sequestration tax credit provisions that would increase the number and value of the credits and enable reservation of a credit stream similar to a production tax credit, yet provide for an adjustment in the credit as the market for carbon emission allowances develops within a cap-and-trade regime.

- Regulatory development. The discussion draft includes a comprehensive environmental regulatory regime protective of water resources as well air quality. Sequestration itself, and the monitoring, reporting, and verification necessary to assure its validity, need definition.

- Liability management. While the issue of long-term liability at sequestration sites is under study, protection of early mover projects deserves consideration.

- Industry mobilization. Early commercial CCS projects, including Trailblazer and Taylorville, have encouraged utility equipment manufacturers, financial institutions and service providers to bring forward

competitive new offerings to address the risks and opportunities of a large new market. Federal, regional and state legislative and regulatory developments are increasing this activity, but greater certainty regarding the ultimate regulatory structure is necessary for wider commercial deployment.

In the past, Congress has employed a number of effective policies to help overcome barriers to entry and encourage new energy technologies. Tenaska supports those mechanisms that provide the greatest degree of certainty with respect to their application and that have objective guidelines. As mentioned, we are participating in the DOE loan guarantee process for Taylorville and look forward to working with DOE on other initiatives. Tax incentives provide predictability for us and our financing counterparties and should be part of the ongoing discussion.

Thank you again for your interest and for the opportunity to provide some details on Trailblazer and Taylorville. I want to express Tenaska's special appreciation to three members of Energy and Commerce for their leadership on CCS and energy generally--Congressman Terry who represents our headquarters in Nebraska, Congressman Shimkus who represents the Taylorville area, and Congressman Boucher who we owe a special thanks to for addressing our long term contracts issue in the climate change legislation he and Mr. Dingell proposed last year.

I would be pleased to respond to any questions you may have.

TENASKA®

Greg Kunkel, Ph.D.
Vice President of Environmental Affairs

AS THE VICE PRESIDENT OF ENVIRONMENTAL AFFAIRS FOR TENASKA, DR. GREG Kunkel is engaged in development of the company's strategic responses to climate change and other environmental issues of primary concern. Tenaska is an independent energy company that develops, constructs, owns and operates non-utility generation and cogeneration plants; provides marketing services for natural gas, electricity, and biofuels; and provides acquisition management services for private equity funds in the energy sector.

Dr. Kunkel leads environmental permitting and development for Tenaska's clean energy projects, including: the Tenaska Trailblazer Energy Center in Texas, the first proposed coal-fueled facility to capture 85 to 90 percent of the carbon dioxide (CO2) it produces for use in enhanced oil recovery; and the Taylorville Energy Center in Illinois, a hybrid integrated gasification combined-cycle plant (IGCC) that will convert coal into pipeline quality natural gas that will fuel power production or be sold, capturing at least 50 percent of its CO2 emissions.

Dr. Kunkel supervises Tenaska's corporate environmental team to assure compliance with environmental requirements and directs environmental commodity transactions for Tenaska affiliates, including domestic and international carbon credits.

In 2008, Tenaska was listed in benchmarking studies by the Natural Resources Defense Council as having the best record among thermal U.S. electric generation companies for fleetwide average emissions of CO2.

Dr. Kunkel earned bachelor of arts and master of arts degrees from the University of Colorado at Boulder. He received his doctorate from the University of California at Davis.

Mr. MARKEY. Mr. Hawkins, Mr. David Hawkins, the Director of Climate Programs at the Natural Resources Defense Council, one of the most frequent visitors to this committee in its history. He has been working on air pollution issues for over 30 years.

We welcome you back. Whenever you are comfortable, please begin.

STATEMENT OF DAVID G. HAWKINS

Mr. HAWKINS. Thank you very much. Thank you for inviting me to testify today. I am going to focus today on a pathway for coal.

NRDC, as an environmental organization, is a strong supporter of efficiency and renewable energy resources, but we also believe that it is important to have a pathway for advanced coal. It is important in order to get the policy support for the protection of the climate programs that we need, and it is important to actually make those climate protection programs happen more easily in the real world. We think we can get deep cuts in carbon dioxide emissions faster and at lower costs if coal with carbon capture is on the table as part of the toolbox, and that is why we very strongly support it.

NRDC is a member of the U.S. Climate Action Partnership, and we put forward in that document what we believed was an integrated package of policy support for carbon capture and disposal. There were four things that we recommended.

The first was a requirement for the government to get its act together in terms of developing the necessary permitting rules.

The second was a program to do early government financial support so that we could get five gigawatts of coal capacity with carbon capture deployed by 2015. It sounds like Tenaska could be part of that five gigawatts.

The third element would be a transitional program where the early movers in the carbon capture world would get a financial incentive. This is very important to overcome the competitive barriers to these kinds of technologies, even in the early years of a cap-and-trade program.

And the fourth thing we recommended was a set of mandatory emissions standards for new coal plants so that we would have clarity and an assurance that we didn't have to rely just on market forces but we would have that good old-fashioned regulation that says: Here's a performance standard. You need to meet it. And, by the way, there will be financial incentives to help you do even better.

The ACES discussion draft does a great job of embracing these concepts and articulating them. And while there are a few places where some added detail would be helpful, we think that it is a very great job, and we are very supportive of it.

In our view, carbon capture and disposal is a real option. It can be made into a reality out in the world if it has adequate policy support. That policy support has been lacking, but it can be provided through the kind of provisions that are in the ACES draft and, for that reason, we support it.

Mr. Chairman, we have heard lots of concerns over the last couple of days about whether the technology is available or whether it is available at a reasonable cost; and there have been lots of con-

cerns and legitimately expressed concerns about the fact that this may cost too much, that we simply can't afford to do what is being proposed in this legislation.

Well, 73 years ago, the predecessor of this committee heard from then chairman Sam Rayburn about the need to have a major energy advance. It was called Rural Electrification Act of 1936, and some of the same arguments that we have heard mounted today about the need to protect the climate and whether we could afford to do it were put forward then. It was said that the technology did not exist to bring electricity to rural Americans. It was said that, if it did exist, it would be simply too expensive and ruin us.

Well, 73 years ago, this committee acted, and it passed out by one vote the Rural Electrification Act of 1936, and the result was an economy that the world still cannot beat. This is the world's greatest economy, and it is brought to that level in large part by electrification. It was that kind of technological advance and willingness to say, you know, we think these challenges can be met.

Today, the challenge is even greater and the stakes are higher and the rewards are greater. But it is going to come down to the same thing: The men and women of this committee voting to do what we need to do to create the future that we need to create. Thank you.

Mr. MARKEY. Thank you, Mr. Hawkins. And it comes in full circle, doesn't it? 73 years ago, we were voting to bring electricity to rural America; now we are going to be voting on bringing electricity from rural America, the sun and the wind and biomass, to urban America. And we might only win by one vote, but that will be the perfect circle then when it is completed.

[The prepared statement of Mr. Hawkins follows:]

Testimony of David G. Hawkins
Director of Climate Programs,
Natural Resources Defense Council

Before the
Subcommittee on Energy and Environment,
Committee on Energy and Commerce
U.S. House of Representatives

Hearing On
"The American Clean Energy and Security Act of 2009"

April 23, 2009

Summary

Coal has fueled economic growth in the world's largest economies. But we cannot solve the climate crisis unless we cut coal's global warming emissions dramatically. We have the tools to do this. Energy efficiency, increased reliance on renewables like wind, solar, and biomass, and capture of carbon dioxide from power and industrial coal plants followed by geologic disposal (CCD or CCS) can play a major role in harmonizing our economic, security and climate protection goals.

But these tools will not be deployed at the required scale unless we enact new laws to cut global warming pollution. The proposed American Clean Energy and Security Act of 2009 (ACES), released by Chairmen Waxman and Markey in March, is a comprehensive program to cut emissions from coal and other sources of greenhouse gases and put America on a path to economic, energy, and climate security. We cannot afford to delay enactment of this program.

The US Climate Action Partnership (USCAP), of which NRDC is a member, has proposed a Blueprint for Legislative Action that combines an economy-wide cap on emissions with performance-based policies focused on reducing CO_2 emissions from coal use. NRDC believes this program can be effective in protecting the climate and managing the transition to a cleaner energy future.

In NRDC's opinion, the ACES proposal would implement most of the USCAP recommendations to modernize the way we use coal in this country. We urge this Committee and Congress to act this year to enact the comprehensive climate protection program we urgently need.

Mr. Chairman and Members of the Subcommittee:

Thank you for your invitation to testify today on behalf of the Natural Resources Defense Council (NRDC) regarding the American Clean Energy and Security Act of 2009. My name is David Hawkins. I am Director of Climate Programs at the Natural Resources Defense Council (NRDC). NRDC is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.2 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles and San Francisco, Chicago and Beijing.

Chairman Markey, Ranking Member Upton, thank you for holding this hearing on The American Clean Energy and Security Act (ACES) legislative proposal. The ACES "discussion draft" recently circulated by Chairmen Waxman and Markey, is an excellent starting point for enacting comprehensive energy and climate legislation this year. The draft bill draws heavily on recommendations of the U.S. Climate Action Partnership of which NRDC is an original member.

I would like to repeat some of what NRDC's President, Frances Beinecke, said to the full Committee in her testimony yesterday. Passing effective climate legislation is NRDC's highest priority. It is vital to enact legislation this year—to help deliver, economic, energy, and climate security. As President Obama said last week, the foundation for growth and prosperity in the 21st Century must be built on solid pillars. Clean, sustainable energy is one of those pillars, and promptly enacting comprehensive energy and climate legislation is the way to put that pillar in place.

Action on global warming has already been delayed too long. Every day we learn more about the ways in which global warming is already affecting our planet. We must act now to begin making serious emission reductions if we are to avoid truly dangerous levels of global warming pollution. Climate scientists warn us that we face extreme dangers if global average temperatures are allowed to increase by more than 2 degrees Fahrenheit from today's levels (equivalent to 2 degrees Celsius over pre-industrial levels). The Intergovernmental Panel on Climate Change reports that it is still possible to stay below this temperature increase if atmospheric concentrations of CO_2 and other global warming gases are kept from exceeding 450 ppm CO_2- equivalent and then rapidly reduced. This will require us to halt U.S. emissions growth almost immediately and then achieve significant cuts continuously for the next several decades.

If we delay and emissions continue to grow, it will become much harder to avoid the worst impacts of a climate gone haywire. In short, a slow start means a crash finish, with steeper and more disruptive emission cuts required for each year of delay or insufficient action.

The Need for Rapid Deployment of Low-Carbon Electricity

Mr. Chairman, this panel has been asked to address the role of low-carbon electricity resources in combating global warming. This is indeed a priority, due to the centrality of electricity in modern life and its large contribution to global warming pollution both in the U.S. and around the world. Electricity is quite miraculous and has made an enormous improvement in the quality of life of every human being lucky enough to have access to

it. We take electricity for granted in the U.S. but there are Americans alive today who know what it was like to grow up without electricity. The hard life of rural families, especially farm women, prior to the enactment of the 1936 Rural Electrification Act is compellingly depicted in Robert Caro's LBJ biographical volume, *The Path to Power:*

> "Washing, ironing, cooking, canning, shearing, helping with the plowing and the picking and the sowing, and every day, carrying the water and the wood, and because there was no electricity, having to do everything by hand by the same methods that had been employed by her mother and grandmother and great-great-great-grandmother before her..."

We meet here today in the building that bears Sam Rayburn's name and before the Committee that succeeds Rayburn's Interstate Commerce Committee, where in 1936 he fought to report out the Rural Electrification Act -- and succeeded by a margin of one vote. Access to electricity--what seems so obviously good policy today -- was fought intensely seventy years ago. And the arguments made then are familiar today as we decide to take another giant step in modernizing our country's use of electricity. Then the opposition argued the technology to bring electricity to rural Americans was simply not available or available only at a ruinous cost. Today, we are told the technology is not available to bring all of us electricity that will not create a disastrous climate or that the technology is available only at an unacceptable cost.

Sam Rayburn's Congress knew it was possible to act boldly and that the arguments against acting were exaggerated and simply wrong. And so that Congress acted, helping to build the strongest economy on earth and making a miraculous difference in the lives of millions of families. It is no exaggeration to say that you in this Congress are

embarked on a challenge even more critical than that facing Rayburn's Congress—the stakes are even larger and the payoff will be even greater. But in the end it will come down to the same action taken in this Committee seventy-three years ago—men and women voting for what seems hard today but with the conviction that it is essential to build the future we want.

The American Clean Energy and Security Act

The American Clean Energy and Security Act of 2009 (ACES) will put us on a path to deliver the future electric power system that we and the rest of the world need badly. I will focus my remarks on the impact of ACES on coal-based electric power generation.

As you know, coal fuels about 50% of U.S. electric generation today. U.S. coal capacity is aging: about one-third of U.S. coal capacity is over 40 years old today; in 2025, more than half of U.S. coal capacity will be over 50 years old. I have testified previously before this Committee on the toll from coal as it is mined and burned today and on the need to act now to begin reducing CO_2 emissions from the U.S. coal and global coal fleets and to prevent new coal plant investments that release their CO_2 to the air.

Coal is the most abundant fossil fuel and is distributed broadly across the world. It has fueled the rise of industrial economies in Europe and the U.S. in the past two centuries and is fueling the rise of Asian economies today. Because of its abundance, coal is cheap and that makes it attractive to use in large quantities if we ignore the harm it causes. However, per unit of energy delivered, coal today is a bigger global warming polluter than any other fuel: double that of natural gas; 50 per cent more than oil; and, of course, enormously more polluting than renewable energy, energy efficiency, and, more controversially, nuclear power. To reduce the contribution to global warming from coal

use, we can pursue efficiency and renewables to limit the total amount of coal we consume but to reduce emissions from the coal we *do* use, we must deploy and improve systems that will keep the carbon in coal out of the atmosphere, specifically systems that capture carbon dioxide (CO_2) from coal-fired power plants and other industrial sources for safe and effective disposal in geologic formations. These systems are referred to as carbon capture and storage (CCS) or carbon capture and disposal (CCD), which is the term I will use.

The Need for CCD

Any significant additional use of coal that vents its CO2 to the air is fundamentally in conflict with the need to keep atmospheric concentrations of CO2 from rising to levels that will produce dangerous disruption of the climate system. Given that an immediate world-wide halt to coal use is not plausible, analysts and advocates with a broad range of views on coal's role should be able to agree that, if implemented in a safe and effective manner, CCD should be rapidly deployed to minimize CO2 emissions from the coal that we do use.

Decisions being made today in corporate board rooms, government departments, and congressional hearing rooms are determining how the next coal-fired power plants will be designed and operated. Power plant investments are enormous in scale, more than $1 billion per plant, and plants built today will operate for 60 years or more. The International Energy Agency (IEA) forecasts that more than $5 trillion will be spent globally on new power plants in the next two decades. Under IEA's forecasts, about 1800 gigawatts (GW) of new coal plants will be built between now and 2030—capacity

equivalent to 3000 large coal plants, or an average of ten new coal plants every month for the next two decades. This new capacity amounts to 1.5 times the total of all the coal plants operating in the world today.

If we decide to do it, the U.S. and the world could build and operate new coal plants so that their CO_2 is returned to the ground rather than polluting the atmosphere. The ACES bill contains a comprehensive approach to make this happen in the U.S. Modeled closely on the USCAP Blueprint for Legislative Action recommendations, the ACES bill combines a declining cap on greenhouse gas emissions with emission standards that will require new coal plants to capture some fraction of their CO_2 emissions. In addition, to allow CCD to be deployed without significant impacts on individual consumers' electricity rates, the ACES bill provides for a program of direct payments for capture and disposal of CO_2 from the early generations of new coal plants.

USCAP Recommendations

As I have testified previously, the USCAP Blueprint contains a comprehensive proposal for CCD deployment as part of a broad climate protection law. In addition to an economy-wide cap, the Blueprint recommends Congress adopt the following measures:

- requirements for the government to issue needed regulations for siting CO_2 repositories and pipelines;
- government financial support to build 5 GW of CCD-equipped commercial power plants by 2015;
- a transitional program to pay for tons of CO_2 emissions captured and disposed through use of CCD;

- mandatory emission standards for new coal plants that are not already permitted as of January 1, 2009.

ACES CCD Provisions

Subtitle B of the ACES bill provides a strong foundation for the deployment of CCD systems to enable large reductions in emissions from large fossil fuel sources. In NRDC's opinion, proposed sections 111, 112, and 113 of the ACES bill would effectively implement the USCAP recommendation to develop and implement a national strategy to address legal and regulatory barriers to commercial-scale CCD deployment.

USCAP also recommends an early grant program to establish at least 5 gigawatts (GW) of coal fueled facilities equipped with CCD and meeting an emission rate no more that 1100 pounds of CO_2 per megawatthour by 2015, including at least one pulverized coal retrofit project. The ACES bill does not contain a provision that specifically requires deployment of this amount of CCD capacity by 2015. The ACES bill does, in proposed section 114, authorize creation of a corporation to provide grants, contracts and financial assistance for commercial-scale demonstrations of carbon capture or storage technology projects. While NRDC believes the section 114 program can be useful in advancing practical knowledge and experience with CCD, we are concerned that as drafted, it does not appear to have a clear enough focus to assure that the USCAP-recommended 5 GW of CCD projects will be established by 2015. NRDC recommends that the discussion draft be revised to specifically incorporate an objective to achieve this important early

deployment component by 2015. We will be happy to work with the Subcommittee and full Committee on this topic.

USCAP also calls for a program of direct payments on a dollar per ton of CO_2 avoided basis for the first ten years of operation of CCD systems. Payments would be based on two sliding-scales. Higher payments per ton avoided would be provided for earlier projects to reflect estimated higher costs and to provide an added incentive for early operation of CCD projects. The payment schedule would be highest for the first 3 GW of projects in the program, with successively smaller payments for later projects. In addition, a separate sliding scale would provide higher dollar per ton payments for projects with higher capture rates. This would reflect the expected higher costs for high capture rate systems and would provide an incentive to achieve lower emission rates than the minimum mandatory emission standard. For example, for a project in the first 3 GW of the program that achieved a high level of capture (85-90%), the payments for the expected incremental costs are estimated to be on the order of $90 per ton avoided. USCAP recommends that the total size of the financial incentive program should be large enough to support on the order of 72 GW of CCD projects.

Section 115 of the ACES bill includes a direct payment program for captured and stored CO_2. This provision includes a requirement for payments to be made based on sliding scales with higher payments provided for early projects and for projects employing higher levels of capture. In NRDC's opinion, this approach is consistent with the USCAP recommendations. The duration of the payment program and the total program size are not specified in the discussion draft version of the ACES bill. We understand

that these provisions will be included as the bill moves through committee and NRDC urges the adoption of the USCAP recommended amounts for these provisions.

USCAP recommends a mandatory emission standard of 1100 pounds per megawatt hour (lbs/MWh) for coal plants permitted between January 1, 2009 and 2020 and an 800 lbs/MWh mandatory standard for plants permitted after the start of 2020, with authority for EPA to establish tighter standards as justified by technical and economic feasibility considerations. Compliance with the initial emission standard would be required upon startup for plants permitted after January 1, 2015. For plants permitted between now and January 1, 2015, compliance would be required within four years after either 2.5 GW of commercial scale CCD power plants are operating in the U.S. or 5 GW of such plants are operating globally. This recommendation guarantees that any proposed coal project not already permitted today must meet an emission standard that requires the operation of CCD, either upon startup or early in its operating life.

Section 116 of the ACES bill adds a new section 812 to the Clean Air Act that does, in NRDC's opinion, implement the USCAP emission standard recommendations.[1]

These provisions of the ACES bill will help speed the deployment of CCD here at home and set an example of leadership. That leadership will help reconcile coal and climate protection; it will bring us economic rewards in the new business opportunities it creates here and abroad; and it will speed engagement by critical countries like China and India. As other witnesses will testify, the first CCD projects are technically ready for deployment today but the lack of a policy framework means there are regulatory and

[1] There may be a need for some technical clarification of certain of the definitions in section 812.

economic barriers that are difficult to overcome. The ACES bill would correct this problem by directing the adoption of required siting rules and providing both the financial incentives and clear standards for emission performance that are needed to make CCD a reality in a timely manner.

Conclusions

To sum up, since we will almost certainly continue using substantial amounts of coal in the U.S. and globally in the coming decades, it is imperative that we act now to deploy CCD systems. Commercially demonstrated CO_2 capture systems exist today and competing systems are being researched. Improvements in current systems and emergence of new approaches will be accelerated by requirements to limit CO_2 emissions. Geologic disposal of large amounts of CO_2 is viable and we know enough today to conclude that it can be done safely and effectively. EPA must act without delay to revise its regulations to provide the necessary framework for efficient permitting, monitoring and operational practices for large scale permanent CO_2 repositories.

A cap and trade program for greenhouse gases is essential to change the way we use coal but it does not assure in its early years the deployment of CCD technology. To achieve that objective, we need complementary policies that require minimum emission standards from new investments and incentives to deploy CCD broadly. The ACES bill contains the needed provisions and its enactment would make CCD a reality soon.

Finally CCD is an important strategy to reduce CO_2 emissions from fossil fuel use but it is not the basis for a climate protection program by itself. Increased reliance on low-carbon energy resources is the key to protecting the climate. The cleanest energy

resource of all is smarter use of energy; energy efficiency investments will be the backbone of any sensible climate protection strategy. Renewable energy will need to assume a much greater role than it does today. With today's use of solar, wind and biomass energy, we tap only a tiny fraction of the energy the sun provides every day. There is enormous potential to expand our reliance on these resources. Accordingly, NRDC supports the other provisions of the ACES bill that would encourage greater reliance on these home-grown energy resources.

We have no time to lose to begin cutting global warming emissions. Fortunately, we have technologies ready for use today that can get us started.

Mr. Chairman, that completes my testimony, I will be happy to take any questions you or other members of the subcommittee may have.

Mr. MARKEY. Our next witness is Eugene Trisko on behalf of the United Mine Workers of America. Mr. Trisko has represented the United Mine Workers for more than 20 years. He is a member of the Environmental Protection Agency's Clean Air Act Advisory Committee and has appeared before the U.S. Court of Appeals for the District of Columbia concerning the Clean Air Act.

Welcome, sir.

STATEMENT OF EUGENE M. TRISKO

Mr. TRISKO. Thank you, Mr. Chairman, Ranking Member Upton. I am pleased to be here today to testify on behalf of the United Mine Workers.

The UMWA has sought technological solutions to the environmental challenges facing coal for decades. The UMWA recognizes that climate change legislation poses potentially the greatest threat to its membership and to the continued use of coal. In July, 2007, the Mine Workers and other industrial unions endorsed the bipartisan Bingaman-Specter climate change bill. Achieving the proper balance among technology incentives and the timing and stringency of emission reductions will be essential for obtaining bipartisan support for climate legislation.

One half of our electricity today is generated by coal. Twenty-three States rely on coal for more than half of their electric supplies. To reduce coal in our energy mix means using another fuel to replace it for baseload generation, most likely a combination of natural gas and nuclear.

There is a great deal in this proposed legislation that UMWA supports. We strongly endorse section 114, incorporating the Carbon Capture and Storage Early Deployment Act reintroduced this year by Representative Boucher and a bipartisan group of cosponsors. The programs called for by this section will provide critical nonbudget support for the early demonstration of CCS technologies on the commercial scale.

CCS technology is the principal means for assuring that coal can continue to supply a significant share of our electric generating needs. These technologies also can provide a major source of new, well-paying low-carbon jobs.

Our statement summarizes a recent study showing that deployment of 65 to 100 gigawatts of new advanced coal capacity with CCS could create five to seven million job years of employment during construction and more than one quarter million permanent jobs.

UMWA supports the objectives of the CCS incentives provided in section 115. The Mine Workers recommend that the committee develop an allowanced-based mechanism for funding qualifying CCS facilities. Such incentives will be critical to attracting capital investment in new and retrofit applications.

The timing and availability of section 115 support should provide planning certainty. We regard the period from 2020 to 2040 as critical for avoiding a large-scale loss of coal markets. As to scale, we recommend a range of 65 to 100 gigawatts of new and retrofit capacity based on U.S. EPA's analysis of previous climate bills.

The Mine Workers recommend the bill avoids specifying CO_2 performance standards limited to coal-based generating units. NSPS

are unnecessary for these sources since all cap sources will be required to comply with the bill's declining cap.

To avoid the risk of WTO challenges, we suggest that the bill's international border adjustment provisions be modified consistent with IBEW and AEP suggested changes submitted to the committee on April 17.

UMWA favors the largest possible use of allowance allocations to the electric distribution and independent generation sectors and to vulnerable manufacturing industries. We support the recommended approach to allocations outlined in the recent letter to Chairman Waxman by the IBW and the utility workers.

UMWA is mainly concerned about the 20 percent reduction target for the year 2020. This target is well above the 6 percent target proposed by the Dingell-Boucher December, 2008, discussion draft and President Obama's proposed 14 percent target.

Commercial use of CCS by 2020 is likely to be limited to a handful of early mover plants. Recent modeling of similar emission control proposals shows that one-third to one-half of coal-based generating capacity could be retired between 2015 and 2030. EPA's preliminary modeling of the bill shows this occurring by 2040, even with aggressive CCS assumptions. Such impacts must be avoided if the Nation is to retain domestic coal as a principal energy supply. The UMWA thus urges moderation in the choice of the 2020 target, recognizing that the majority of the emission reductions required by the bill occur later in the program when technological advances should facilitate the continued use of coal.

Thank you, Mr. Chairman, members of the committee.

Mr. INSLEE [presiding]. Thank you very much.

[The prepared statement of Mr. Trisko follows:]

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Statement on behalf of the
United Mine Workers of America, AFL-CIO
Before the
Committee on Energy and Commerce
Energy and Environment Subcommittee
U.S. House of Representatives
April 23, 2009
"The American Clean Energy and Security Act of 2009"

Chairmen Waxman and Markey, Ranking Members Barton and Upton and distinguished members:

I am pleased to be here today to testify on behalf of the United Mine Workers of America (UMWA), the labor union representing the nation's organized coal miners. I have represented the UMWA in clean air and global climate change issues for more than 20 years, including participation as an NGO at all major United Nations climate negotiating sessions subsequent to the 1992 Rio Earth Summit. A copy of my bio is Attachment 1, and a summary of my statement is Attachment 2.

The American Clean Energy and Security Act (ACES) is comprehensive energy and environmental legislation, combining for the first time requirements for national renewable energy portfolio standards, a suite of energy efficiency

initiatives, and a national cap-and-trade program to reduce emissions of greenhouse gases. We are pleased to have the opportunity to comment on this proposed legislation, and will focus particularly on its cap-and-trade and carbon capture and storage provisions.

Background

The UMWA has sought technological solutions to the environmental challenges facing coal production and use for decades. The union fought, but ultimately lost, a 10-year legislative battle to require large coal-based generating plants to install available scrubber technologies to reduce their sulfur emissions. Due to fuel-switching to meet Title IV acid rain emission reductions, coal production in major eastern coal producing states declined by more than 113 million annual tons between 1990 and 2000. More than 30,000 coal mining jobs were lost. Dozens of mining communities have all but ceased to exist across economically-depressed Appalachia and the rural Midwest.

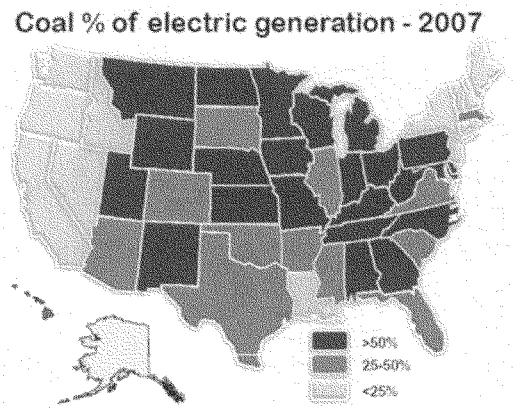
The UMWA recognizes that climate change legislation represents the greatest threat to its membership and to the continued use of coal. In July 2007, the UMWA, the AFL-CIO and other industrial unions endorsed the bipartisan Bingaman-Specter climate change bill (S.1766). That bill provided an appropriate balance of technology incentives, reasonable emission reduction targets and timetables, and safeguards for the economy. Achieving the proper balance among

technology incentives, the timing and stringency of emission reductions, and economic safeguards will be essential for obtaining broad bipartisan support for climate legislation.

The Role of Coal in America's Energy Supply

Coal is an indispensable part of America's energy supply. The U.S. has a demonstrated coal reserve base of over 500 billion tons, with an estimated 275 billion tons of recoverable reserves. Our recoverable reserves have the energy equivalent of one trillion barrels of oil, equal to world known oil reserves.

Approximately one-half of our electricity is generated by coal. Twenty three states rely on coal for more than half of their electric supplies, while another 12 states receive 25% to 50% of their electricity from coal (see map below).



Source: U.S. DOE/EIA, Electric Power Annual (2008)

Intermittent renewables such as wind cannot replace baseload coal generation, and usually are backed up with natural gas. To reduce coal in our energy supply mix means using another fuel to replace it for baseload generation, most likely a combination of nuclear and natural gas. Such a fundamental shift in U.S. energy policy would bring into question the cost and the availability of natural gas supplies. Substantial increases in demand for natural gas inevitably would lead to much higher electric generation costs, higher natural gas costs for consumers and industries, and greater dependence on foreign sources for supply. At the margin, our gas supplies will come from higher-cost unconventional reserves, and imports from Canada and unstable foreign markets in the form of LNG.

ACES Requires Comprehensive Economic Analyses

Due to its comprehensive nature and aggressive emission reduction and renewable energy and efficiency targets and timetables, ACES would impact virtually every aspect of energy supply and demand in this country. We look forward to U.S. DOE/EIA and other independent analyses of the economic and environmental impacts of this legislation, and hope that such studies will be available to guide the Committee's deliberations on this major bill.

There is much in this proposed legislation that UMWA supports, and our statement highlights these areas of agreement while outlining some suggested changes or improvements to the bill.

5

Support for Section 114

We strongly endorse the adoption, in Section 114, of HR 1689, the Carbon Capture and Storage Early Deployment Act reintroduced this year by Rep. Rick Boucher and a bipartisan group of cosponsors. The programs called for by this section will help to provide critical non-budget support for the early demonstration of CCS technologies on a commercial scale. Changes to the bill since its introduction in 2008 have enhanced the role of state public utility commissions, ensuring greater transparency and accountability.

HR 1689 is based on the unanimous recommendations of the U.S. EPA Advanced Coal Technology Work Group (ACT). In January 2008, U.S. EPA's ACT Work Group, representing a broad array of industry, state and environmental stakeholders, including the UMWA, unanimously recommended that Congress create a Carbon Capture and Storage Early Deployment Fund to defray the additional costs and risks of these technologies.

It is widely recognized that geological capture and storages of CO2 is the key to retaining domestic coal as a viable energy supply in the context of constrained U.S. greenhouse gas emissions. While various private and federal research programs are exploring the potential for carbon sequestration, a secure and adequate funding source is not available to accelerate essential applied research, development and commercial-scale demonstration of carbon capture and

storage as a viable commercial option for existing and future coal-based energy providers.

The 2007 MIT report, *The Future of Coal*, cautioned that:

> "Today, and independent of whatever carbon constraints may be chosen, the priority objective with respect to coal should be the successful large-scale demonstration of the technical, economic, and environmental performance of the technologies that make up all of the major components of a large-scale integrated CCS system — capture, transportation and storage. Such demonstrations are a prerequisite for broad deployment at gigatonne scale in response to the adoption of a future carbon mitigation policy, as well as for easing the trade-off between restraining emissions from fossil resource use and meeting the world's future energy needs." (*Id.*, at xi.)

MIT also concluded that current funding for advancing CCS was "completely inadequate":

> At present government and private sector programs to implement on a timely basis the required large-scale integrated demonstrations to confirm the suitability of carbon sequestration are completely inadequate. If this deficiency is not remedied, the United States and other governments may find that they are prevented from implementing certain carbon control policies because the necessary work to regulate responsibly carbon sequestration has not been done. Thus, we believe high priority should be given to a program that will demonstrate CO2 sequestration at a scale of 1 million tonnes CO2 per year in several geologies. (*Id.*, at xii.)

Section 114 is responsive to MIT's recommendations. CCS technologies are the only means for assuring that domestic coal can continue to supply a significant share of our electric generating needs in a carbon-constrained environment. As discussed below, the widespread deployment of CCS technologies also can provide

a major source of new, well-paying low-carbon jobs involving a broad range of skills.[7]

The U.S. must take the lead in establishing the technical and commercial viability of CCS technologies for use both here and abroad. The world's ability to stabilize global CO_2 concentrations – the long-term goal of the U.N. Framework Convention on Climate Change - depends upon the willingness of major developing economies like India and China to accept meaningful commitments to reduce their future greenhouse emissions. These countries have vast coal reserves, and will continue to rely upon them to support their economic development.

Section 115 Commercial Deployment of CCS Technologies

The UMWA supports the objectives of the CCS commercial incentives provided in section 115 of ACES. A financial mechanism is needed to defray the incremental capital and operating costs of CCS technologies relative to units not employing carbon controls.

Section 115 currently depends on appropriated funds to be distributed by EPA in "tranches" to electric generating facilities meeting certain qualifications, in the form of payments per ton of CO2 captured and sequestered. The duration of this program and its potential scope are not yet defined.

The UMWA recommends that the Subcommittee develop an allowance-based mechanism for funding qualifying CCS facilities, similar to the bonus

allowance provisions of the Bingaman-Specter (S. 1766) or Warner-Lieberman (S. 2191) climate bills introduced in the 110th Congress. Appropriated funds cannot provide the security for financial planning that developers of multi-billion dollar projects require. Using bonus allowances (e.g., x tons of allowances per ton of CO2 captured and stored), or an alternative payment mechanism based on other allowance resources, will be critical to attracting capital investment in new and retrofit CCS applications. We agree with the principle established by Section 115 that larger payments should be awarded to projects achieving higher degrees of carbon capture and storage.

The timing of the availability of Section 115 support should be defined to provide planning certainty. The UMWA regards the first 20 years of the greenhouse gas reduction program as the most critical for avoiding a wholesale "dash to gas" as the principal utility compliance strategy. As an illustration, a program of commercial incentives operative from the first anticipated date of commercial operation of new or retrofit facilities – beyond the "first mover" projects to be supported by Section 114 – might be structured for the period 2020 to 2040. Beyond 2040, allowance prices alone should justify investments in CCS technologies.

Regarding the potential scope of Section 115 – how much capacity might be qualified to receive support – the Subcommittee should consider the potential

demand from both new and retrofit facilities. There is more than 300 Gigawatts of existing coal capacity across the nation. Many of the larger plants equipped with conventional pollution controls and located near carbon storage sites represent viable candidates for retrofit CCS controls. The demand for new coal plant applications also must be considered.

We recommend that the Subcommittee consult with U.S. DOE, the Electric Power Research Institute, and similar experts to assess the potential magnitude of demand for Section 115 support. For reference, U.S. EPA analyses of the Warner Lieberman and Bingaman Specter bills indicated that the bonus allowances and other incentives provided by these proposals would be sufficient to support the construction of approximately 65 Gigawatts and 100 Gigawatts of new Integrated Gasification Combined Cycle (IGCC) capacity equipped with CCS, respectively. EPA's analyses did not take into account the potential demand for CCS retrofits at existing plants.

Job and Other Economic Benefits from CCS Commercial Deployment

A February 2009 study by BBC Research & Consulting (BBC), "Employment and Other Economic Benefits from Advanced Coal Electric Generation with Carbon Capture and Storage Technologies," illustrates the employment and economic benefits that would result from deployment of CCS

technologies to reduce carbon dioxide emissions from the electric power sector.[1] The UMWA joined with the Industrial Union Council of the AFL-CIO, the International Brotherhood of Boilermakers, the International Brotherhood of Electrical Workers, and the American Coalition for Clean Coal Electricity to jointly sponsor this study to inform the discussion about the job and other economic benefits of CCS technologies.

The BBC study provides estimates, based on three legislative proposals, of the economic benefits that could result from development and operation of advanced coal-based generation facilities equipped with CCS. The study does not advocate any policy position on climate change, nor does it examine the potential adverse economic impacts of climate change legislation on the overall coal or electric generation industries, or on other industries and economic sectors.

The BBC study builds on U.S. EPA analyses of the Lieberman-Warner (S. 2191) and Bingaman-Specter (S. 1766) bills. To estimate economic benefits, BBC used EPA's projections of the amount of advanced coal-based generation equipped with CCS that would be added to the nation's generation mix under each of the two bills (65 GW and 100 GW, respectively). In addition, BBC estimated the employment and economic benefits of HR 6258, introduced by Rep. Rick Boucher in 2008 to provide funding support for the early commercial demonstration of

1 The BBC study is available at:
http://www.boilermakers.org/resources/news/New_study_shows_advanced_coal_technology_will_create_jobs

CCS-equipped plants. BBC estimated the capacity to be installed under HR 6258[11] at approximately 3.2 Gigawatts (six 540 MW units).

Data from sources such as DOE/NETL and EPRI were incorporated into the IMPLAN model, an economic model developed by the U.S. Forest Service that is widely used for economic impact studies of this type. IMPLAN produced estimates of the jobs, output, value-added (GDP) and labor income associated with the construction and operation of advanced coal-based facilities equipped with CCS. BBC's findings are summarized below for the construction and operating phases of advanced coal facilities with CCS, showing total (direct, indirect and induced) job, output and income effects.

Construction Phase (Cumulative Benefits)

	100 GW	65 GW	Boucher
Job-Years	**6.9 Million**	**5.5 Million**	**225,000**
Output (Sales)	**$1.103 Trillion**	**$874 Billion**	**$33 Billion**
Labor Income	**$368 Billion**	**$297 Billion**	**$12 Billion**

Operating Phase (Annual Benefits)

	100 GW	65GW	Boucher
Job-Years	**251,200/yr**	**179,400/yr**	**7,500/yr**
Output (Sales)	**$58 Billion/yr**	**$41 Billion/yr**	**$2 Billion/yr**
Labor Income	**$17 Billion/yr**	**$12 Billion/yr**	**$500 Million/yr**

These estimates underscore the vital contribution that advanced coal-based[12] facilities with CCS can make to our economy, while reducing greenhouse gases and creating significant new job opportunities. Notably, the incremental benefits of the 100 GW case, relative to the 65 GW case, are some 1.4 million job years of employment over a 4-5 year construction phase, $225 billion of gross output, and $90 billion in labor (household) income over the construction phase. During the operating phase, the incremental benefits of the 100 GW case are more than 70,000 permanent jobs, $17 billion of gross annual output, and $5 billion of annual labor income.

Concerns about GHG Performance Standards

Section 116 of ACES proposes new GHG emission performance standards for coal-based power plants, but not for other sources dependent on fossil fuels such as natural gas or oil. This section adds a new Section 812 to the Clean Air Act specifying greenhouse gas emission limitations for new coal plants, with emission rates linked to the dates of final permitting. The emission rates range from 1100 lbs CO2/MWh (~50% CO2 capture) for plants finally permitted by January 1, 2015, to 800 lbs CO2/MWh (~65% capture) for plants permitted by January 1, 2020. Plants permitted between January 1, 2009, but prior to 2015 are subject to an emission limit of 1100 lbs CO2/MWh dependent upon EPA determinations on the extent of operational CCS capacity in the U.S. and globally.

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In addition to these provisions, Section 331 adds a new Section 811 to the CAA directing EPA to set GHG performance standards for stationary sources that are not subject to the bill's cap, and precluding the agency from setting GHG New Source Performance Standards for stationary sources subject to the cap.

The UMWA recommends that the Subcommittee avoid specifying performance standards limited to coal-based generating units subject to the cap. There is no basis for excluding new natural gas- or oil-based generating sources from Section 116, since all types of fossil generation ultimately would need to apply CCS technologies to comply with the bill's longer-term reduction requirements. More fundamentally, for capped sources, NSPS are unnecessary since all capped sources will be required to limit emissions through offsets or technology to comply with the bill's declining cap. The bill implicitly recognizes this by precluding EPA from setting NSPS for other capped stationary sources. In its present form, the bill appears to favor natural gas-based sources, which could comply with the cap for many years through low-cost offsets, while forcing coal plants to use CCS technology that has not yet been commercially demonstrated at the scales contemplated by the alternative "trigger" provisions. For these reasons, the UMWA respectfully suggests that only Section 331 of the bill's emission limitation provisions should be retained, providing for EPA determination of emission standards for uncapped stationary sources.

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Support for IBEW-AEP Border Adjustment Proposal

ACES incorporates (at Section 411 *et seq.*) a modified version of the IBEW-AEP proposal for imposing allowance-based border adjustments on goods and products imported from countries that have not adopted comparable greenhouse gas controls. Changes to the proposal include delaying its start date to 2020, replacing the "comparability" test with a "competitiveness" test more likely to be challenged successfully under WTO, and transferring administrative authority and discretion over the program to the President rather than to an independent commission subject to judicial review.

These modifications weaken the prospective effect of the IBEW-AEP proposal, and reduce the pressure on China and other developing nations to adopt greenhouse gas controls. We are advised that the revisions substantially enhance the likelihood of successful challenges under WTO.

With China, India and other major developing economies unlikely to agree to any form of emission caps under the UN FCCC process, in Copenhagen this year - or for the foreseeable future - the U.S. should not limit its options for helping to create a level playing field in international commerce. At the 1992 Rio Earth Summit, there was no expectation that within less than 20 years China would emerge as the world's largest coal consumer, the dominant source of manufactured goods exported to the United States, and the largest emitter of greenhouse gases.

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We recommend that the international border adjustment provisions of ACES be modified consistent with IBEW-AEP's suggested changes to the proposed bill submitted to the Committee on April 17th. Adoption of the IBEW-AEP suggested changes, including creation of an independent commission and elimination of a "competitiveness" test, will help to avoid WTO challenges.

Support for IBEW-UWUA Allocation Position

Critical decisions regarding the allocation and auction of emission allowances remain to be made. In principle, the UMWA favors the largest possible use of allowance allocations to the electric distribution and independent generation sectors, and to vulnerable manufacturing industries, with auctions reserved for use in upstream oil and gas. The UMWA supports the recommended approach to allocations outlined by USCAP and by the Edison Electric Institute, as reflected in the recent joint letter to Chairman Waxman and other members by the IBEW and the Utility Workers of America (Attachment 3).

The allocation of emission allowances downstream to electric utility "wires" companies will avoid the risk of windfall profits, while an appropriate allocation to independent generators in restructured states, sufficient to offset their compliance costs, will reduce the risk of large-scale switching from coal to natural gas. Auctions, in contrast, ensure that the costs of obtaining allowances would be passed through immediately to customers, increasing the cost of the program and

reducing public acceptance. The Title IV allowance allocation program, with bonus allowances for early adoption of technology, is a good example of how direct allocations can minimize customer costs while providing incentives for early use of control technologies.

Concerns about Timing and Stringency

ACES proposes an aggressive schedule of greenhouse gas emission reductions that could lead to large-scale displacement of coal-based generation before CCS technologies can be adequately demonstrated for widespread commercial use. The UMWA is less concerned about the proposed reduction target of 42% below 2005 emissions by 2030 – assuming that CCS technologies can be widely deployed by that time - than by the 20% reduction target for 2020. This target is well above the 6% target proposed by the Dingell-Boucher December 2008 discussion draft and President Obama's proposed 14% target.

Any new power plant designed for CCS technologies and scheduled to be in commercial operation by 2020 should be in the design and permitting process today. ACES implicitly recognizes, both through its adoption of the Boucher Early CCS Demonstration Act, and its provisions calling for a study of long-term liability issues related to CCS, that commercial use of CCS by 2020 is likely to be limited to a handful of early-mover plants. The 2020 target should also recognize that the electric generation sector tends to bear the brunt of national emission

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reductions in an economy-wide trading scheme, well in excess of its contributions to greenhouse gas emissions.

Recent modeling of emission control proposals being considered by the Midwest Greenhouse Gas Reduction Accord (MGGRA) process supports our concerns about the adverse consequences of an overly-aggressive 2020 target. The Midwest Governors' Accord stakeholder process has evaluated a package of policy options including a cap-and-trade program with a 20% reduction below 2005 levels by 2020, a long-term reduction target of 80% by 2050, and energy efficiency and renewable energy portfolio standards similar to those called for by ACES. The MGGRA region covers six signatory states: Minnesota, Iowa, Kansas, Illinois, Michigan and Wisconsin. Together, these states account for some 20% of U.S. GDP, and rely on coal for more than 60% of their electric generation.

The two charts below summarize the modeled impacts of the proposed cap and trade and complementary RPS and energy efficiency policies on electric generation and on the retirement of existing generating capacity in the six-state region. The energy efficiency targets are average annual reductions of 1% and 2% from baseline demand for the period 2015-2030.

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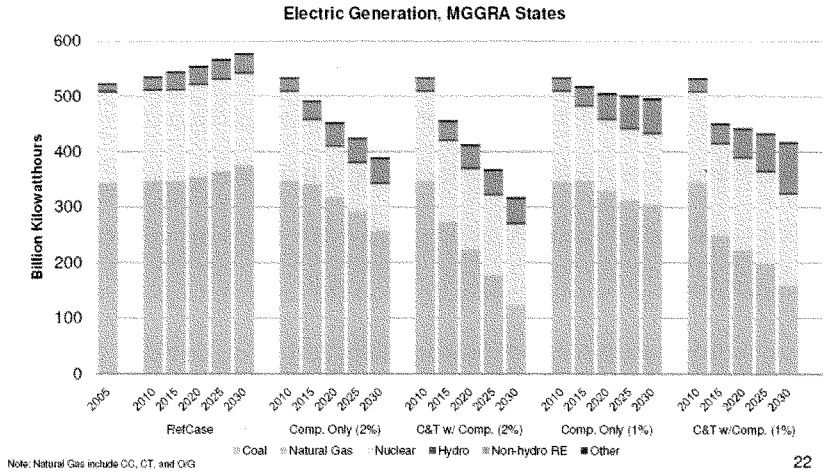
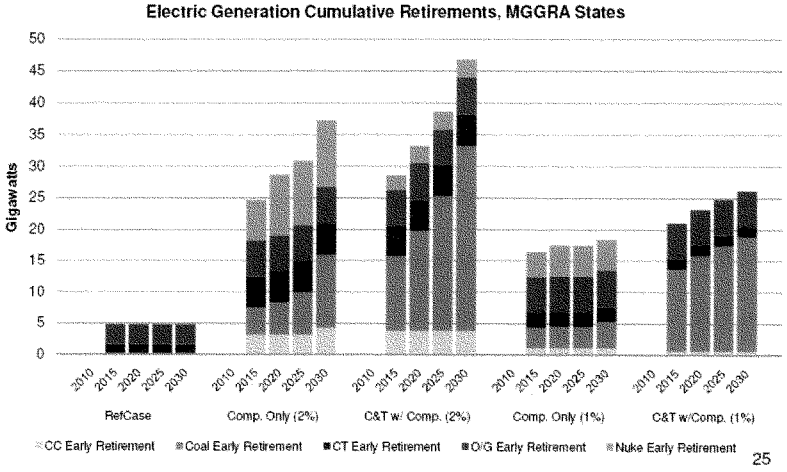


Source: ICF, Inc., Cap-and-Trade Modeling: Initial Policy Run Results (March 27, 2009).



Source*: Id.*

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The predominant impact of the MGGRA policies is the reduction of coal generation and the premature retirement of coal-based capacity. The coal unit retirements by 2030 range from 17 Gigawatts to 27 Gigawatts, or 30% to 50% of regional coal generating capacity of 55 Gigawatts. These unit retirements begin as early as 2015 and are more than half completed by 2020. In the lower case (1% energy efficiency), we estimate that more than 140 coal units – mainly smaller units less than 300 MW capacity and more than 50 years old - would be retired.

MGGRA modeling shows that most of this capacity would be replaced by wind energy. MGGRA has not undertaken transmission access or reliability analyses to assess the feasibility of this reduction of regional coal generation. We believe that similar concerns likely surround the impact of the 2020 target proposed in ACES.

Similar coal market impacts have been predicted for legislation with 2020 emission targets less stringent than 20 percent. Analyses by U.S. EPA[2] and DOE/EIA[3] of the Lieberman-Warner bill indicate that U.S. coal production for electric generation would be curtailed sharply, mainly reflecting the low availability of CCS technology to meet the bill's target of a 15% reduction below 2005 emissions by 2020. The following EIA chart summarizes the bill's impacts

2 U.S. EPA, "Analysis of the Lieberman-Warner Climate Security Act of 2008 (March 14, 2008).
3 U.S. DOE, Energy Information Administration, "Energy Market and Economic Impacts of S. 2191, the Lieberman-Warner Climate Security Act of 2007 (April 2008).

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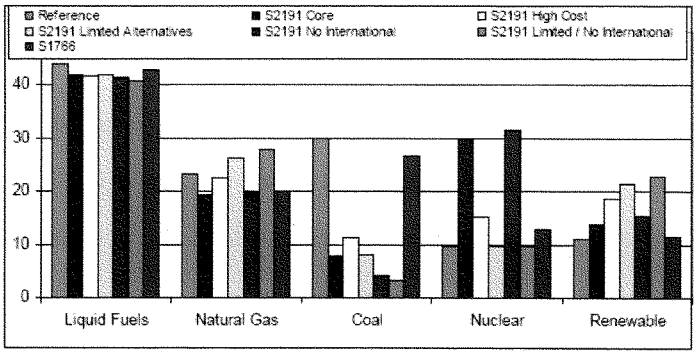
on coal utilization in 2030 for alternative cases, including a comparison to the Bingaman-Specter bill (S. 1766):

Primary Energy Consumption by Fuel in 2030,
S. 2191 Cases and S. 1766 Update
(In quadrillion BTUs)



Source: DOE/EIA, n.3, Figure ES-1.

EIA's projection of a 65% reduction in coal use in the core case from 2006 levels underscores UMWA's concerns about the impacts of overly aggressive climate change targets and timetables when CCS is not commercially available on a widespread basis. EIA projects major increases in the demand for natural gas in the limited alternatives case, with adverse implications for other industries and consumers dependent on scarce gas resources. If EIA's core case assumptions about trebling nuclear power capacity by 2030 proved optimistic, utilities would have little choice but to switch from coal to natural gas on an unprecedented scale.

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Sensitivity of Coal Impacts to 2020 Reduction Targets

On an economy-wide basis, reducing U.S. greenhouse gas emissions by 20% below 2005 levels by 2020 is equivalent to an emission reduction of nearly 1.2 billion tons of CO2-equivalent, based on current EIA emissions projections.4 The table below shows the total annual CO2-equivalent reductions associated with alternative 2020 economy-wide reduction targets below 2005 levels.

2020 Economy-wide CO2 reductions for alternative reduction targets

2020 Target Reduction (below 2005)	2020 CO2 Emissions (Mil tons)	2020 CO2 Reduction (Mil tons)
-6%	5,623	-359
-10%	5,384	-598
-14%	5,145	-837
-20%	4,786	-1,196

Absent widespread availability of CCS technologies for both new and retrofit applications by 2020, a significant portion of these emission reductions likely would be achieved by natural gas and renewable energy sources. If coal-based generation were retired and replaced in many regions by a combination of

4 U.S. DOE/EIA, Annual Energy Outlook 2009 (DOE/EIA-0383, March 2009), Table 18.

wind and natural gas generation,5 we estimate that each 100 million tons of CO2 reductions achieved in 2020 could displace approximately 158 million tons of coal to produce an equivalent amount of electrical generation. This means, in effect, that achieving a 2% reduction of overall U.S. CO2 emissions of 6.0 billion tons in 2020 could reduce projected coal use of 1.1 billion tons by 14 percent. This disproportionate effect results from the relative CO2 emission rates of natural gas generation and the availability of wind resources.

The UMWA therefore urges moderation in the choice of the 2020 target, recognizing that the majority of emission reductions required by ACES occur later in the program when technological advances should facilitate their implementation.

Support for Integration of State and Regional Climate Programs

A single national federal currency for allowance trading is essential to the operation of an efficient carbon market. Duplicative and overlapping state cap-and-trade programs could raise program costs while achieving no real environmental benefit.

ACES proposes limited preemption of the California and Northeast Regional Greenhouse Gas Initiative cap-and trade programs from 2012 until 2017. This

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5 The estimated coal displacement is calculated assuming a combination of wind energy operating at 30% annual capacity factor (0 lbs CO2/MWh) and natural gas units (938 lbs CO2/MWh) operating at 70% capacity, to replace the generation associated with the estimated coal displacement (2,120 lbs CO2/MWh). Emission rates are based on 2005 data from EIA Forms 767 and 906.

period will be critical for developing the federal cap-and-trade allowance program. Avoiding the duplication of state CO2 cap-and-trade programs will not impede continued state climate change initiatives focused on other source sectors. The proposed mechanism (Section 790) for compensating California and RGGI allowance holders through exchanges of federal allowances appears fair because it makes these parties "whole" for their allowance transactions made prior to 2011.

The UMWA supports efforts to provide uniform national rules for allowance allocations and trading without the risk of duplicative state cap-and-trade regulation. ACES provides that states will be entitled to participate in the State Energy and Environment Development Fund (SEED) program established by Subtitle D (Sections 131 et seq.), consolidating a variety of federal funding programs to enhance energy efficiency, promote renewable energy sources, and the like. The energy efficiency and related investments made possible through SEED will facilitate achieving ACES's ultimate emission reduction objectives.

Conclusion

The UMWA thanks the Chairmen, the Ranking Members, and the Committee and Subcommittee for their consideration of its views.

Attachment 1

Eugene M. Trisko
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emtrisko@earthlink.net

Mr. Trisko has a B.A. in economics and politics from New York University (1972) and a J.D. degree from Georgetown University Law Center (1977). He is admitted in the District of Columbia, and has appeared before the U.S. Court of Appeals for the D.C. Circuit in matters concerning the Clean Air Act. He has lectured on the Clean Air Act and climate change at The Pennsylvania State University, the University of Virginia, and West Virginia University College of Law.

Mr. Trisko was active on behalf of the United Mine Workers of America in the reauthorization of the 1990 Clean Air Act Amendments. He has participated as an NGO on behalf of the UMWA in all United Nations climate change negotiating sessions since the 1992 Rio Earth Summit. In 2006 and 2007, he represented the UMWA in mercury proceedings in Pennsylvania, and in the Illinois Climate Change Advisory Group. He currently represents the Illinois AFL-CIO, the UMWA and IBEW local unions in the Midwest Governors' Association climate initiative.

Mr. Trisko is a member of U.S. EPA's Clean Air Act Advisory Committee. He served on EPA's Mercury MACT Work Group from 2003 to 2005, and on the Advanced Coal Technology Working Group in 2007-08. In 2000 and again in 2007, he was appointed by the U.S. Department of State to represent U.S. labor and stationary source interests as a member of the U.S. Delegation in bilateral air quality negotiations with Canada.

Mr. Trisko is the author of more than 20 articles on energy, climate and clean air policy issues published in environmental and law journals. Before entering private practice, he served as an attorney with the Federal Trade Commission, and as an energy economist with Robert R. Nathan Associates. He has appeared as an expert witness on utility cost of capital before several state public service commissions.

Attachment 2

Summary Statement of Eugene M. Trisko on behalf of the United Mine Workers of America, AFL-CIO April 23, 2009

I am pleased to be here today to testify on behalf of the United Mine Workers of America (UMWA) to discuss the proposed American Clean Energy and Security Act of 2009.

The UMWA supports national climate change legislation. The UMWA is mindful, however, that imprudent climate change legislation potentially represents the greatest threat to its membership and to the continued use of coal.

Coal is an indispensable part of America's energy supply. Twenty three states rely on coal for more than half of their electric supplies, while another 12 states receive 25% to 50% of their electricity from coal More than one-half of our nation's electricity is generated by coal, principally in baseload plants. Renewable energy alone cannot replace coal's role in baseload power.

Section 114 of ACES provides an essential foundation for national climate change legislation by establishing a secure, non-budget source of financing for demonstrating the technical and commercial feasibility of carbon capture and storage (CCS) technologies. CCS technologies are the only means for assuring that domestic coal can continue to supply the majority of our electric generating needs in a carbon-constrained environment.

The UMWA supports the CCS incentives provided in section 115 of ACES. A financial mechanism is needed to defray the incremental capital and operating costs of CCS technologies relative to units not employing carbon controls. Section 115 depends on appropriated funds to be distributed by EPA. We recommend an allowance-based mechanism for funding 65 to 100 Gigawatts of CCS-equipped facilities, similar to the bonus allowance provisions of the Bingaman-Specter (S. 1766) or Warner-Lieberman (S. 2191) bills. We agree with the principle that larger payments should be awarded to projects achieving higher degrees of carbon capture and storage. A recent analysis by BBC Research & Consulting indicates that commercial deployment of 65 to 100 GW of CCS-based advanced generating capacity could create 5 to 7 million job-years of employment during the construction phase, and 179,000 to 251,000 permanent jobs during operations.

The Subcommittee should avoid specifying CO2 performance standards, or limiting these standards to coal-based generating units. There is no basis for excluding other fossil-based generating sources from Section 116, since all types of fossil generation ultimately would need to apply CCS technologies to comply with the bill's longer-term reduction requirements. The proposed standards are unnecessary since all capped sources will be required to limit emissions through offsets or technology to comply with the bill's declining cap.

The UMWA is mainly concerned about the 20% reduction target for 2020. ACES implicitly recognizes, both through Section 114 and its provisions for a study of long-term liability issues, that commercial use of CCS by 2020 is likely to be limited to a handful of early-mover plants. The 2020 target should recognize that the electric generation sector will bear the brunt of national emission reductions. Recent modeling of similar emission control, energy efficiency and renewable energy proposals for the Midwest Governors Association shows that the region could lose one-third to one-half of its coal-based generating capacity between 2015 and 2030. Such impacts must be avoided if the nation is to retain domestic coal as a principal source of reliable electric power, and avoid a large-scale conversion to natural gas. The UMWA therefore urges moderation in the choice of the 2020 target, recognizing that the majority of emission reductions required by ACES occur later in the program when technological advances should facilitate their implementation.

Attachment 3

March 27, 2009

The Honorable Barbara Boxer
Chair
Senate Environment and Public Works Committee
410 Senate Dirksen Office Building
Washington, DC 20510

The Honorable Jeff Bingaman
Chair
Senate Energy and Natural Resource Committee
304 Senate Dirksen Building
Washington, DC 20510

The Honorable Max Baucus
Chair
Senate Finance Committee
219 Dirksen Senate Office Building
Washington, DC 20515

The Honorable Henry Waxman
Chair
House Energy and Commerce Committee
2125 Rayburn House Office Building
Washington, DC 20515

The Honorable Ed Markey
Chair
House Energy and Environment Sub-Committee
2125 Rayburn House Office Building
Washington, DC 20515

The Honorable Charles Rangel
Chair
House Ways and Means Committee
1102 Longworth House Office Building
Washington, DC 20515

Dear Senators and Congressmen:

Last November we wrote you on behalf of our respective labor unions to express support for balanced, comprehensive legislation to reduce greenhouse gas emissions. We also expressed our strong opinion that emission allowances be allocated, not auctioned, under a cap-and-trade program. Our concern that workers in impacted industries not be adversely affected has become even greater as the economic down-turn has deepened.

We're aware that some economists claim that auctioning allowances would be more efficient than administrative allocations to affected industries. Others who support a large or total auction are attracted by the financial proceeds such an auction would yield. We strongly disagree that auctioning off allowances, particularly in the early phases of a cap-and-trade program, would be best for our nation's energy supply or consumers. We believe an allocation scheme much like that in the successful Clean Air Act acid rain program would greatly mitigate impact on consumers and minimize disruption of our economy and workers. This allocation method has been extremely successful in achieving emission reduction goals at the lowest cost to consumers.

Much has changed since November. The economic slump is severe and appears to be long-lived. Also, two organizations – Edison Electric Institute (EEI) and the United States Climate Action Partnership (USCAP) – each issued principles on cap-and-trade legislation after considerable deliberation. We note with interest that each recommends allocating allowances for the electricity sector to distribution utilities *and* to merchant coal generators who are unregulated, competitive power producers from which utilities in some states purchase electricity for their customers.

In our letter. we recommended allocating all allowances for the electricity sector to distribution companies rather than generators. For regulated electric power markets. where fully integrated utilities own both generation and distribution under state regulation. this approach is sound. However. both the EEI and USCAP proposals recognize the importance of merchant coal generators to consumers in unregulated markets and advocate allocations to cover only their "net compliance costs" over some reasonable transition period until replacement or retrofit technology develops.

We realize the importance of merchant coal generators to our electricity supply as we transition to low-or-zero carbon alternatives. About half of our nation's electricity is produced from coal and about one fourth of that is provided by competitive or merchant generators who sell their output to regulated utilities and their customers. Without allowances. those generators would be forced to retire prematurely early in the transition. which costs all consumers and jeopardizes the system's reliability. Any potential of "windfall profits" for such generators can be addressed by restricting the quantity of allocated allowances to only the amount necessary to cover net compliance costs (defined as incurred allowance cost minus increased wholesale electricity prices).

We urge you to recognize the significant differences in market structures that exist for coal-fired generators in the United States as you deliberate the most effective and efficient way to address greenhouse gas emission allowance allocations. Market-specific allocation schemes will be required to ensure equitable protection to all union members and consumers.

Sincerely.

Edwin D. Hill
International President
IBEW

D. Michael Langford
President
UWUA

/ceb
Copy to President Barack Obama
All Members of United States Congress

Mr. INSLEE. The next witness is Jonathan Briggs, who is Regional Director of the Americas for Hydrogen Energy. Mr. Briggs is responsible for managing Hydrogen Energy's project in California and developing other Hydrogen Energy business opportunities in North America.

Thank you, Mr. Briggs.

STATEMENT OF JONATHAN BRIGGS

Mr. BRIGGS. Mr. Chairman, members of the committee, thank you for inviting me to testify before you today.

HEI, or Hydrogen Energy International, offers commercial-scale deployments of low-carbon hydrogen fueled power plants with carbon capture and storage. It offers the ability to bring together the complementary skills of its two parent companies, BP and Rio Tinto.

Hydrogen Energy, HEI, is currently developing two projects, one in Abu Dhabi, the other in California. The project in California is located in Kern County and will distribute 250 megawatts of much-needed, baseload low-carbon power.

The project's primary feedstock is petroleum coke, a refinery by-product, along with coal as needed, and will capture and store 90 percent of its CO_2 emissions in the Elk Hills oil field for sequestration and Enhanced Oil Recovery. The project has been designed and developed to provide numerous environmental and economic benefits for the State.

It will conserve freshwater resource by using brackish groundwater with zero liquid discharge. It will create 1,500 construction jobs and 100 permanent jobs in an economically depressed region of the State, and the project will also significantly boost State and local tax revenue from EOR.

Just 2 months ago, the PUC voted 5-0 to direct $30 million of support to our project. This is unprecedented and a demonstration of political leadership that first mover projects such as ours need.

And while I have the opportunity, I would like to thank CPUC, including Commissioner Grueneich, for recognizing the need for in-State, low-carbon baseload power. We filed for the planning permits and the site license and will be up and running by 2015, contingent on the development of an appropriate policy support framework.

In order to meet the aggressive emission reduction goals that are outlined in the draft ACES bill, CCS must be widely deployed and quickly to drive down the costs of future plants. Just as pre-combustion capture technology is proven, so is the storage of CO_2.

In the U.S., there are more than 3,500 miles of CO_2 pipelines to support Enhanced Oil Recovery, an activity which has been conducted safely and without incident for the last 30 years. We believe that storing CO_2 in existing oil and gas fields in connection with the EOR will significantly advance the near-term deployment of CCS by bringing down the costs of early moving projects such as ours.

Like other forms of clean energy, CCS is more expensive than conventional energy. The majority of the extra capital costs lies with the power plant rather than the sequestration activity. The cost of CCS today is more than $100 per ton of CO_2. That may

seem like a lot, but remember this technology is still in the early development stages; and despite other technologies having enjoyed years of learning, low-carbon hydrogen power with CCS is competitive with nuclear and renewable energies. So cost, while important, is not a reason to forgo or stall the rollout of this technology.

The draft ACES bill is a welcome first step to identifying CCS as a needed technology to mitigate GHT emissions. HEI appreciates the support shown for CCS in the Waxman-Markey draft, particularly fixed incentive payments which are critical to project sanction; feedstock neutrality; and recognition of geologic sequestration combined with enhanced hydrocarbon recovery.

In addition, we hope that any climate change bill would also recognize the need for early movers, provide clear and definitive performance qualification terms, and tie fiscal support to the levels of CO_2 capture such as the 90 percent that I referred to earlier.

Before I close, I would like to leave the committee with one other recommendation regarding the regulatory certainty needed to allow CCS to move forward. We need one regulator, one set of regulations, and acknowledgement that EOR and sequestration can act simultaneously.

I would like to thank the committee for inviting me to testify before you today and remind you that CCS is ready today. We just need fixed near- and medium-term incentives to get these projects off the ground.

Thank you.

Mr. INSLEE. Thank you, Mr. Briggs.

You have 10 seconds left. I am just dying to know, is your sequestration through pumping into oil fuels? Is that the sequestration system you are using?

Mr. BRIGGS. It will be.

Mr. INSLEE. Thank you.

[The prepared statement of Mr. Briggs follows:]

hydrogen energy

Testimony of Jonathan Briggs
Regional Director of the Americas
Hydrogen Energy International LLC
Before the House Energy and Commerce Committee Subcommittee on Energy and Environment
Legislative Hearing on the "American Clean Energy and Security Act of 2009"

April 23, 2009

Mr. Chairman, members of the Committee, thank you for inviting me to testify before you today. My name is Jonathan Briggs, and I am Regional Director of the Americas for Hydrogen Energy International, a venture company jointly owned by BP Alternative Energy and Rio Tinto. Formed in May 2007, Hydrogen Energy started with the significant experience BP had already gained in developing industrial scale, base-load, low-carbon hydrogen fuelled power plants with carbon capture and sequestration (CCS). Furthermore, Hydrogen Energy is able to build on the complementary skills of its parent companies – BP's leading position and expertise in chemical processing and low-carbon power generation with carbon capture and storage; and Rio Tinto's expertise and world-class assets in resource extraction and supply.

Hydrogen Energy is currently developing two projects—one in Abu Dhabi, the other in California. The project that I will focus on today is the California project. Hydrogen Energy is siting the U.S. project in California because of the State's leadership role in requiring greenhouse gas emission reductions in policy initiatives supported by the Governor, Legislature, and energy regulatory agencies, including the California Public Utilities Commission and the California Air Resources Board.

Our project in California is located in Kern County, and will distribute to the California electricity grid 250 megawatts of much needed, baseload low-carbon power. The project's primary feedstock is petroleum coke, a refinery by-product, along with coal as needed, and will capture and store 90% of its CO2 emissions in the Elk Hills oil field for sequestration and enhanced oil recovery. The project has been designed and developed to provide numerous environmental and economic

One World Trade Center, Suite 1600, Long Beach, CA 90831-1600 Main (+1) 562-276-1543 Fax (+1) 562-276-1571 www.hydrogenenergy.com

benefits for the state of California. For example, in California, water is of vital importance, and freshwater continues to be threatened in the State as a result of climate change. We have taken that into consideration for our project. The project will conserve fresh water sources by using brackish groundwater with zero liquid discharge. I will now briefly highlight the other benefits of this project to California—it will reduce the state's reliance on natural gas by diversifying energy feedstocks in the state, it will create about 1,500 construction jobs and 100 permanent jobs in an economically depressed region in the State and allow it to be the hub for a new low carbon energy center. The project will also significantly boost state and local tax revenue.

When selecting a site, we realized that in order to succeed we would need to locate the project close to both the CO_2 "sink" and transmission lines in order to avoid additional complexity. As a result, the project site is located such that we will need less than a five (5) mile pipeline to transport the CO_2 from the project site to the Elk Hills oil field, and less than five (5) miles worth of a trunk line to get the power to a major transmission line.

Just two months ago, the California PUC voted 5-0 to direct $30 million of support to our California project. This is unprecedented and a demonstration of the political leadership that first mover projects, such as ours, need. And while I have the opportunity, I would like to thank the California Public Utilities Commission, including Commissioner Gruenich, for recognizing the need for in-state, low-carbon baseload power.

We have filed for the planning permit and site license so if we are able to get the financial support we need, we believe we will be up and running by 2015.

In order to meet the aggressive emission reduction goals that are outlined in the draft "ACES" bill, CCS must be widely deployed, and quickly. The technology that is ready to go today at a scale used in commercial power plant generation is pre-combustion technology. That is why Hydrogen Energy is focussed on pursuing pre-combustion capture.

Pre-combustion also enables the production of hydrogen for other uses and makes it easier to eliminate many other air pollutants up front through the gasification process. And pre-combustion technology provides the best opportunity for achieving very high levels of capture. Hydrogen Energy projects

offer 90% capture rates, meaning that our project in California will easily exceed state requirements for long-term power procurement arrangements. Other capture technologies will scale up in time, but they still have the technology challenges facing them that we do not with the pre-combustion technologies. If we are to meet the 2050 GHG reduction targets, we can no longer wait. It has been estimated that a delay of as little as seven years in deploying carbon capture and sequestration technology could increase atmospheric concentration of CO2 by 10 ppm over the next 50 years. In addition, nearly all integrated assessments indicate that significant (70-80%) reduction of U.S. CO2 emissions by 2050 is either infeasible or significantly more expensive without widespread deployment of CCS. We must start now in order to achieve the material cuts in CO2 emissions that are needed to stabilize the climate and in order to drive down costs for future plants.

Just as pre-combustion capture technology is proven, so is the storage of CO2. In the US there are more than 3,500 miles of CO2 pipelines – used to transport CO2 to oil fields for use in Enhanced Oil Recovery (EOR) — an activity that has been conducted safely without major incident for more than 30 years.

Industry also has experience in sequestering large amounts of CO_2 in oil and gas fields, such as at In Salah, in Algeria, where BP is storing 1 million tons of CO2 per year, and also at the Weyburn project in Canada.

We believe that storing CO2 in existing oil and gas fields in connection with EOR will significantly advance the near-term deployment of CCS technology and geologic sequestration of CO2 for many reasons:

- Oil and gas formations offer the best characterized sites among potential sinks for anthropogenic CO_2;
- Much of the required infrastructure and operational experience is already in place;
- Existing regulatory requirements have proven to be an effective regulatory framework in protecting USDWs in the context of CO_2 EOR operations, evidenced by more than 30 years of experience in the Permian Basin and more than 25 years of miscible gas injection projects on the North Slope of Alaska (where CO_2 comprises 25% of the miscible gas injected); and

- Demand for large volumes of CO_2 for EOR is increasing, and can provide a revenue stream to supplement the economics of early-mover CCS projects.

The Department of Energy estimates that EOR has the potential to add 40-80 billion barrels of oil reserves in the United States, which is 2 to 4 times the current United States's total proven reserve. The Intergovernmental Panel on Climate Change (IPCC) has agreed that EOR technology can provide a significant kick-start on proving geologic sequestration of CO_2 on a commercial scale.

With these benefits in mind, we chose the Elk Hills field because it was part of the Strategic Petroleum Reserve for almost 80 years and the reservoirs are well characterized and understood, it has the ability to store over 1 billion tons of CO2, and it has excellent shale seals which will trap the CO2 more than a mile underground.

Like other forms of clean energy, CCS is more expensive than conventional energy. The extra processing plant and infrastructure needed for CO2 capture, transportation and sequestration brings with it both extra capital and operating costs as well as additional energy costs to run the additional processes. The majority of the extra capital cost lies with the power plant, rather than the sequestration activity.

The cost of CCS today is more than $100/ton of CO2. That may seem like a lot, but remember, this technology is still in the early deployment stages, and despite other technologies having enjoyed years of learning, low-carbon hydrogen power with CCS is already competitive with nuclear and renewable energies. So cost, while important, is not a reason to forego or stall the roll out of this technology that can make such a significant contribution to tackling CO2 emissions as found by leading academic institutions and experts some of which are sitting here. Further still, if built, the cost of the electricity from this project will be competitive with other forms of low-carbon power.

Hydrogen Energy is comfortable with the level of current technology risk because it has chosen pre-combustion separation of CO2 and storage in well-characterized, well-understood oil and gas formations. While all of the technologies have not yet been integrated in commercial power projects, HEI has the expertise and the willingness to lead industry deployment provided it is commercially reasonable to do so. What presents the greatest risk to these projects

is the economic risk associated with bringing first of a kind low carbon baseload power projects to market. This is an obvious place for the government to step in.

The draft ACES bill is a good first-step to identifying CCS as a needed technology to mitigate GHG emissions. Hydrogen Energy appreciates the support shown for CCS in the Waxman/Markey draft, particularly:

- Fixed incentive payments which are critical to project sanction;
- Feedstock neutrality; and
- Recognition of geologic sequestration combined with enhanced hydrocarbon recovery.

We believe that the government needs to support and encourage CCS, just as it does other low carbon energy technologies, and would hope that any climate change bill would include the following types of fiscal incentives:

- ***Tying fiscal support to the levels of CO2 capture***: Since we can achieve 90% capture today, we believe that incentives should avoid perverse incentives that encourage lower capture levels that have lesser environmental impact.
- ***Providing certainty for fiscal incentives***: Fixed payments, credits and subsidies provide this certainty, while floating value instruments such as bonus allowances are inevitably deeply discounted when project developers are evaluating project economics for final approval decisions.
- ***Don't penalize early movers***: We are taking on the most financial risk, and future projects will advance more quickly because of our experiences.
- ***Maintain feedstock neutrality***: Addressing climate change requires mitigating emissions from the use of all fossil fuels; energy policy should not be driven by any single fossil fuel.
- ***Recognize importance of oil and gas reservoirs***: Sequestration in oil and gas formations (which are currently much better characterized and understood than other potential geologic

reservoirs for CO2) have a key role in the near-term deployment of CCS technologies.

- ***Provide clear and definitive qualification terms***: Incentives should be automatically granted based on technical performance and date of deployment, rather than a potentially subjective and prolonged selection process.

Before I close, I would like to leave the Committee with one other recommendation regarding the regulatory certainty needed to allow CCS to move forward. Early projects are likely to involve CCS in conjunction with enhanced oil recovery (EOR) so regulatory frameworks need to acknowledge EOR and sequestration can be combined and occur simultaneously – injection of CO2 for EOR is already regulated and we can provide assurance that during EOR, CO2 is simultaneously sequestered. We appreciate that the Committee acknowledged that in the discussion draft. However, we would also urge that the Committee ensure that there is only one regulator and one set of regulations for CCS in order to reduce complexity, avoid redundancy and ensure that these CCS projects get off the ground quickly and become the widespread technology we need it to be in order to ensure GHG emission reduction.

I would like to thank the Committee for inviting me to testify before you today and remind you that CCS is ready today, we just need fixed, near and medium-term financial incentives to get these important projects off the ground.

Mr. INSLEE. Our next witness is Mr. James Kerr, who is a partner with McGuire Woods LLP. He has previously served as Commissioner on the North Carolina Utilities Commission and is President of the National Association of Regulatory Utility Commissioners for 2007–2008. Today, he is appearing on behalf of the Electric Reliability Coordinating Council.

Thanks, Mr. Kerr.

STATEMENT OF JAMES KERR

Mr. KERR. Thank you, Mr. Chairman.

My perspective today is that of a former utility regulator, where I examined regulatory policy to be sure that it was both cost-effective and equitable among and between customer classes and across regions.

My testimony focuses on the RES and the CCS portions of the bill that is before the subcommittee. Let me first focus in these remarks on what I believe to be certain inequities concerns and cost-effectiveness concerns with the RES. I am concerned that the bill, as drafted, will be both ineffective and inequitable for ratepayers in the Southeast and Midwest where cost-effective and renewable resources are limited.

The first concern is that the RES conflicts with a market-based cap-and-trade program. Renewables are simply one option to decarbonize power fleets and reduce carbon. They may or may not be the most cost-effective option for doing that, however; and the price signals set by the cap is supposed to decide this. Since the RES performance-based standard must be complied with regardless of the cost, that undermines the cap's basic least-cost approach. In effect, the RES effects that renewables and not the other alternatives to be the most cost-effective solution of carbon reduction under the cap all the way up to the full amount of the RES.

Most troubling would be is that there appear to be no economic studies supporting the fact that a 25 percent RES by 2025 will produce the most cost-effective carbon reduction or cost-effective carbon reduction program in the cap program itself. Hence, I refer to RES.

Second, the RES gives ratepayers three compliance options, each of which is uneconomic to them and provides little benefit.

My second concern is that ratepayers in resource-poor States will be assessed significant costs to comply with the RES for which they will receive no benefit. Instead, the monies will flow to the benefit of the ratepayers in resource-rich States and either subsidize those ratepayers' RES compliance costs or those ratepayers' fleet decarbonization efforts and associated carbon cap costs.

To illustrate this, I thought I would use the example where I am a utility owner or a regulator or, for that matter, simply a citizen in a resource-poor State where renewables tend to cost more than in resource-rich States. I would have three choices available to me under this legislative proposal.

First, I can build above market. By that, I mean higher cost renewable power than the prevailing REC price, renewable facilities in my State. That will ensure that green jobs and investment capital provided by ratepayers remained in State and that will provide some benefits towards carbon compliance in State. But the cost for

compliance with the RES will be higher than if other alternatives are adopted.

However, since I also get a carbon benefit if I build my own renewables facility, I need to subtract that cost saving from my renewables costs, and those economics will likely make me build some and perhaps many above-market renewable facilities.

That result makes sense to me and my ratepayers, because it is the lowest-cost solution to the dual-compliance obligations of the carbon cap and the RES, but it makes no sense as national policy. The result will be nationally more above-market renewable facilities in the Southeast and Midwest and fewer economic renewable facilities in resource-rich States. And, of course, since renewables will be part of the compliance with the carbon cap and the overall cost of renewables is higher than it need to be because above-market facilities are built, the cost of compliance with that cap nationally will be higher than they would be without the RES.

My second choice is to purchase RECs, to fund construction of renewable facilities in another State with better renewable resources. If I do that, my ratepayers' compliance costs with the RES will be lower, but I will have to go back to them for more money to fund investments in carbon reductions for my system since I have received no carbon benefit from the renewable power facility funded by my ratepayers REC dollars.

In addition, I will have funded the creation of green jobs in the resource-rich State but not my own, and I will have funded fleet decarbonization efforts in the resource-rich State through construction of a renewable facility but not my own. As a consequence, I have subsidized the carbon compliance cost of the ratepayers in the resource-rich State who will not see rate increases to fund the carbon reductions my renewable power facility has made for them.

My third choice is to make an alternative compliance payment. This option would allow my ratepayers to comply with the RES at a lower cost, but, again, they see no carbon reduction benefits for the payment, and I will have to go back to them for additional monies to fund my own carbon reduction efforts.

In addition, the monies I spend making alternative compliance payments are returned to the resource-rich States that complied with the RES and presumably refunded to those ratepayers. Thus, my alternative compliance payments subsidize RES compliance cost of citizens in resource-rich States, but my ratepayers see no benefits.

As a former public servant and citizen, I do not like any of these choices. None make any economic sense to my ratepayers and they do nothing to address climate change since the cap already requires carbon reductions independent of the RES.

Frankly, I am baffled as to why I would have to make a choice between three such poor options. No one has told me that renewables up to the full amount of the RES are the most cost-effective way to reduce carbon, and no one has told me that the U.S. renewables industry cannot sustain itself based on the price signal that cap will send the existing plethora of the 33 State RES requirements and other financial incentives available to renewables. It seems to me that the primary effect of the RES requirement is to pick winners and losers and that the ratepayers in resource-rich

States will be the clear winners, while ratepayers in resource-poor States will be the clear losers.

I want to be clear. I am not against renewables in any way. They are an important part of the toolkit to address climate change, and they will be employed at scale under any carbon cap up to the point that they are the most cost-effective alternative. What I am against is the imposition of a very large Federal renewables mandate that effectively advantages ratepayers in resource-rich States and disadvantages ratepayers in resource-poor States for no compelling reason.

While I do not see the need for any mandatory Federal RES, my testimony does have suggestions that will limit but not eliminate these inequities.

Finally, with respect to CCS, the ERCC supports the efforts in the bill to generate research, development, and deployment of CCS. We also, however, provide a couple of comments that might help shape that piece of the legislation.

Thank you. I am happy to answer any questions.

Mr. INSLEE. Thank you, Mr. Kerr.

[The prepared statement of Mr. Kerr follows:]

Statement of James Y. Kerr, II

Counsel, Electric Reliability Coordinating Council

Before the U.S. House of Representatives
Committee on Energy and Commerce
Subcommittee on Energy and Air Quality

April 23, 2009

Chairman Markey, Ranking Member Upton, and other members of the Subcommittee, thanks for the opportunity to offer testimony on issues raised by the pending legislative proposal on climate change and energy policy. My name is Jim Kerr and I chair the Energy and Climate Change practice at the law firm of McGuireWoods. I also serve on the Advisory Council to the Board of Directors of the Electric Power Research Institute.

For over seven years prior to returning to private practice, I was a Commissioner on the North Carolina Utilities Commission (NCUC). During that time I served as President of both the National Association of Regulatory Utility Commissioners (NARUC) and the Southeastern Association of Regulatory Utility Commissioners (SEARUC). As President of NARUC, I formed and served on NARUC's Climate Change Task Force which led to the adoption by NARUC of policies supporting economy-wide action by Congress to address greenhouse gases and outlining principles which should guide such action.

While serving on the NCUC, I was fortunate to be able to participate in the development of two landmark initiatives to encourage the development of renewable energy. In 2003, the Commission approved the creation of NC GreenPower, the first statewide voluntary green energy program in the nation. NC GreenPower is an independent, nonprofit organization that uses voluntary contributions from individual and business consumers to fund green power purchases by North Carolina electric utilities and to fund carbon offsets in the form of subsidies paid to generation project owners to reduce or mitigate carbon emissions. In 2007, North Carolina became the first state in the southeastern U.S. to enact a renewable portfolio standard with the state General Assembly's adoption of the Renewable Energy and Energy Efficiency Portfolio Standard (REPS) in Senate Bill 3. Pursuant to the REPS, the NCUC developed new regulations implementing Senate Bill 3 which were approved in early 2008.

Today, I am speaking to you as a counsel to the Electric Reliability Coordinating Council (ERCC), a group of power-generating companies established in 2001, serving millions of consumers in diverse regions of the United States. ERCC works for common sense energy, environmental and climate change policies.

While the Bill before the Committee is a comprehensive take on several complicated issues, including a cap-and-trade program, I will focus my remarks specifically on the renewable energy standard (RES) and on the carbon capture and sequestration (CCS) provisions. As a former public servant and economic regulator, my perspective was always to ensure that regulatory proposals were cost-effective for their intended purpose, and treated customers equally and equitably as a whole and across regions. From that perspective, I believe the Bill represents a good-faith effort to address the important topics of clean energy and climate change. These are topics that we, as a nation, are ready and willing to address. However, as with many legislative starting points, I also believe the Bill will need substantial work before it can become equitable and cost-effective public policy.

I believe, in particular, a national RES can be problematic from a cost-effectiveness and regional equity perspective. Renewables will be an important element in reducing our carbon emissions and decarbonizing our power fleets. But good, and by good, I mean cost-effective, renewable resources are not available equally in all regions of the country. Yet mandating a national RES requires power companies across the country to select renewables for a defined amount of carbon compliance regardless of their cost. That is a function that a carbon trading market is expected to resolve in a way that is most cost effective for the individual company.

The regional disparity in available cost-effective renewable resources also creates inequities among customer classes by region, a problem that is not solved by a renewable trading program because such a program simply directs investment capital from renewable poor state to renewable rich ones. I am thus concerned that a national RES effectively picks winners and losers in ways that are cost-ineffective and inequitable. While I cannot say that I am in favor of a national RES, since I do not see the need in the presence of a carbon cap-and-trade program, I do have some suggestions I will make later to tailor an RES to limit its inequities and cost issues.

Renewable Energy Standard

1. The need for a federal RES?

In legislation designed to address climate change through a cap and trade policy, the purpose of a federal RPS is not readily apparent. The Waxman-Markey draft imposes an RES, an energy efficiency resource standard (EERS), and a cap-and-trade program all at the same time. Two of these, the RES and the EERS, are mandated carbon reduction performance standards to be done regardless of cost, while the cap-and-trade program is a market–based proposal specifically intended to provide the least cost solution to carbon reduction requirements. Hence, these policies are at best redundant and at worst contradictory.

The cost-effectiveness of a trading regime is based upon the premise that the regulated community should have a choice of regulatory options – from reductions to credits to offsets, from fuel switching to new technology – in order to achieve compliance. In addition, utility least cost planning and prudence standards also ensure that power companies seek the lowest cost solution. By contrast, the RES mandates a specific set of technological choices in the manner of a command-and-control regulatory policy, and regardless of cost. The market-based least-cost objective of the cap-and-trade program is thereby undermined by the RES, and for no additional policy benefits. In effect, the RES is simply an economic bet that renewables up to the full amount of the RES will prove more cost effective than all the other carbon reduction alternatives the market might otherwise select. Nor is this an idle bet, since compliance with the RES may produce one-third or more of the carbon reductions called for under the legislation's proposed cap in 2020. More troubling, in the face of this economic bet, there appears to be little cost analysis supporting it. The cost impacts of layering in the RES and efficiency performance standards over the cap-and-trade program have not yet been assessed, and any cost assessments of the Bill's cap-and-trade program must include simultaneous implementation of the RES and EERS a hard and fast assumption, or the analysis will be meaningless.

As the Harvard Electricity Policy Group found, efficient climate policies are global, economy-wide, directed at emissions, market-based, and aimed at creating new technologies. The RES, by contrast, addresses planning and resource issues which have traditionally been local or regional matters, is limited to the electric sector, is command-and-control in nature, does not even mention the carbon emissions it seeks to reduce, and focuses attention on the limited suite

of renewable technologies, to the potential exclusion of others. In many respects, the policy is "the opposite of a desirable climate policy."[1]

If the purpose behind an RES is simply to encourage the use of renewables, it is still unclear if a federal mandate is needed given the plethora of adopted state RES mandates. First, based on existing state renewable policies and market conditions, the North American Electric Reliability Council (NERC) has estimated a massive expansion in renewable resources added to the North American bulk power system in the next decade. Even if only half of the predicted capacity comes into service, it will represent a 350% increase in variable resources over what existed in 2008. Absorbing this expansion already strains the system in a manner that could pose "reliability concerns as well as economic consequences" if not planned properly.[2]

Second, considerable encouragement for renewables will come from the proposed cap and trade program because it will provide a "price" for carbon – which in turn will incentivize low-carbon or no-carbon energy. Further, the President – in signing the recent economic stimulus package – has put aside some $71 billion for green-technology development. Given these elements, as well as existing policy incentives for renewables, it is not clear that an RES is necessary to further encourage development of renewables or the U.S. renewables industry.

2. The cost of a federal RES

There is no doubt that a federal RES will impose costs, that those costs might be higher than other carbon reduction alternatives, and that those costs will not be borne equally by all regions of the nation. Some preliminary data gathered on the impacts on consumers of a proposed renewable portfolio standard in one Midwestern state yielded some troubling results. If utilities in that state were to actually build renewable electricity sources to comply with the mandate, ratepayers could see their rates increase by roughly 31% over estimated rate levels in 2025. If the alternative compliance option were chosen, electric rates over the same period could increase by roughly 21% - however the policy would thereby result in no net increase in renewable energy in Missouri and no carbon reductions in that state.

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1 W. David Montgomery, Harvard Electricity Policy Group, Renewable Portfolio Standards: A Solution in Search of Problem?, CRA International, May 20, 2005, at __.

2 NERC, Accommodating High Levels of Variable Generation, April 7, 2008, at i and iii.

Increases in renewable energy requirements also carry significant additional costs to address transmission needs. NERC recently reported that, "High levels of variable generation will require significant transmission additions and reinforcements to move wind, solar, and ocean power from their point sources to demand centers and provide other needed reliability services, such as greater access to ramping and ancillary services."[3] One analysis has found that addressing transmission bottlenecks for renewable power can cost some three times more than with other types of energy resources since generation sites are distant and transmission must be sized to meet generation maximums that will rarely be hit by variable renewable resources.[4]

3. Regional differences and a federal RES

Under the draft Bill, utilities that cannot meet the percentage requirement for renewables in their system could pay a certain charge – an alternative compliance payment of 5 cents per kilowatt hour – in lieu of meeting the requirements. Some areas of the country simply do not have access to the same level of certain traditional and cost effective renewable resources as other parts of the country. For example, the very limited and very cost-ineffective solar and wind resources in the Southeast and in much of the Midwest make it unlikely that the aggressive RES timetable and targets can be met in those regions, forcing companies – and their customers – in those regions to make instead substantial alternative compliance payments. These payments would adversely impact consumers in those regions, yet provide little or no benefit to them. In other words, citizens in resource-poor states pay an inflated cost yet gain no renewable or carbon benefit.

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3 NERC at ii.

4 PNUCC, Renewable Portfolio Standards, May 4, 2007, at http://www.pnucc.org/documents/PNUCCRPSPostionPaper.pdf.

The Southern Legislative Conference of the Council of State Governments observed that, "[a] federal mandate fails to recognize the significant differences among states in terms of available and cost-effective renewable energy resources, and the impact on consumers' electric bills."[5] This point was recently underscored by a bipartisan resolution adopted by the Mississippi State Senate, finding that because of adverse impacts on "our state's people and overall economy through increased energy costs to consumers" the US Congress should "forego the imposition" of the RES "until such time as technological advancements allow for efficient and cost-saving implementation."[6]

The very states that have the most limited available renewable resources would clearly pay the most in these alternative payments. However, these payments will go to those states that are already blessed with significant access to wind and solar locations, thereby subsidizing the RES compliance requirements for states that have abundant renewable resources. As a consequence, the federal RES will perpetrate a massive income and jobs transfer of otherwise needed investment capital from "have-not" states to "have" states – working tremendous regional unfairness, particularly to the Southeast and Midwest. If instead, RECs are purchased to comply with the RES, and renewable facilities in the "have" states are thereby constructed, that will subsidize efforts to decarbonize the power fleets of the "have" states. In both cases, having provided compliance subsidies to the "have" states, ratepayers in the "have not" states will have to pay again to generate their own carbon reductions to comply with the carbon cap. At the very least, funds collected for alternative compliance in particular states must be spent within those states on energy and efficiency programs so that ratepayer dollars will at least generate jobs and carbon reductions in their own states.

4. Limitations on the choice of energy sources

Severe limitations on which energy sources satisfy the compliance obligations of the proposal further compound these regional imbalances. Because wind and solar are very limited in their regional availability, it is troubling to see that the current language does not allow waste-to-energy or existing hydroelectric power to qualify as renewable. Further, energy efficiency is

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5 Southern Legislative Conference, Policy Position Regarding Federal Renewable Portfolio Standards, July 14, 2008, at http://www.slcatlanta.org/meetings/OKC_08/RPS_final.pdf.

6 Senate Concurrent Resolution No. 689, adopted 45-5, Mississippi State Senate, 2009 Regular Session.

limited to no greater than one-fifth of the compliance obligation, where sound policy and equity direct that efficiency gains should be allowed to satisfy as much of any RES as possible. In addition , nuclear power – while producing neither carbon dioxide nor conventional air pollutants – is not only excluded from compliance; it is included in the baseline of non-qualifying energy sources making its treatment roughly the same as coal, natural gas, or even bunker oil. These efforts to "pick winners and losers," between resources and, effectively, citizens, must be changed.

In the Southeast, it is often suggested that biomass could help satisfy an RES because forests in the region account for some 29% of total US forest reserves. That suggestion is probably incorrect, for several reasons. First, Southeastern forests already supply some 60% of the fiber for US timber product output. Second, recent federal mandates for cellulosic ethanol also rely in part on a cost-effective supply of woody biomass as feedstock.[7] Third, the supply of biomass for energy needs in the South alone is not likely to be sufficient to meet RES needs. The Bill complicates the equation further by adopting an overly-restrictive definition of biomass that qualifies under the standard. For example, utilities in Georgia alone would require another 2300 megawatts of biomass generating capacity to meet a 20% RES. While the largest biomass facilities are only planned for about 100 megawatts, 2300 megawatts would require almost 4 million acres of forest to harvest enough biomass – that land area would equal about eleven counties in Georgia![8]

5. Impacts on natural gas demand

Some have suggested that simultaneous implementation of an RES and a climate change policy could lesson demand for natural gas by driving power providers away from natural gas and towards renewables. Unfortunately, we are likely to see the opposite result. Unlike natural gas or coal, which can be extracted and stored or transported for later use, renewable power is

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7 G. Comatas and J.L. Shumaker, Effects of Renewable Energy Mandates on the Sustainability of Forests in the Southeastern U.S., available at www.pinchot.org/uploads/download?fileId=222.

8 Stan Wise, Georgia Public Service Commissioner, Statement before Subcomm. on Energy and the Environment, House Comm. on Energy and Commerce, Hearing on Renewable Energy (Feb. 26, 2009) at http://energycommerce.house.gov/Press_111/20090226/testimony_wise.pdf.

highly variable and must be backed up. The most likely candidate to support these variable renewable resources is natural gas.[9]

Notably, several regional transmission organizations and the TVA recently issued a report which shows that in the eastern U.S. when electric demand is at peak load wind is only available 30% of the time. The report goes on to conclude that the gap between that 30% and meeting 100% of the demand will have be filled by building natural gas fired generating capacity. The same report also shows that the Eastern US would need to build approximate 115,000 large windmills if it were to satisfy a 20% RES.[10]

6. A more sensible RES?

As stated in the beginning, we are for a cost-effective and equitable climate change policy, and we have pointed out aspects of the national RES that do not meet these criteria. Although on this basis, we believe a persuasive case has not yet been made for a one-size-fits-all federal RES – particularly in light of a pending federal climate change trading system – there are several points Congress should keep in mind if it should proceed with a national RES:

- A federal RES should set a more sensible renewable requirement (for example, 10% - not 20% or 25%), and should moderate, or phase in, the amount of renewables required over time to avoid price spikes;
- A federal RES should contain a rate impact cap (cap rate impacts attributable to the RES at a certain percentage, e.g. 1% per year). Some states have rate impact caps, but the current federal proposal has none. Any law should also conduct periodic reviews of the renewable program to determine impacts on consumers;
- A federal RES should allow for unlimited use of energy efficiency measures as a means of compliance to the greatest extent possible. Energy efficiency, available across all regions of the country, should be placed on "equal footing" with new generation - megawatts saved are as effective as any zero-emissions technology;
- A federal RPS should allow for a lower alternative compliance payment e.g., 1.5 cents /kWh as opposed to the 5 cents/kWh in the current proposal. Utilities should have the option of paying their alternative compliance payments to their states, but at the very least any such payments must be made available to fund projects within the state that generated the payments;
- A federal RES should allow existing nuclear generation to be subtracted from the baseline, and new nuclear energy, all hydroelectric and waste-to-energy to count toward meeting the requirement; and

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9 NERC at i-ii.

10 Wise at 3

- A federal RES should terminate upon enactment of carbon legislation so that the market determines the most cost-effective means of compliance.

Carbon Capture and Sequestration

As a general proposition, ERCC supports the policy goals of legislation designed to support the research, development and deployment of carbon capture and sequestration (CCS) technology. Coal represents over half of the electricity generated in the United States today. As an energy source, coal is reliable, affordable, and domestically produced. Therefore, as society seeks to address carbon emissions, CCS will be an important part of maintaining the viability of coal in the national energy equation. ERCC understands the need for broad-based funding mechanisms to support CCS and looks forward to working with the Committee in perfecting its approach.

We hope the Committee will keep the following points in mind as it deals with CCS development and deployment:

- The federal government must make realistic assumptions regarding the viability and commercial availability of CCS technology as it calibrates its carbon trading program. Emissions timetables and target assumptions are based on how robust CCS technology will be at any given time. If the technology does not advance as planned, Congress must allow the government to conform its timetables and targets accordingly;
- The goal of developing CCS is inconsistent with the federal RES as drafted. Because the size of the RES is significant, and the range of renewable technologies is so limited under, the legislation may create undue focus on those technologies. That will draw attention and resources away from CCS and into a limited range of geographically-limited renewables. Congress should consider counting clean coal applications with CCS towards RES compliance in order to level the regional playing field;
- Congress should think more broadly in terms of the CCS technologies it supports. The current draft seems limited to geological sequestration. The flexibility to consider perfecting terrestrial carbon sinks or mineralogical sequestrations processes should be considered. As broad an array of CCS technologies as can be used to allow affordable and reliable coal is an obviously desirable policy objective;
- The current proposal is weak in terms of providing appropriate liability protections for geological sequestration. Part of providing an inviting investment climate for CCS is to firmly establish that the government will share in the potential liabilities, much as it has done in the context of Price-Anderson for the nuclear industry; and
- Funding mechanisms for CCS research, development and deployment must be carefully monitored. On the one hand, the funding mechanism must not become a target for increases to address other programs; on the other hand, monies raised must be spent as suggested – and not diverted for other purposes through the budgetary process.

The task of balancing conflicting command and control regulations like the RES, the Energy Efficiency Resource Standard, performance standards for new coal-fired plants, and a Low-Carbon Fuel Standard with a market-based carbon trading program is daunting if not impossible, and seemingly unnecessary. Given the tremendous economic consequences for the entire US economy, and the perilous state of our economic recovery, we urge this Committee to undertake a full deliberative process and to understand the needs of consumers and businesses in all regions of the United States.

Thank you for the opportunity to testify.

Mr. INSLEE. Our next witness is Dr. Jay Apt, who is Executive Director of the Carnegie-Mellon Electricity Industry Center and an associate professor at Carnegie-Mellon University. We hope Dr. Apt feels very much at home today, because he has been in space flying four times and logging more than 35 days in that environment and over 10 hours in space walks.

We hope this is as easy an experience, Dr. Apt. Thank you for being here.

STATEMENT OF JAY APT

Mr. APT. Thank you, Mr. Chairman. I like to tell people that I am probably the only person in the room who owes their life to solar cells.

I appreciate not only the invitation but your stamina.

As you said, Carnegie-Mellon, I am a faculty member in both the engineering school and the business college. I have studied the electric power industry for many years at our Carnegie-Mellon Electricity Industry Center. But burning any appreciable fraction of the estimated fossil fuel resources on this planet without carbon dioxide control is going to send CO_2 levels to places that humans have never experienced and cause really dangerous climate change. There is no question that the singular focus, our goal, ought to be controlling CO_2.

Renewable energy sources are going to be an important part of whatever we do in this country, but I caution that a singular emphasis on renewable energy is not the best way to meet that overriding goal of controlling CO_2.

We spend about 3 percent of GDP annually on electricity. Removing 80 percent of the CO_2 from electric power with the most cost-effective technologies will take about two-thirds of a percent of GDP. That turns out to be just about what we spend on the Clean Air Act. That is affordable. But if we try to specify which technologies, like renewables, are the only ones that need apply and don't allow the least expensive technologies to compete, costs can grow to unaffordable levels. It is important to develop competing low-carbon technologies to keep costs low, rather than trying to select technologies based on attributes that have little to do with controlling CO_2.

A national RES is a costly way to reduce CO_2 emissions, because renewable and low greenhouse gas are not synonyms. There are several other practical and often less expensive ways, and you heard about some of them just now, to reduce CO_2 from electric power generation.

As you know, renewable energy is concentrated only in certain States. The Southeast doesn't have either good wind or good solar. It does have biomass, but that is going to be needed for production of liquid fuels. Legislation should give each region the greatest flexibility to reduce CO_2 at the least cost, including renewables, efficiency, conservation, fossil fuels with CCS, and nuclear.

Mandating technologies can be much more expensive than mandating performance. Renewable performance standards unnecessarily increase costs in an attempt to eliminate the use of uranium, coal, natural gas, and large hydropower.

What is needed instead is a carbon performance standard that lowers the limits in a predictable fashion on the emission of CO_2 for every kilowatt hour produced. To affordably lower CO_2, we are going to need everything that works. No power source is free of problems.

Our research has examined what was then the largest solar ray in the country in the desert in Arizona. It had a duty cycle, what we call the capacity factor, of 19 percent averaged over 2 years. All the wind farms in Texas last year added together had a capacity factor of 29 percent. That means that 70 percent of the time you have got to use something else. And our research shows that natural gas turbines used to provide fill-in powers as the wind rises and falls or clouds cover the sun produce more CO_2 and much more NO_X, nitrogen oxide, than they do when running steadily. That lessens the beneficial effects of wind or solar.

One solution is to store large amounts of electricity when these sources are generating. The discussion draft doesn't appear to me to contain significant incentives for large-scale storage, and I think it ought to.

If our industries are to be able to afford electricity, it is essential that demonstration coal plants with carbon capture be built to improve the technology and show that we can sequester CO_2 without leakage in a range of geology. The section 114 incentives seem to me to be at the low end of what is required to demonstrate the commercial viability of sequestration. It is also essential that we build half a dozen nuclear plants using new technology to assess their costs and performance, or we are going to be importing that technology from abroad.

I hope that you will keep two principles in mind.

First, focus on reducing carbon dioxide, rather than singling out renewables as the answer. There are significant savings, from letting all the technologies compete in satisfying the goals of lowering greenhouse gas emissions and increasing energy security, while ensuring that energy prices aren't so high that they derail our economy.

Second, ensure that efficiency gains generating electricity as well as in using it can count in any low-carbon legislative mandate such as section 231 of the discussion draft.

Thank you very much for the opportunity to testify.

Along with my written testimony, I provided the subcommittee with one of our published papers. I think the research outlined in the paper might be of interest and value and would ask that that be included as part of the hearing record.

Mr. INSLEE. Hearing no objection, Dr. Apt, thank you very much.

[The prepared statement of Mr. Apt follows:]

Testimony of
Dr. Jay Apt

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U.S. House of Representatives
Committee on Energy and Commerce
Subcommittee on Energy and Environment

Hearing on
The American Clean Energy Security Act of 2009

Panel on Low Carbon Electricity, Carbon Capture and Storage, Renewables and Grid Modernization

April 23, 2009

My testimony is based on research described in an article in the Fall 2008 issue of *Issues in Science and Technology*, attached to this testimony, and in a longer working paper, and in several papers published in the research literature. Lester B. Lave and Sompop Pattanariyankool are colleagues in this research.

Chairman Markey, Ranking Member Upton, and members of this subcommittee including my Representative, Mr. Doyle, thank you for giving me the opportunity to testify.

At Carnegie Mellon University, I am a faculty member in the Engineering College and the Tepper School of Business. I am also executive director of the Carnegie Mellon Electricity Industry Center. The opinions here are mine and do not necessarily reflect the views of my coauthors, Carnegie Mellon University, or any other institution.

I commend you for searching for ways to reach the goals of reducing greenhouse gas emissions and pollution, enhancing energy security, maintaining electric supply reliability, and controlling costs. Renewable energy sources are a key part of the nation's future, but I caution that a singular emphasis on renewable energy sources is not the best way to achieve these goals. One goal is paramount as the greatest challenge of the century: reducing air emissions and the atmospheric concentration of carbon dioxide.

I have two recommendations that I hope you will consider:

1. Focus on reducing carbon dioxide rather than singling out renewables as the answer. There are significant savings from letting all technologies compete in satisfying the goals of lowering greenhouse gas emissions, increasing energy security, and improving sustainability, ensuring that energy prices are not so high that they derail the economy.
2. Ensure that efficiency gains, in generating electricity, as well as transmitting and distributing it, and in using it, can count in any low-carbon legislative mandate, such as Sec. 231 of the discussion draft.

If estimates of the amount of recoverable fossil fuels are correct, without carbon dioxide controls we will run out of atmosphere long before we run out of fossil fuels. Burning any appreciable fraction of the estimated coal, oil, and natural gas resources will send atmospheric carbon dioxide concentrations to far greater levels than humans have experienced and lead to major global climate change.

All fossil fuel sectors contribute emissions and need to be addressed, but my testimony focuses only on the electricity sector. The United States is increasing its reliance on electric power and will have to generate 40% more electricity by 2030 if demand keeps growing as it has the past 35 years. We face the additional challenge of quickly reducing carbon dioxide. At the same time, the price of power has risen 25% nationally in four years, and has risen much faster in cities such as Baltimore. We spend about 3% of GDP annually on electricity.

Removing 80% of the CO_2 we emit today from electric power generation with the most cost-effective technologies we know about will cost us about 2/3 of one percent of GDP annually. That's about what we spent on the Clean Air Act. That amount is affordable. But if we try to specify which technologies – like renewables – are the only ones that need apply and don't allow the least expensive clean technologies to compete, these costs can grow to unaffordable levels.

It is important to develop competing low carbon technologies to keep costs low, rather than trying to select technologies based on attributes that have little to do with controlling CO_2.

A national RPS is an expensive way to reduce greenhouse gas emissions because "renewable" and "low greenhouse gas" are not synonyms; there are several other practical and often less expensive ways to generate electricity with low carbon dioxide emissions. In addition, renewable energy is concentrated in only certain states. A national RPS would force other states to transfer wealth to windy or sunny states, instead of using it to develop low carbon technologies that are appropriate to their locales.

Mandating technologies can be much more expensive than mandating performance, by capping emissions at a level that declines over time or by requiring that no more than a given amount of CO_2 be emitted for every kilowatt-hour produced. Renewables portfolio standards unnecessarily increase costs (and often leave out efficiency and demand-side response) in an attempt to eliminate the use of uranium, coal, natural gas, and large hydroelectric power. What is needed instead is a direct performance standard that lowers the limits on emissions of CO_2 in a predictable fashion over the next few decades to very low levels.

For renewables, the maps I have provided of wind and solar resources show vast differences among states. For example, the Southeast has neither good wind nor solar resources. It does have biomass, but that will be needed for producing liquid fuels. Legislation should give each region the greatest flexibility to achieve the goals at least cost, including renewables, efficiency, conservation, fossil fuels with carbon capture and sequestration (CCS), and nuclear.

Many people like wind turbines in the abstract but don't want them as neighbors, for example, the proposed wind farm off Cape Cod. In my state of Pennsylvania, we now have 200 wind turbines. About 10,000 would be required to meet a 25% RPS and the resulting land use issues can't be ignored. A handful of states require wind farm operators to pay into a fund for decommissioning the turbines at their end of life. A quick YouTube search for "wind turbine failure" is all that is required to see why this is very good idea.

Achieving a large national RPS requires building large amounts of transmission from areas with good wind resources to population centers. More people oppose transmission lines than wind turbines. There are likely to be delays of ten years or more in siting transmission.

Even in good areas, the wind doesn't blow all the time. Looking at all the wind power plants in Texas in 2008, we find that in a quarter of the hours during the year Texas wind production was less than 10% of its rated capacity. That means that when a wind farm is built, some other power source of the same size must be built to provide power during those calm hours. Our research shows that natural gas turbines, that are often used to provide this fill-in power, produce more CO_2 and much more nitrous oxide (as they quickly spin up and then slow down to counter the variability of wind than) than they do when they are run steadily.

The point is that wind and solar can lower the amount of fossil fuels used for generation, but they don't lessen the need for spending money on always-available generation capacity, nor do we get all the air emissions benefits we once expected. For new generators, the capital cost is the vast majority of new costs and so the savings by having free fuel from the wind or sun are small.

As you know, wind and solar generation differ from the traditional ways of generating electricity because they are generally not available when we need power. Wind turbines and solar arrays generate electricity when the wind blows and the sun shines. One of the best solar sites in the USA is in the Arizona Desert. A very large solar generator there had a duty cycle, what we call the capacity factor, of 19%, out of the possible 100%, if it had generated full power every hour of the two years we studied it. Wind turbines have higher potential in good wind sites but, for example, the average capacity factor for the wind turbines in Texas was only 29% in 2008.

The solar map shows that the good sites are in the desert Southwest. Sites in the Southeast have lower potential because of cloud cover. The rest of the continental USA has much lower potential for generating solar power, particularly the most heavily populated areas. The capacity factor is important because almost all the costs are in manufacturing and installing the array. Thus, a solar array with a capacity factor of 20% would produce electricity at half the cost of an array with a capacity factor of 10%. Forcing solar installations into Atlanta, Washington, or New York would consume a vast amount of resources per kilowatt-hour.

Nature is more generous in distributing good wind sites around the nation, but they are still distant from population centers. In particular, note that there are no good wind sites in the Southeast. As with solar, the cost of produced power is inversely related to the capacity factor since almost all the costs are building the wind farm. Thus a site with a capacity factor of 40% would have half the cost per kilowatt-hour as a site with a 20% capacity factor.

In general wind and solar power are not available when demand is highest. Wind tends to be strongest at night and lowest in the summer. Solar power is best in the summer, but the Arizona data show that the arrays have all but stopped producing electricity by 5 PM in the summer, just as demand is hitting its peak.

Another problem is that wind and solar generation are variable. Wind speed changes from moment to moment and clouds block the sun, even in the desert. This variable power challenges the grid to provide reliable, high quality power when wind and solar are contributing more than a few percent of total generation.

One solution to both these problems is to store large amounts of electricity when these sources are generating so that it can smooth power output and have that output available when demand is high. Pumped hydroelectric storage is the best way to store electricity, but few new sites are available. Compressed air storage looks promising, but is expensive and less efficient than pumped hydro. The discussion draft does not appear to contain significant incentives for large-scale electricity storage.

Wind farms can affect climate downwind, reducing precipitation. Massive reliance on wind energy would take energy out of the wind, changing the Earth's climate. All power generation options have feet of clay. There is no generation utopia. But just because there is no free lunch doesn't mean we can't eat: we just have to acknowledge the issues honestly so that we are not faced with a public backlash later on.

There are other renewable sources that are also low-carbon. Hydroelectric dams generate six times as much power today as the other renewables, but there is little prospect for getting significantly more power. Dams are being torn down, not being built. Run of the river hydro could provide small amounts of power. Geothermal provides power in California and more is planned for the Southwest. Where there are good geothermal resources, this resource can be attractive. However, the good areas are limited to the West. Biomass could provide significant amounts of power at competitive costs, but there is a limited amount of land and water, and the biomass may be better used for transportation fuels. Ocean currents and waves can provide power, but corrosion and withstanding storms make the power expensive, in addition to other problems.

Where they can compete for our low-carbon dollar, renewables should be applauded. In good sites, wind power is competitive with new fossil generation with carbon capture and sequestration. At good sites, solar thermal power is almost competitive with new fossil generation. However, even at the best sites, solar photovoltaic generation is several times the cost of other low-carbon power per kilowatt-hour. We should not pick technologies with legislation – rather we should pick the low carbon goal and allow the cost-effective winners to emerge.

Federal support of R&D in this industry is essential to achieving low carbon electricity at affordable cost. While solar photovoltaic power is too expensive for massive deployment, I urge funding solar photovoltaics research, since this technology will ultimately provide most of our energy. I also recommend R&D funding for bulk electricity storage, such as compressed air. America's largest fossil fuel resource is coal; we will rely on coal for much of our energy in the coming decades. In particular, coal will continue to provide most baseload electricity generation.

It is essential that demonstration coal plants with carbon capture be built to improve the technology and that we show that massive underground injection of carbon-dioxide in a range of geological strata can sequester the carbon dioxide without leakage. The Section 114 incentives are at the low end of what is required to demonstrate the commercial viability of sequestration.

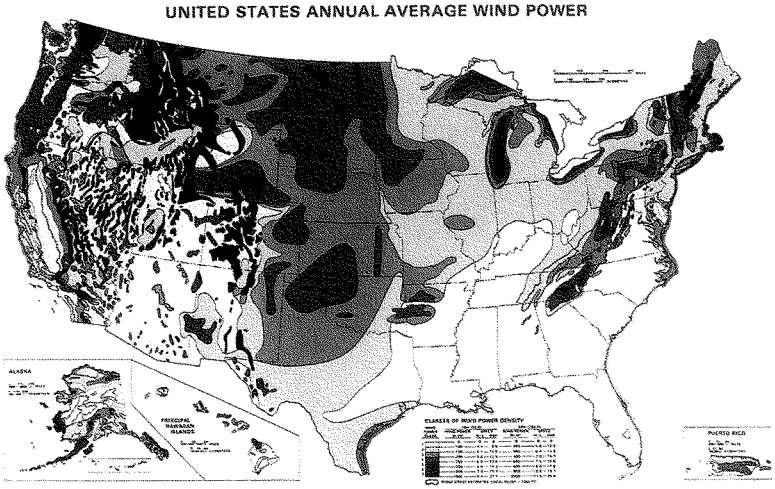
It is also essential that we build half a dozen nuclear plants using new technology to assess their costs and performance.

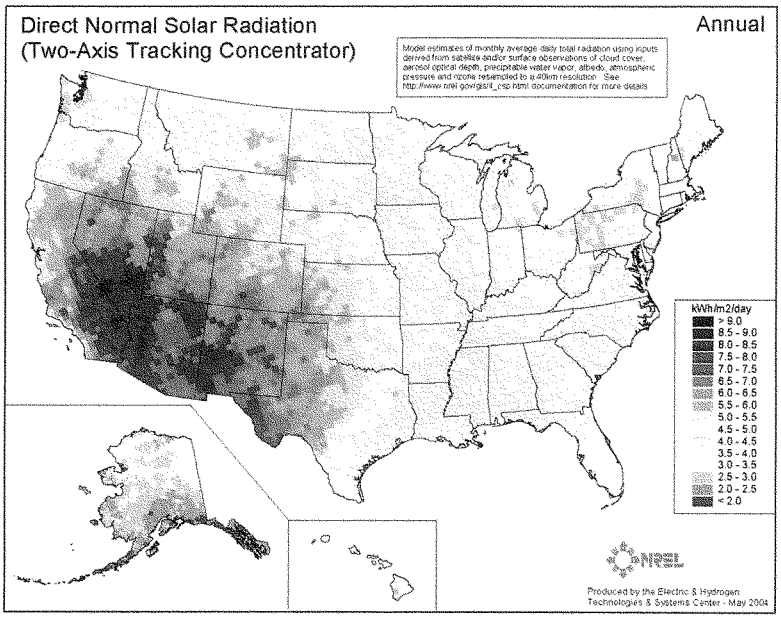
I commend the Committee and Congress for moving this most important topic forward. I hope that you will keep two principles in mind:

1. Focus on reducing carbon dioxide rather than singling out renewables as the answer. There are significant savings from letting all technologies compete in satisfying the goals of lowering greenhouse gas emissions, increasing energy security, and improving sustainability, ensuring that energy prices are not so high that they derail the economy.
2. Ensure that efficiency gains, in generating electricity, as well as transmitting and distributing it, and in using it, can count in any low-carbon legislative mandate, such as Sec. 231 of the discussion draft.

Thank you for the opportunity to testify on this important legislation. I would be happy to answer any questions.

UNITED STATES ANNUAL AVERAGE WIND POWER




Direct Normal Solar Radiation
(Two-Axis Tracking Concentrator)
Annual
Model estimates of monthly average daily total radiation using inputs derived from satellite and/or surface observations of cloud cover, aerosol optical depth, precipitable water vapor, albedo, atmospheric pressure and ozone resampled to a 40km resolution. See http://www.nrel.gov/gis/cf_rsp.html documentation for more details
kWh/m2/day
> 8.0
8.5 - 9.0
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Mr. INSLEE. We will start questioning with Tammy Baldwin.

Ms. BALDWIN. Thank you, Mr. Chairman; and thank you all for your patience and your testimony here this afternoon.

We just returned to session from a recess, and over the course of my recess I had a chance to do a great tour of some of the most innovative Wisconsin-based companies that are doing all sorts of exciting things in the energy area in anticipation of the work we are doing on the climate change bill.

One of the places I visited is a company called Orion based in Nashua, Wisconsin; and they are managing a solar light type technology that can illuminate factory floors electricity free by concentrating daylight. Just last month, the company was even touted by President Obama for having innovators and creating jobs that will foster our economic recovery and create clean technology to power our long-term prosperity.

Now, like the solar light pipe, there exists a number of distributed renewable energy resources such as solar water heaters, solar air heating and cooling, geothermal heat pumps that deliver measurable and verifiable renewable energy at the load source. These technologies help businesses and homeowners lower their utility bills; and because they produce clean energy at the load source, they certainly lessen the burden on our Nation's transmission infrastructure.

As I understand it and have looked into it, some States have included these technologies in their renewable portfolio standards, and others have not, because these technologies do not actually generate electricity even though we can sort of monitor virtually with meters the electricity consumption displaced by these technologies.

So I want to ask, I think, Mr. Reicher and Commissioner Grueneich, do you think these types of technologies should be considered as a part of our renewable energy technologies and can they provide benefits under a national renewable portfolio or electricity standard?

Ms. GRUENEICH. Yes, and yes.

Let me also say I want to congratulate your State. We are not talking about energy efficiency, but in a recent report you are ranked number five in the country. I am very happy to hear about some of the technologies that are being developed. I think that this is an example where we see innovation at the State level, and I think that it definitely is an example of the types of new technologies coming on line that can and should be included when we are looking at the renewable standard.

Mr. REICHER. And I would add that, as you know, there is already a three X multiplier for on-site generation. It would be interesting to take a look at what of these technologies might be included and, if not, how that might be adjusted. That is number one. Number two, of course, the energy efficiency resource standard would capture some of the value of this as well by cutting electricity demand.

So I think the interplay between the two of those should at least help these technologies. What we may want to do is look a little bit further and see if there is ways to move them forward even better.

Ms. BALDWIN. And that was precisely my second question. Should this technology be a part of the energy efficiency resource standard? You sort of jumped to that answer already.

On the distributed generation multiplier, another one of my stops on my tour last week was to an anaerobic digester on a dairy farm. Now, I think Wisconsin is the leader in the country in deployment of anaerobic digester systems, but all of them are smaller than two megawatts. The one that I visited is generating enough electricity for about 600 homes in the area.

The proposed definition in our draft discussion bill right now would exclude small biomass generation systems from receiving the distributed generation credit multiplier because they rely on combustion, and the proposal appears to make distributed solar and wind more valuable than distributed biomass. And I guess I would want to ask your opinion also on what guidance you would give our committee as we get into the details of the bill on this issue of should it count or not. Commissioner?

Ms. GRUENEICH. I will say that we are facing in California, as we have had now a couple of years under our belt—I guess 3 or 4 now—on our renewable standard that as the technology is improving, and we have got a project that Pacific Gas and Electric Company is doing also with one of our dairy farms, where we are seeing that we do have to look at modifying our definition of what qualifies. And I think that it will be important for the committee to really take a look throughout the country at what are the different projects that have emerged, take a good look at the definitions.

And I totally concur with Dan. Let's make sure that things don't fall between the cracks of what is considered a renewable or what is considered an energy efficiency, and it doesn't qualify for either one. So I think that is real good homework. We want to capture the most innovative projects.

Ms. BALDWIN. Mr. Chairman, I was going to ask a question to our carbon capture and sequestration experts. I see my time has expired.

Mr. INSLEE. The Chair is extending an additional minute to all committee members who are so dedicated to be here.

Ms. BALDWIN [continuing]. Along with my other stops on my energy tour I got a chance to visit a coal plant owned by WEE Energy in Wisconsin that is doing a demonstration project on carbon capture—not the sequestration part, but they are right now succeeding in capturing 90 percent of the CO_2 emitted, but only doing this demonstration project on 1 percent of the flue gas. So it is a small demonstration project. A larger scale project, sort of tenfold the size, will be under way soon in West Virginia.

I would love our CCS experts to address a couple of quick questions. One is the job creation potential. The second is, if we do not have a cap in the end, would you expect whole scale commercial deployment of this technology without it? I have concerns that we wouldn't.

And then, finally, this is a huge issue, but Wisconsin is not particularly geologically—well, we don't have the geological formations necessary for storage in state which brings up transportation issues. And I wonder whether the funds collected by the CCS provi-

sions of the bill will apply to researchers' transportation for CO_2 and the costs associated with that. But—I know that is broad, but I would love to hear our CCS experts address those three areas.

Mr. KUNKEL. We have been following the WEE Energy project there too, and they are tackling one of the most interesting parts of this that could have big promise for reducing the costs of it, which is the energy efficiency penalty using ammonia technology. And we think that is very promising, and we are following that technology and considering that very closely. That sort of goes to one of your questions.

Your second question was jobs.

Ms. BALDWIN. Actually, that was the first question. The second was the relationship between the cap and the deployment of this technology.

Mr. KUNKEL. Yeah. Certainly large-scale deployment won't happen without there being some kind of a market value, if society doesn't value the reduction of emissions in some way. And—that has to happen, and what we are working at is getting the cost of that down to where it happens at a reasonable price; and we believe that that can happen as well.

Jobs, our projects in both Texas and Illinois will—the one thing, they take a long time to build; it is like a 4-year construction cycle, 1,500 jobs at the peak and even as many as 2,000 in some cases. So, for a retrofit, that project would be much less, but it is still a very substantial project employing a significant number of people.

Mr. INSLEE [presiding]. Thank you. We are now moving on to Mr. Upton.

Mr. UPTON. Thank you, Mr. Chairman.

Dr. Apt, I want to come back to your testimony. You talked about a carbon performance. If you look at that for the base as an RPS, you probably could include nuclear as part of that, right, because it has—that has no greenhouse gas emissions?

Mr. APT. Certainly.

One of the statistics I like to tell people is, in my home State of Pennsylvania, we are nearly last in renewables, but we are first in low carbon because of the percentage of nuclear that we have.

Mr. UPTON. You said that the solar array in Arizona was only 19 percent, which means that it is out?

Mr. APT. Sure. It can't be more than 50 percent because it is night half the time.

Mr. UPTON. I know they don't have daylight savings time. That is probably another hour.

Mr. APT. The thing that surprised us was that it wasn't higher than it is. That is because of the intermittency caused by the clouds. We have looked at the solar rays in other locations. The DOE has a solar roof here, and that is 11 percent as it turns out.

Mr. UPTON. Thank you.

Mr. Robo, you mentioned that you are managing the largest solar bank in the world; is that right?

Mr. ROBO. That is right.

Mr. UPTON. In the Mojave Desert. How big is it? What is the size?

Mr. ROBO. Three hundred megawatts.

Mr. UPTON. What is the footprint? How big is it?

Mr. ROBO. The footprint is tens of acres, it is about an acre a megawatt, so it is about 300 acres.

Mr. UPTON. There has been some debate that I have seen in the press—we mentioned this either today or yesterday at one of these hearings—that the senior Senator from California has not been all that supportive. Is that true or not? Is it that project or is that another one?

Mr. ROBO. No. It is not our project. Our project is already built.

Mr. UPTON. Is this another project that is going to rival you as the largest in the world then?

Mr. ROBO. There are several new projects that are being considered in California. We have several that are under—that are trying to be permitted right now. Other folks are being—other folks are trying to permit projects.

Our, actually, two projects that are furthest along in the permitting process are outside of Senator Feinstein's areas.

Mr. UPTON. Now when you began the construction of this or to get the licensing and the approvals, did you have trouble hooking it into the transmission lines? And how long did that take?

Mr. ROBO. These projects, the projects we have right now in California are actually quite old. They were built in the late 1980s-early 1990s and took several years to develop—any large-scale solar project in any of the areas that we are looking at.

We are developing large-scale solar projects in Florida, California, Arizona, Colorado. It really depends in the jurisdiction. We have built 110 megawatts of solar in Florida in the space of a year. California would take 5 years.

Mr. UPTON. Would it be helpful in this bill, if this bill moves forward, to have some type of allowance to allow FERC to step in if folks like your seatmate there are not entirely cooperative in getting things hooked up?

Mr. ROBO. We think having FERC have——

Mr. UPTON. Constructive.

Mr. ROBO. We think having FERC have ultimate siting authority makes good sense.

Mr. UPTON. Ms. Grueneich, you talked about California going to 33 percent by 2020. I seem to remember at one point they were 20 percent by next year is; is that right?

Ms. GRUENEICH. We have—our current law is 20 percent by next year. There are what some would call flexible provisions that will allow it to be another year or two probably. But we are on target.

Mr. UPTON. So you think they will hit it?

Ms. GRUENEICH. Yes.

Mr. UPTON. Again, I am not from California.

Ms. GRUENEICH. Yes.

Mr. UPTON. Last question I have in my minute that is remaining, Messrs. Briggs, Kerr and Trisko, as we look at the issue of carbon capture, something that has to be part of coal's future, there is nothing in this bill, as I understand it, relating to the long-term liability issues.

Does that need to be part of this, if you could each comment on that?

Mr. TRISKO. Yes.

Mr. UPTON. I don't know if you had it cited in the longer part of your testimony or not.

Mr. TRISKO. The bill contains a provision for research on long-term liability issues, and we think that that underscores the need for resolution of the long-term liability question.

Mr. UPTON. Would the others dis—Dr. Kunkel, would you agree? Just maybe to speed this along in my remaining 5 seconds.

Mr. KUNKEL. I do think there is the need for kind of a study, but there is also some—we have a project that we want to take to financing next year. So I think there needs to be some consideration for the pioneering projects, a first group of projects, and to take care of those.

Mr. BRIGGS. Just very quickly, one of the advantages of our parent companies being familiar with the subsurface, we are willing to move ahead of these sorts of frameworks not being defined because we are comfortable with it. But we have also been—we have also suggested a framework for liability as it moves through a project from operatorship to postclosure.

Mr. KERR. Congressman Upton, I would say "yes" completely, and I would also point out—and I think Representative Baldwin mentioned the transportation issue in your question. There are a number of these issues around CCS that are very important. And one of the things that this subcommittee needs to focus on is, when you look at EPA analysis of this bill and bills in the last Congress, there are very aggressive assumptions about when resources like CCS will be available, and yet they don't match up with what—the realistic issues like liability transportation, so I think when you look at the analysis, look at the presumptions and then realize there are a plethora of what seem like sort of minor issues.

The sooner we deal with those in a bill like this, I think the more rapidly we can deploy these technologies, which then will maybe justify some of the assumptions being used in the economic analysis.

Mr. UPTON. Dr. Apt.

Mr. APT. At CMU we have started a large project on the legal and regulatory environment for deep underground sequestration. And a lot of paths through the thicket lead to dead ends.

We have put out a draft of—a working paper on that. We give presentation on January. We will be happy to talk with you more about it.

We are expecting to put out a final on that later this summer, and we would love to work with y'all.

Mr. UPTON. Thank you. Thank you.

Mr. INSLEE. Thank you. The Chair will proceed.

Mr. Reicher, thanks for being here. Thanks for Google's vision and the work they are doing. I wanted to ask, you alluded to the necessity for some financing mechanism across what has been called "the valley of death," particularly for the first commercial projects.

There are a couple of approaches that have been proposed. I have proposed one approach. And we have tried to focus in our approach somewhat more narrowly than others to make sure we target the risky adventures that really do not have access to commercial lending credit—narrower insofar as the target, but broader as far as al-

lowing the use of the full financial tools that could be available, multiple systems to really finance these.

I just wonder if you want to comment on those approaches and what you think we need.

Mr. REICHER. Congressman, I think the approach that you are looking at which is quite similar to the approach that Senators Bingaman and Murkowski are looking at, I do think that is the right way to go; and let me explain why I reached that conclusion.

The issue we face is the following: There is today in developing new energy technology both private and public capital to get technologies to the pilot stage. We have a burgeoning venture capital world, there is a variety of funding available at the Federal level for the lower-cost development of this to the pilot stage. The valley of death begins when you get a technology, whether it is renewables, efficiency, clean coal a whole host of technologies, when you get to that successful pilot stage and you have got to go from there to large commercial deployment. But it is those first few large commercial projects that the bankers will say, too risky, we are not interested, come back when you have built the first couple and talk to us then. That is the valley of death, and that is what your bill and that is what Senator Bingaman and Murkowski's bill would deal with well.

The tools, as you say, are quite broad—loans, loan guarantees, other credit enhancements and also secondary market support so we could, in fact, develop clean energy-backed bonds as well. So a whole set of tools focused right on that, that really critical moment where so many technologies across the entire energy spectrum die, between pilot scale and multiple large commercial projects being built.

So I salute you in what you are doing, Senators Bingaman and Murkowski are doing a hearing next Tuesday to try to advance this.

Mr. INSLEE. Great. Thank you very much.

Dr. Kunkel your effort, the Tenaska project, I am told is in Taylorville, Illinois; is that right?

Mr. KUNKEL. Taylorville, Illinois.

Mr. INSLEE. Is that Mr. Shimkus's district?

Mr. KUNKEL. It is.

Mr. INSLEE. It is a great district. He is a great Congressman, of course.

If you are successful and we have got a great cap-and-trade bill that helps drive investment into your project, because your project would be more cost competitive once we have a cap-and-trade system, would that allow people to continue to mine coal, also create jobs associated with your project, and continue the coal-based economy in that area?

Mr. KUNKEL. It would definitely spur the development of these types of projects and that project in particular.

Mr. INSLEE. And would the existence of a cap-and-trade system increase your attractiveness to investors to invest in that coal-sequestered technology? Would it make it more attractive vis-a-vis other technologies?

Mr. KUNKEL. We believe it is going to be attractive in any case because of the particular conditions of the project. But certainly

that would be helpful in kind of setting a framework in which those investments are going to be encouraged in the future.

Mr. INSLEE. Well, I will happily fulfill the responsibility of conveying that to Mr. Shimkus, that a cap-and-trade system could help a business in his district and employ perhaps 1,500 people. Thank you for that.

Dr. Apt, you said something that was really interesting to me. I think—and I want to make sure that I understood your assessment, and I think you bring up a very interesting point. As I understand what you told us, if we are successful in policies that do, in fact, find the least costly ways of dealing with this—and I understand that is an "if" at the moment, and you have some critique of that effort—but if we are successful in that regard, do I understand that the costs you have assessed are about two-thirds of a percent of GDP, which are in the range of what we did successfully in the Clean Air Act?

Mr. APT. That is correct, if the costs are kept to $35 to $50 a ton of CO_2.

The difficulty is that that applies to things like coal with CCS. It does not apply to things like natural gas with postcombustion capture that could be about $80 a ton of CO_2. At the moment, the best solar PV or solar thermal are many multiples of that.

Mr. INSLEE. So, if I can, how much loss to the GDP, the no-action scenario if we do nothing, if we do what some have suggested here to do nothing, not to address this issue of climate change, is the amount of loss to our GDP due to drought and, you know, changes in the climate, perhaps some health-related impacts?

Do you think those reductions of our economic well-being will exceed what we tried to avoid in the Clean Air Act? Is this a worse problem than what we tried to solve in the Clean Air Act?

Mr. APT. The answer is a complicated one because it depends on the details regionally, what happens. In California, one of the things that drove people to action there was the prediction that the snowpack in the Sierra would be much worse off a few years from now without control of CO_2. That is not going to be the case everyplace. There are going to be winners and losers.

In the Clean Air Act there was a clear—or I should say, dirty and present danger. It is a conceptual thing at the moment for most people. That is why downscaling studies like the Sierra snowpack is so very important in making people understand how it affects them.

Mr. INSLEE. Let me just—I don't want to take too much time.

But I will just tell you, one Congressman's assessment is that the danger to our communities and the danger to our Nation has the capacity to be quite a bit more severe than what we were suffering under the Clean Air Act for a whole variety of different reasons and that, because of that, an investment anywhere close to what we did with the Clean Air Act would make sense because of the potential danger faced.

Mr. APT. I would concur. Any investment of the type, the two-thirds of a percent of GDP that we did in the Clean Air Act not only makes sense, but it is clear that we accepted that, although with a great deal of kicking and screaming.

Anything much more than that, certainly many multiples of that, is probably a very different animal.

Mr. INSLEE. Thank you. I appreciate that.

Mr. Walden of Oregon.

Mr. WALDEN. Thank you very much, Mr. Chairman.

Dr. Apt, let me go back to you because you said solar is about $80 a ton, carbon equivalent.

Mr. APT. No. That is natural gas with postcombustion capture at the moment. Solar PV and solar thermal are many times that.

Mr. WALDEN. Many times that?

Mr. APT. You know, it depends. At the moment, you could bring in a good solar thermal plant for perhaps $200 a ton of avoided CO_2. And I think Mr. Robo would——

Mr. WALDEN. The reason I ask that is, yesterday we had testimony from the EPA Administrator, Ms. Jackson, who indicated her analysis of this bill, given whatever they plugged in. I thought she said, in the first few years it was $17 a ton for carbon, that that is what they used as a price, and then maybe as much as $20 or $30. We are trying to get all those data points.

So I find it fascinating, you are saying $35 to $50; it may be as high as $80.

Mr. APT. It is one of the reasons why I think that a carbon performance standard is going to be much more effective than a—let's say $17 a ton, because it is going to affect investment. It is going to take $35 to $50 a ton to really affect investment in the area I know about, the electric power industry.

Or you can do a carbon portfolio standard that says, as California has done, you can emit no more than X, in that case, 1,100 pounds of CO_2 per megawatt hour; and that declines.

Mr. WALDEN. Okay. I am going to move down to Mr. Gruenspecht because in your testimony you state, in absolute terms, the key terms are projected to be biomass and wind; but other renewable fuels including solar and geothermal are also projected to grow significantly in percentage terms.

What would constitute the biomass that you reference?

Mr. GRUENSPECHT. Well, there could be both co-firing of biomass in existing plants that currently burn coal.

Mr. WALDEN. That would be like woody biomass?

Mr. GRUENSPECHT. That would be woody biomass. That could be used in a modest proportion as part of the feed to that existing plant. That is attractive to the extent there is not a big capital investment involved.

Mr. WALDEN. Would that be the primary source you are looking at when you use the term "biomass"?

Mr. GRUENSPECHT. Or you could have dedicated biomass crops. You could have—switchgrass as well can be burned, as well as——

Mr. WALDEN. And I have raised this issue every other chance I have had, the deal with woody biomass on Federal land.

Mr. Hawkins, I understand NRDC is the one who is responsible for the language in the 2007 energy bill that precluded fuel sources made from woody biomass on Federal lands from being applied toward the fuel standard; is that correct?

Mr. HAWKINS. We supported safeguards so that we would not have adverse land use changes associated with the renewables.

Mr. WALDEN. So it was your language or you were the ones who principally said that?

Mr. HAWKINS. I wish we had the power to actually write language and have it show up in legislation.

Mr. WALDEN. Did you have any role in the language regarding biomass in this draft? Did NRDC have any role in the biomass language in this draft?

Mr. HAWKINS. We didn't review any draft before you saw it.

Mr. WALDEN. Did you submit draft language? Did you participate in the discussions in what you thought ought to be—that is not a bad thing, by the way. I am just trying to figure it out.

Mr. HAWKINS. I don't believe we submitted any language on the biomass provisions.

But if we did——

Mr. WALDEN. Do you support these biomass provisions that are in this bill?

Mr. HAWKINS. Do we support them? Yes.

Mr. WALDEN. And so you think it is okay to exclude all woody biomass on Federal lands as being considered biomass?

Mr. HAWKINS. We think that until and unless we have safeguards in place that address everyone's concerns about the impact of sourcing some of these biomass resources, that it is an appropriate safeguard, yes.

Mr. WALDEN. To just simply say, woody biomass off Federal land isn't biomass? That is what you say.

Mr. HAWKINS. To say that it shouldn't be an eligible source of a resource for purposes of complying with this obligation, that is appropriate policy.

Mr. WALDEN. Obviously you can have that opinion. I disagree vehemently with it, as you might have noticed by now, and hope to change it.

Ms. Grueneich.

Ms. GRUENEICH. Not to be confused with Gruenspecht.

Mr. WALDEN. Got it. And it is turned as well.

Mr. GRUENSPECHT. It is a very green panel.

Mr. REICHER. This is the German end of the panel.

Mr. WALDEN. The German end of the panel, and Mr. Reicher too.

First of all, Google has got a facility in my district. One of the reasons is because of our low-cost hydropower, which I think is renewable, but this bill does not. But I want to go to geothermal because I think both of you may have mentioned that.

I was told by our scientists at Oregon Institute of Technology we could replace two-thirds of Oregon's electricity generation needs by geothermal. I have also been told by University of Washington scientists you could replace all of Oregon's gasoline consumption with methanol made from woody biomass due to the backlog on our forests. So it looks to me like there are some enormous opportunities here to use new energy types in a very effective way.

When we move off of that, though, and into distributive energy, which I think is also a key element and gets at the real issue of transmission which you have raised, we have got a huge fight out across my district right now about the siting of transmission lines, principally because they go over Federal land.

In one case, a company I believe is trying to avoid any Federal land because of the siting fights. So now they are going to try to drive it right over everybody's farm and field, which is another huge problem.

The other case, we may deny an entire wind project over 180 acres of BLM ground that they need to run the supply line to private land. How do we address these issues?

Ms. GRUENEICH. I have spent 4 years on transmission permitting.

I will just say, it is not in the bill. I think one of the most significant provisions that somebody needs to put in the bill on transmission—the planning part is great, and I will talk a moment about that, but we have huge problems with the Federal land use agencies in transmission permitting. And I hear a lot about the problem from the State agencies.

Just about every land permit—every transmission project in California and it sounds like in Oregon, and it is a lot in the West—ends up going through Federal lands; and we need somewhere in all these bills that are going through on transmission, something in my—this is my personal opinion—that really talks about the Federal land use, agencies having to streamline their transmission permitting projects.

We do MOUs with BLM and U.S. Forest Service on a regular basis that have schedules, and they never stick to the schedules. We have had projects that an entire year has been lost after we have permitted them under our sequel, our environmental review, which is tough, and we still wait another year to finish the Federal permitting.

So I am a strong believer that this cuts both ways, that it is the Federal land use agencies, and a little bit of language in there that has them streamlining some of their processes could help.

There is a terrific process—I will just be real quick—going on in the entire western United States called western REZ, Renewable Energy Zone——

Mr. WALDEN. Right.

Ms. GRUENEICH [continuing]. That is looking at every single State; and nobody is worried about red, green, blue anything that is really going down to the level again of transmission planning we need, of what are those resources in the States. And we are finding some really good information.

We talk about, we think that States are resource poor on renewables. When we are actually spending time looking at this, we are finding that there is a lot more, frankly, than we thought about.

And so I do think that this is a ray of hope that we are going to be able to come together. And once we know those resources, that is, where we are able to look at what are the transmission lines that are going to make sense, and then get our act together; and if they are the ones we need, let's get them built.

Mr. REICHER. Mr. Walden, if I could just add, one of other aspects of this is improving citizen engagement, getting people involved earlier, giving them the information they need to understand what the options are in terms of transmission.

We have been working with some organizations, including NRDC, at actually building mapping capabilities using Google tools

and other kinds of tools to get this information to people. If you engage them earlier, if you give them the options, walk them through the process, often some of this, some of the opposition can be overcome.

But I would second what Commissioner Grueneich said about the critical need to engage Federal agencies more readily.

Mr. WALDEN. Mr. Chairman, I know we are over. Are we going to have a second-round opportunity for questions? This is such a great panel, but there are so many of them.

Mr. MARKEY [presiding]. Okay. And there are so few of us that I think we can do that then as a result. I think it works out well.

Mr. WALDEN. Thank you, Mr. Chairman.

Mr. MARKEY. The Chair will recognize himself at this point for a round of questions. And, you know, I think there are two ways you can look at the renewables issue. You can look at it in a rearview mirror or you can look out the windshield at the future as it is arriving.

So you can use two sets of numbers. One set of numbers can be, oh, my goodness, only 1 or 2 or 3 percent of our electricity comes from renewables, excluding hydro. That is not a good picture. How are we ever going to be able to provide the electrical generation we need for our country in the future?

Of course, another way of looking at it is 2008. 8,500 new megawatts of wind generated in our country, 400 new megawatts of solar generated in our country, 205 new megawatts of biomass generated in our country, 138 new megawatts of geothermal generated in our country; only 1,100 new megawatts of coal and 9,700 megawatts of natural gas, zero in nuclear. So, my goodness, when you add it all up, 45 percent of all new electrical generation in the United States in 2008 was from renewables, and that is before we pass a national renewable electricity standard.

If we were looking out the windshield, looking ahead, and we had a national renewable electricity standard and we had the incentives that were put on the books in order to give incentives for States and individual companies to deploy renewables; if you look at the State of Texas having the legislature authorize $5 billion to build a transmission system out to the west in the State to capture the wind and the solar; if you look at Florida Power and Light initiatives—how many new megawatts of solar in Florida, Mr. Robo?

Mr. ROBO. One hundred ten.

Mr. MARKEY. One hundred ten.

You can see that all over the country there is massive new interest.

And, Dr. Kunkel, you have a technology that you believe is going to give coal a big future, as well, because you believe that we can capture the carbon that is generated from coal burning; is that correct?

Mr. KUNKEL. No. That is right. And we think there are technologies we can get financed and go to construction next year.

Mr. MARKEY. I am feeling so good, you know, after this panel. And that is why I do want a second round. This is just—you know this is—you guys are like walking antidepressant pills sitting at this panel. So thank you for coming in today.

Mr. Trisko.

Mr. TRISKO. Thank you, Mr. Chairman. We didn't comment directly in our prepared statement on the RES requirements, but your question recalls——

Mr. MARKEY. Can I say this, that was not a question. My question there was in the form of an answer, okay, so I was just laying out what the answer is going forward.

But you can take it as a question, and please comment.

Mr. TRISKO. I will interpret it as such, Mr. Chairman.

It calls to my mind Commissioner Kerr's comments regarding the effects of a cap-and-trade program on providing significant incentives in the market to bring new renewable energy supplies on; and that very much will be the case, particularly if allowances, as we advocate, are given to the wires companies and to the distribution companies.

The first power sources that they will want to obtain to sell to their customers will be power sources for which they don't have to give up an allowance, that are zero carbon-based sources. So that will create the correct market incentives in the resource, the renewable resource-rich States that the Commissioner referred to, in order to develop those in a very cost-effective and rational manner.

Mr. MARKEY. Thank you, sir. Very much.

So in listening to the testimony—and, Mr. Robo, you are making money on this all across the country. You are very optimistic about the vast capacity for our country to generate electricity from renewable sources?

Mr. ROBO. That is right.

Mr. MARKEY. It is going to be a profit-making business?

Mr. ROBO. It is a profit-making business and—you can be successful being green, and I think that has been a critical part of our strategy over the last decade.

Mr. MARKEY. Thank you.

And again back to you, Dr. Kunkel. Do you have reason to give really a sense of confidence to the coal miners, to the coal industry that there is a real future ahead for them, and the technology will catch up and make them compatible with our goals in reducing greenhouse gases?

Mr. KUNKEL. We do look at it differently. We are developers of power projects. That is what we do for a living. And for us, the impediment is not these rules, but the lack of rules. What we need is a set of rules where we can move forward. We can finance projects knowing what the rules are going to be in the future. And in the absence of those rules, is quite an impediment to coal-based development.

Mr. MARKEY. So in your opinion the best friend of the coal industry will be that we put predictable, consistent rules on the books and then the technology will come into place that makes that electrical generating source compatible with the goals that we are setting for the country?

Mr. KUNKEL. I think there have been legitimate concerns about the viability and the technology. Things that we are doing are going to be, you know, many times larger than the next largest one.

And so we do need some time to go through this scale-up process, but we are convinced we can do it. And we can move forward. And

then once those pioneering projects have demonstrated themselves, I think the opportunities for broad deployment are definitely there.

Mr. MARKEY. Great.

And again, I would like—and maybe, perhaps you, Mr. Briggs, you could deal with that decline in the cost of generating renewables that Mr. Robo was talking about earlier, this 25 percent decline that has occurred over the last decade.

Do you see the same thing happening over in CCS? Do you see the—kind of the once the marketplace established that we will see a development of a technology, but then a decline in cost curve for the deployment of that technology?

Mr. BRIGGS. I believe so, yes. The main thing is to get out there and start getting on the learning curve. I wanted to go on record and answer the question you just asked. Yes. Yes.

Mr. MARKEY. Thank you, sir.

Mr. BRIGGS. The technology is there today.

Mr. MARKEY. Thank you. My time has expired.

Let me turn and recognize the gentleman from Texas, Mr. Burgess.

Mr. BURGESS. Thank you, Mr. Chairman. I don't want to create any new depression for you, but actually——

Mr. MARKEY. He is a physician so he won't do it. I know he won't do it.

Mr. BURGESS. I find myself agreeing with you.

Mr. MARKEY. It is the Hippocratic Oath.

Mr. BURGESS. I am so happy that you have recognized the vision and contribution of not just our current governor of Texas, but our former governor—that would be George W. Bush—who had the foresight and vision to create this renewable portfolio and standard which allows us to be the number one wind-generating State in the country.

Mr. MARKEY. I come here to praise Governor Bush for what he did in the 1990s.

Mr. BURGESS. And I will have to tell you too, I didn't expect to be encouraged today, but I have been. It is probably more muted than your encouragement.

But, Dr. Apt, your testimony—and I really appreciate your honesty and recognize that there are a lot of areas where we disagree.

But your last two thesis statements that you have in your written testimony, that you related to us, probably may be the most important testimony that we have received in the last 1,000 hours of testimony we have had on this subject in this committee: Focus on reducing carbon dioxide rather than singling out renewables as the answer. The simplicity is almost—I am going to use it like a—as a haiku or something that I can repeat for myself.

This is the correct direction for us to go. I have been terribly disturbed by what I see are some of the inequities in the draft language for a State like Texas that has made the incredible investment to get to where it is. And yet if we have the federally mandated renewable energy standard, we may not produce a percentage that is going to be required, although as far as the number of megawatts we are producing with the renewable energy, we are far ahead of everyone else.

But your concept of, let all technologies compete in satisfying the goals would mean to me then that the technology of energy conservation and some of the newer things that are happening with attic systems and insulation, low-heat glass, high-efficiency air conditioners, tankless water heaters, those should be eligible to be considered just the same as the newest nanotechnology, photovoltaic solar cell.

So I am encouraged when I hear you say that. Unfortunately, the chairman was out of the room. That is why I wanted to be sure I repeated it; the chairman was out of the room when you gave your testimony.

I think this is something that I would like to see us work on in that draft language, to limit the number of—the percentage that a State like Texas could take credit for in creating efficiencies does not seem to me to be fair; the creation of a standard that is almost unattainable in a State that is as large as Texas and produces as much power as we do, those concepts have been very troubling to me, that we may mandate a Federal system that sends our already robust State system and moves it into a condition of noncompliance or one where our ratepayers may be punished because we can't quite get up to the percentage standard.

I am and I remain concerned about some of the distributional problems we have—again, a State as large as Texas.

Mr. Reicher, I apologize. I was out of the room when you gave your testimony, but picking up on what you were discussing with Mr. Walden, clearly there are more innovative ways of going about site and providing the transmission capacity than what historically has happened in the past. And our good friend, Boone Pickens, back home, who is anxious to get his electrons from Amarillo back to the Metroplex, perhaps there are ways to do that without disrupting all of the farmers and ranchers and landowners who live betwixt and between, and that has been the tension and that has been the problem. And then, of course, it is not just Amarillo and Dallas. It is out Interstate 10 and back to the Houston metropolitan area, the San Antonio metropolitan area.

So we have a lot of wind generation capacity. It is just not where the folks are, and then bringing the electrons back to where the folks are has been the challenge. Not that they haven't made great strides; in the last 10 years, they have.

Yes, sir.

Mr. REICHER. Congressman, by way of another antidepressant, let me point out that your State of Texas—I am looking at actually the resource map for enhanced geothermal systems. You have an extraordinary resource in Texas. Your total generating capacity today is about 100,000 megawatts; that is all sources—coal, gas, wind. Two percent of your EGS, Enhanced Geothermal Source, would represent over 175,000 megawatts.

I learned something that you probably know well. You have a quote-unquote problem in Texas called "hot oil." It turns out, what hot oil is is when you drill down you find high temperature oil in many parts of the State, and that is because there is a really robust geothermal resource down there.

What oil companies in your State are now beginning to look at quite carefully is how can we both continue to extract oil and gas

but how can we also begin to develop the geothermal resource? And, as I say, yours is a very vast one. It is well distributed. You would reduce the need for transmission.

So I actually think you can get to a 25 by 25 quite read readily. Given the wind resource, given this geothermal resource, given the solar resource, you can get there and you can be making money at it.

Mr. BURGESS. I don't disagree with that. But I would also—to Dr. Apt's point, there is no point in discriminating one technology over another. If we have two nuclear plants, one which is being doubled in size over the next several years, why not get credit for that as well? If we have a robust program in going back and retrofitting homes with energy, products of increased energy efficiency, why not get credit for that as well?

Mr. REICHER. You do, absolutely. The RPS, as written, would allow you to get one-fifth mandate through energy efficiency. That is, in fact, quite clear and, in my mind, quite an improvement.

Mr. BURGESS. Let me just ask a question of Dr. Apt.

The fact that it is restricted to one-fifth, does that really comply with your philosophy of treating all carbon equally?

Mr. APT. My view is that renewables are absolutely a part of the solution. But by mandating a particular technology, whether it be EGS or solar or biomass, you are constraining the problem so that you increase costs and may have other effects.

EGS, the big effect in Texas will be water. I think that, in general, you have got to focus on one issue, and here it is reducing CO_2.

Mr. BURGESS. And if we use the reduction of CO_2 as the currency, then—whether it is from energy efficiency whether it is from other areas; it does not all have to be wind, solar and biomass. New hydro.

Yes, sir.

Mr. KERR. If I might add, one of the points I wanted to make, if you are going to have an RES, it will be favored and disfavored States based on the availability of the paper technologies. If you are going to have an RES—and again I am not sure if it is consistent with the cap proposal—but if you would allow efficiency to operate in an unfettered manner, efficiency is available everywhere. It should be put on equal footing with generation, would smooth out some of those resource discrepancies and then the associated costs, inefficiencies and discrepancies.

If you are going to persist, and I am not sure you should, I think it would be a huge improvement to allow efficiency to operate in an unfettered manner.

Mr. BURGESS. I really think it is the common ground that I have with Mr. Markey. And you can see I have depressed him by going over time.

Mr. MARKEY. Not at all. Again, I have nothing to do. I am willing to go on indefinitely on this subject. I love this subject. I find it exciting.

So the gentleman from Utah, Mr. Matheson.

Mr. MATHESON. Well, thank you, Mr. Chairman.

Ms. Grueneich, I should tell you, as someone who represents a large public land State, your comments about the challenges of

dealing with Federal lands agencies and permitting are certainly—I am sympathetic to what you are saying. I think as part of a discussion about encouraging opportunities for new types of generation, renewable energy to have an opportunity to get to market in this country, we do have to have a serious discussion in this committee and legislation about how to encourage siting of transmission, because it is not happening now. And there are impediments to it and I think it is something where the draft legislation is a little light right now.

So any suggestions people have in that to beef up that part of the bill, to encourage development of transmission infrastructure, I think would be very welcome to everyone. I think that is one of the least—I think everybody on this committee, actually on both sides of the aisle, has a pretty strong feeling about the need for enhanced transmission infrastructure.

At the risk of going a little bit off topic for what this panel was asked to talk about, which was low-carbon electricity and carbon capture and storage and renewables, I wanted to at least frame the issue as also associated with the renewable fuel standard that was passed by this Congress previously.

Do you think that this legislation ought to revisit that issue? And I may be asking this panel the wrong question. But it seems to me that the corn ethanol policy we had in this country is actually creating far more greenhouse gases in the life cycle context than people first anticipated. A lot of organizations have come up with information to help validate that.

The subsidy of corn ethanol, in my opinion, is—personally, I think it is bad Federal policy at this point. Do people think that we ought to take a look at opening that up as part of this effort as we look at broad-based energy legislation? And again, I apologize if folks on this panel, it is not their area of expertise. Has somebody got a thought on that?

Mr. HAWKINS. Thank you, Congressman Matheson. I am Dave Hawkins from NRDC, and NRDC is part of U.S. Climate Action Partnership, and USCAP has recommended a low-carbon fuel standard and recommended that it be one that is implemented as we transition from the renewable fuels standard.

Mr. MATHESON. Right.

Mr. HAWKINS. And the speed of that transition, the timing of that transition, the conditions of that transition are things that this committee will need to wrestle with. But we do think that having a low-carbon fuel standard that applies to all of the transportation fuel options, including electricity—which actually does connect to the topic of this because if we do produce electricity with carbon capture and storage and use it to run plug-in hybrids, we can back out oil that way, as well, and that should be regarded as a low-carbon fuel.

Mr. MATHESON. And I concur. I think the low-carbon fuel standard is the way to go and I think that the current RFS should be phased out so I think that is helpful.

Mr. APT. May I make one comment? We have done some analysis of the California low-carbon fuel standard. It is superb. It is really an excellent way to reduce greenhouse gas. And it has the right structure.

Ms. GRUENEICH. And here I was going to just bring it up. So I will defer to Dr. Apt.

Mr. MATHESON. But I think it is consistent. As you said before, you are not picking a specific technology; you are saying, set the standard and let the market figure out the best way to reach it. I think that that is what we have seen, as opposed to Congress saying, Oh, well, let's make ethanol from corn.

Mr. APT. Let me make just one remark that harks back to something that was said earlier about transmission.

Bringing in the folks early is really crucial. A Federal eminent domain is unlikely to do anything more than get people to dig in their heels. It is just not going to go down that well.

Mr. MATHESON. Well, those are fighting words where I come from: Federal eminent domain.

Mr. APT. You know what actually happens, when you look at a lot of the transmission that has gotten built is that people monetize their pain. And it happened in Connecticut with a crosstown cable; it is happening in West Virginia with AEP's line. And folks get involved and they get their pain recognized. They get people to respect them, and then the transmission gets built. It doesn't get built with eminent domain.

Mr. MATHESON. Okay. Mr. Chairman, my time is about to expire. I will yield back. Thanks.

Mr. MARKEY. I thank the gentleman.

So we need Dr. Burgess back again because now we are at the pain management.

But it can be managed. Okay? Willing to pay the price?

The gentleman from Florida, Mr. Stearns.

Mr. STEARNS. Thank you, Mr. Chairman. And I obviously welcome Mr. Robo, who is CEO of Florida Power and Light. I don't know when you got hired whether they told you this is part of your job description to sit here on a Thursday afternoon at 5:15 answering these questions. But we appreciate your being here.

And also Florida Power and Light is one of the leaders in Florida in renewables. So that they are in a way ahead of the curve. So they saw this in advance.

But my question is for Mr. Hawkins and Mr. Kunkel. In Poe County, Florida, which is a little south of my congressional district, we have a state-of-the-art coal gasification plant that has successfully produced electricity since 1996. This technology is well suited to carbon capture. And so as we look to coal gasification and other clean coal technologies as part of the climate solution, the question would be, what do you see as the best way to incentivize these technologies so that we can continue to have them available, considering their efficiency?

Mr. HAWKINS. Thank you, Congressman Stearns. Yes, the Poe County plant run by Tampa Electric is certainly one of the leaders in doing gasification in the United States and one that has provided a great deal of operational experience. The first couple of years of that plant had some operational difficulties, but they have learned how to run that plant, run it reliably.

I think that their testimony today, if they were here, would be that it is the most reliable unit on their system and the one that is dispatched the most. It was built with some Federal support. It

doesn't capture its carbon. And if we want to create a structure that will allow plants to be built that actually capture their carbon, then we are going to need the kind of policy package which is in the Waxman-Markey discussion draft, a policy package that combines clear regulatory requirements both for the storage of the CO_2 and also for the performance of the new coal-fired power plants and coupling it with financial incentives that are bankable financial incentives for the early deployment opportunities in this area.

And it is very important that they be bankable, which means a different model than applying to the Federal Government for an award and hope that you win. The odds are better than the lottery, but they are not all that much more certain than the lottery.

We need something that—if you want to go to Wall Street and get your project financed, you need something that is better than the lottery. And the structure that is in the Waxman-Markey bill I would commend to your consideration because what it says is that if you have a project which captures the CO_2, you are entitled to get a payment of X dollars per ton, captured.

There is no government uncertainty there. There is no sort of, you know, "file your application and hope that you win the lottery." You have an expectation that you can go to Wall Street with, and that will help finance the project.

Mr. STEARNS. Why haven't the folks in Poe County done this?

Mr. HAWKINS. We don't have the policy enacted yet. But with your help, maybe they will.

Mr. STEARNS. So you say you need a policy before you do it with the coal sequestration or the carbon capture? You wouldn't do this on your own; you would need the incentives?

Mr. HAWKINS. That is exactly right. We operate in an electricity generating system where the marginal operating costs determine how much the plant gets run. And if you don't have the marginal operating costs covered for this additional cost of capturing the carbon, then you are not going to install that kind of capture. It will only happen if you get the economics right. And for the early projects, that means that you need a financial incentive payment.

Mr. STEARNS. Mr. Trisko, I was going to ask Mr. Kunkel and then I will ask you. Thank you.

Dr. Kunkel.

Mr. KUNKEL. Yes. I really agree with that very much. The types of project development we do are project-financed projects. In other words, we will sell the entire output of electricity for a 25- or 30-year project life right up front with our, you know, some customer to whom we are selling this power. And then we will operate that plant for them over the long term.

These are large, large financings. Each of these projects we are working on is over $3 billion. So these are very large financings. And one of the things that is happening to us in looking at this future commodity market of carbon dioxide is that it will be a highly volatile potential commodity market.

So if there are incentive systems that give us kind of a known stream of financial support for these new technologies, and early on, the program when—if it is designed right, carbon prices should actually be pretty low. If there is a known stream for that, then that is something I can take to my finance guys to put in their pro

forma, and they can persuade investors and lenders that that is real.

So those aspects are critical to really moving these projects forward.

Mr. STEARNS. Mr. Trisko.

Mr. TRISKO. Yes, Congressman. Thank you.

And I have also had the pleasure of visiting the Poe County plant. It is a marvel of technology. I was just going to point out that we have a precedent in Title IV of the Clean Air Act, in the acid rain title that was added in 1990 for the provision of bonus allowances for utilities that employed scrubber technology early in Phase I rather than later in Phase II, and that bonus allowance program was so popular that it was oversubscribed.

It was known before the allowances were to be given out that there was more demand for them than supply. And the Utility Air Regulatory Group basically did an allocation of the available pool among its membership so that everybody had certainty as to the amount of allowances that they would receive. And that pool, which was not nearly as large as the one that the United Mine Workers had advocated, was responsible for putting about 13 gigawatts of scrubbers on in Phase I rather than waiting until Phase II.

Mr. STEARNS. Thank you.

Mr. Briggs wants to answer and then thank you, Mr. Chairman.

Mr. BRIGGS. Very briefly Congressman. I concur with the MLDC's comments and also add, if one of the reasons why, in the early phases of these projects, you are looking for all the value you can get to supplement the value of CO_2 as a commodity value in the absence of incentives.

And it is obviously dependent on States. One of the reasons we are in California is, you are looking at States who will go ahead of that policy mechanism and take the lead.

Mr. STEARNS. Thank you, Mr. Chairman.

Mr. MARKEY. Could I just ask, Mr. Robo, what do you think by 2025 is the achievable goal for Florida under a national renewable electricity standard? Do you think Florida has capacity for 25 percent of its electricity to come from renewables?

Mr. ROBO. Chairman Markey, I am very bullish, solar PV economics. And we have seen just in the last year the cost of solar photovoltaic come down from July—from our first project to the ones we are proposing right now—come down from 20 percent; and I think by the middle of this decade we are going to see grid parity with solar PV in Florida.

And so I think we have a real opportunity to have a big penetration of solar in Florida, but certainly by the middle of the next decade.

We have been very——

Mr. MARKEY. By 2025. But by 2025 do you think 25 percent is possible?

Mr. ROBO. I do think it is possible, depending on how quickly the technology comes down the cost curve. But I have been—actually, I have been personally surprised at how quickly it has come down.

Mr. MARKEY. But is your gut now telling you that that decline in the cost curve now is now inexorable, and you can see how their economies of scale are kicking in?

Mr. ROBO. Yes. Yes, sir.

Mr. MARKEY. The Chair recognizes the gentleman from Vermont, Mr. Welch.

Mr. WELCH. Thank you, Mr. Chairman.

The discussion draft includes energy efficiency resource standards, as you know, requiring the utilities to achieve a certain level of electricity or natural gas savings. In many cases, energy efficiency measures more than pay for themselves by reducing electricity bills. Not all, but I want to ask a couple of questions about that; and I will start with you, Ms. Grueneich.

California has its own energy efficiency resource standards, so you have had some experience with this type of policy. Do you think that the energy efficiency resource standard in this discussion draft strengthens our prospects for success?

Ms. GRUENEICH. Absolutely. The energy efficiency performance standard is certainly among the top three items that need to——

Mr. WELCH. I would like to elaborate on this because the debate we are having here is whether the action we take creates jobs or causes jobs, reduces costs or increases costs. And we are deeply divided on that. And those States that have taken steps that we are proposing be taken nationally are in a special place, I think, to offer some practical experience.

Ms. GRUENEICH. Certainly.

First of all, we in California, as in—everywhere in the United States and just about everywhere in the world, we are in terrible, terrible economic times. I haven't heard one person say, "And the reason why California is having all these problems is because you have got ahead of the country on clean energy." I mean, the economic problems we are suffering from are not stemming from the fact that we have engaged in clean energy. In fact, a lot of the jobs that we have that we still have are because people are still pursuing energy efficiency; and they are expanding because people are looking at installing solar.

And so the whole job conundrum actually, I think, in the little bit I have been listening yesterday and today, to me is turned around, quite frankly. We should be looking at the jobs we have been able to grow. And here, just quickly, a study that came out from the University of Berkeley for the jobs that we have created in California over our—from 1972 to 2006—on our energy efficiency is that we have created about 1.5 million full-time equivalent jobs with a total payroll of over $45 billion, driven by well-documented household energy savings of $56 billion.

As a result of this, it was able to direct a greater percentage of its consumption to in-state employment-intensive goods and services, whose supply chains also largely reside within the State, creating a multiplier effect of job creation.

I want to take a moment to recognize Vermont. You have got a terrific energy efficiency program and you are doing the same thing too. You are keeping the jobs within the State and growing them. And that is what this is all about.

Mr. REICHER. Congressman, could I add that——

Mr. WELCH. I was going to ask you a different question, Mr. Reicher. Good to see you.

Mr. REICHER. Good to see you, Congressman.

Mr. WELCH. Some folks are arguing we should just include efficiency in the renewable electricity standard and skip the energy efficiency resource standard. And I am asking your thoughts on that.

Mr. REICHER. I think that what is proposed makes sense, both standards, but with a—the carve-out of around 20 percent within the renewable energy standard. I think that how those get integrated is not completely clear in the bill right now and needs some further fleshing out. But I think the two concepts, as multiple States have adopted renewable energy standards—as we know, multiple States have adopted energy efficiency resource standards; they are working well—I think it makes sense for the Federal Government to step up and do both, but as I say, make sure that there is integration across there.

I just wanted to add one quick thing about energy efficiency. The hot new opportunity in the venture capital—the clean technology venture capital world right now is indeed energy efficiency. As we sit here in Washington, there is a whole conference out in California called the Energy Efficiency Finance Forum. This is bringing financial people to the table saying, all right, how can we bring even more capital to energy efficiency? Because that is the low-hanging fruit right now.

And California, as the Commissioner said, has made great strides keeping energy use flat per capita for the last 20 years while it has grown 50 percent in much of the rest of the country.

Mr. WELCH. Okay. Thank you.

Mr. Robo, how do you see the renewable electricity standard? Bottom line: job creator or job killer?

Mr. ROBO. We see it as a large job creator, Congressman.

Mr. WELCH. Thank you.

I yield back. My time has expired. Thank you.

Mr. MARKEY. The gentleman from Oregon is recognized for a second round.

Mr. WALDEN. Thank you, Mr. Chairman. I want to pick up on a couple of comments here. Ms. Grueneich, you talked about how we can create and grow jobs. I want to get back to my soap box on biomass. I can't resist because Harney County, Oregon, is up to seasonally unadjusted 20 percent unemployment; Oregon is second to Michigan in unemployment overall.

My district has 11 national forests. There is a lot of interest in biomass. But when you have got a county that is 70 or 80 percent controlled by the Federal Government and you have got 20 percent unemployment, they don't get where Mr. Hawkins is coming from. And why when you have a forest like this—may look good on a poster like that, but it is completely out of sync with nature in terms of being managed for old growth characteristics for Ponderosa pine. That is a fire waiting to happen.

That forest, exact same scene, has now been thinned. And that is how an old growth forest should be managed.

The issue before us is, after you have done this work and thinned it out to where the biologists and botanists and everybody else say it should be, why shouldn't you be able to take the waste material that came out of that thinning project and have it count toward biomass in renewable energy? And this is the frustration we have.

There was a biomass facility with green investors ready to go into Harney County, who could not get a guaranteed supply of woody biomass to make their investor satisfied. And yet the forest there, at the rate they are treating, will take 25 to 28 years at the current rate of treatment to get it in balance.

So you see why they don't get where Mr. Hawkins' organization is at when it comes to saying, nothing off this Federal ground can you count as woody biomass for renewable energy consideration? Does California have that standard?

Ms. GRUENEICH. I honestly don't know. I will be happy to look into it.

It seems to me that the difficult issue here is the balancing that we know forests are a way in which we are helping to reduce greenhouse gases because of——

Mr. WALDEN. If they are properly managed and don't go into fire.

Ms. GRUENEICH. And what we want to avoid doing is on the one hand having more forests cut down in order to then produce the biomass fuel to meet the renewable standard to satisfy the climate change, and then on the other hand to think about how are we going to continue to have sustainable forests.

I am not a forestry expert, so where you draw the line going into the forests or not——

Mr. WALDEN. Here is the deal. Here is the deal. This legislation is so poorly written on those areas.

First of all, it directs the Departments of Interior and Agriculture to come up with adaptive management plans for the forest dealing with carbon and do so in 1 year. Each forest already has to come up with its own management plan, follow full NEPA, and that is just to do the planning process. Those often take 5 to 8 years, to develop a 10-year plan. I am not making this stuff up.

Ms. GRUENEICH. That, I am aware of.

Mr. WALDEN. You understand this.

So this legislation says to every agency in all Federal ground, you will create a plan in 1 year and report back. That is just never going to happen. I mean these timelines in this bill are embarrassingly poorly constructed, to be honest with you.

But then I go to like page 368 and it talks about electricity sources. And it excludes renewable biomass from, I guess, the base load. And have you all by the way read the full text of the bill? I have asked every panel this. Yes or no.

Have you read the whole bill, Dr. Apt.

Mr. APT. I read the parts a nonlawyer can understand.

Mr. WALDEN. I stayed in a Holiday Inn, but I am not even a lawyer. Mr. Kerr.

Mr. KERR. Not all parts.

Mr. BRIGGS. Not all parts, no.

Mr. TRISKO. Not all parts, sir.

Mr. HAWKINS. I have got mine already tabbed and indexed.

Mr. WALDEN. So you have read the whole bill?

Mr. HAWKINS. I have skimmed the whole thing and some pages faster than others.

Mr. WALDEN. I understand. I am struggling too.

Mr. KUNKEL. Not all parts.

Mr. ROBO. Not all parts.

Ms. GRUENEICH. Just about the whole thing, but I have to confess, I think I skipped over the biomass definition.

Mr. WALDEN. Go back to that.

Mr. REICHER. 648 pages. I have looked at every page.

Mr. WALDEN. Yes, sir.

Mr. GRUENEICH. Absolutely not.

Mr. WALDEN. Perfect. All right. As I say, I wore out one pair of reading glasses. I have got another in my desk.

I am trying to figure out, even on page 368 when it talks about compliance obligations and then talks about electricity sources, it excludes renewable biomass as an electricity source.

Now renewable biomass is already defined early on to be all—to exclude all Federal lands and all this. So can somebody tell me why renewable biomass would be excluded in this electricity source?

Mr. HAWKINS. I can answer that one.

It is because if you make electricity from renewable biomass, you don't have to turn in an allowance. This is the compliance obligation section of the bill, and this is a benefit for renewable biomass.

Mr. WALDEN. Okay. Good. But now we know that if you make it from woody biomass off Federal ground, which is occurring in my district now, where they are heating—they replaced an oil-burning stove in a high school in Enterprise; using hog fuel wood chips, they are saving an enormous amount of fuel, replace it with wood, very few emissions, a lot less than that, it doesn't qualify. How does that make sense?

Mr. HAWKINS. Well, you know what I would say? These hearings are educational experiences for the witnesses sometimes too.

And you have obviously thought a lot about this issue, Congressman. And I am not the organizational expert on the biomass issues. But if you have the time, we would very much like to come in and visit with you.

Mr. WALDEN. I would be happy to do that. My door is always open.

Because the hospital in Harney County, where this biomass—they switched to a wood pellet-burning stove, and they cut their fuel costs by two-thirds. And DEQ, our Department of Environmental Quality—at least the hospital folks told me this—it has virtually no emissions; and they take out a garbage-can size of ash every 2 to 3 months, and it is from wood chips.

In Sweden, 18 percent of their renewable energy now is from woody biomass.

You have said, from the energy information, this is where we are going. We have got the Federal land, 47 percent of the Forest Service budget spent fighting catastrophic fire. You know that in California. We know that in Oregon.

And my time is way over. You have been most generous, sir.

Mr. MARKEY. I am learning a lot too. It is an interesting subject.

Does the gentleman from Vermont wish to be recognized again?

Mr. WELCH. Thank you, Mr. Chairman.

I want to talk a little bit about carbon capture sequestration, and address my questions to Mr. Hawkins.

Mr. Hawkins, I just wish if you would elaborate on why U.S. Cap members believe that we need a set of complementary policies in place for carbon capture and sequestration and, more broadly, I

guess, for coal; and, what would happen if we don't have a comprehensive approach?

Mr. HAWKINS. Yes. The cap-and-trade program by itself in the early years, especially one that has a substantial number of offsets and cost containment provisions, is likely to have a fairly modest economic signal. And as Dr. Kunkel and others have testified, these early projects, whether it is for carbon capture or some advanced forms of renewables, these early projects are likely to have incremental costs that are higher than the carbon clearing price in the early years of these programs.

So if you rely solely on the market signal from the cap as the only device, you are likely to get a bunch of decisions which look optimal from the standpoint of the individual investor, but in fact, are suboptimal from the standpoint of where society needs to head.

We have got to—this is a marathon. Controlling carbon is a marathon. And if you run it like a sprint, which is what tends to happen when you have these short-term economic signals and a high discount rate, you are not going to finish the race.

So we tend to think that having a multiple set of strategies, which are enabled by the bill and incented by the bill, is very powerful. I say that a bicycle is more stable than a pogo stick, a tricycle is more stable than a bicycle, and a wide-stanced four-wheel vehicle is more stable than all of them. And we have a bunch of platforms here that can be used to drive home CO_2 reductions.

And so my variant on Dr. Apt's point is, yes, the focus needs to be on CO_2, but sometimes it is good to have a turtle strategy, have a lot of eggs on the beach, because you are not entirely sure right now what is going to be the one that is going to get you to victory, and you probably need more than one. And having a strategy that gets all of these in the game so that you have as many things to pick from we think is the right way to do it.

Mr. WELCH. So just describe, what will happen with the deployment of the new coal-based power plants these provisions are adopting? And one of the concerns folks have been—things we need to do, one of the concerns folks have expressed is this dash for gas and what the displacement would occur and how that would affect the price in a very disruptive way. Could you comment on that?

Mr. HAWKINS. Yes. We discussed this at great length in the U.S. Cap group, and everyone was concerned about the dash to gas being something to be avoided. And that is why there is a package that says there is an emission performance standard for new coal and there is a financial incentive, the stream of payments for carbon capture. And our view is that that payment stream ought to be sized at a level where an investor that is looking at a fossil investment plant says, you know, this is a better business proposition to build a coal plant that captures its carbon and we get that financial incentive than it is to build a natural gas plant that vents its carbon and we get no financial incentive.

Mr. WELCH. And there has been lot of concern raised about the timing of the deployment of the carbon capture and storage technology, saying that commercial deployment is not expected until 2025. But those estimates assume there is no cost to emitting global warming pollution, no requirement to use carbon capture and storage technology, and no significant financial support for the

technology. What do these estimates tell you about the timing for deployment of CCS technology if this legislation in its draft form or close to it is adopted?

Mr. HAWKINS. Well, what we do is pay attention to witnesses like Dr. Kunkel from Tenaska and Hydrogen Energy. And Dr. Kunkel has testified that they could break ground next year on their project if they have the right policy support, and that could be up and running as fast as any coal plant that breaks ground next year.

Our view is that this can happen very quickly. There are a bunch of commercial operators that are ready to go as soon as the policy signals get straightened out.

Mr. WELCH. Mr. Trisko.

Mr. TRISKO. Congressman, if I could elaborate on David's point.

First, from a practical standpoint. If you were talking about having a plant, an operating advanced coal plant equipped with carbon capture and storage that was online and producing electricity in the year 2020, that plant in effect would need to be in the permitting stage today leaving aside all of the issues concerning financial incentives in the bill and the like. To get a plant on line by 2020, the plant needs to be in permitting today. We do not have at this point, beyond the number of plants such as AEP, the Duke plant, the Tenaska facilities, we do not have any assurance of significant penetration at a commercial scale by the year 2020 beyond the kind of three gigawatt level that is proposed in the Boucher bill. And the Boucher bill is designed to handle the demand, if you will, for commercial scale demonstration facilities between now and 2020. It is after the year—it is after the year 2020 when we would anticipate that the second suite of financial incentives, those that are to be defined by what is now the open-ended section 115 that David has spoken about, those plants would come online after the year 2020. And the indications are that there would be significant demand for them going out to 2030 and 2040.

Mr. WELCH. Dr. Kunkel, do you agree with the 2020 timeline assessment?

Mr. KUNKEL. Well, not for us. And, of course, we are in permitting, and our project in Illinois has received a permit and so on. And, of course, it does take time to develop these projects.

One of the things I would point out is that in the post-combustion capture technologies that we are looking at as opposed to IGCC, that the period of time required to build that piece on the back of an existing power plant as a retrofit might be something like two and a half years of construction time. I mean, these things all take significant amounts of time. But it is less than the full construction cycle of a power plant.

So if we could demonstrate that technology at commercial scale, let's say, at Trailblazer, by 2015, and run it for a year and convince people this really works, then the designs and so on could be perfected and a new generation could be online and operating as retrofits within a couple of years after that point. So maybe that gets you around to the 2020 time frame for that. But, maybe let hydrogen energy talk more about the IGCC opportunity.

Mr. WELCH. Yield back to the chairman.

Mr. MARKEY. The gentleman's time has expired. The Chair recognizes the gentleman from Texas.

Mr. BARTON. Thank you, Mr. Chairman. I really came down here just to ask you to give this panel a meal voucher since they have been here all day and probably didn't get to eat much lunch or whatever. But as long as I am here, I thought I would ask one question.

I want to ask Dr. Apt, I believe—first, thank you for your service to the country as an astronaut and all that you have done. But I am told that you testified that you think a performance-based standard based on the Clean Air Act model is much better to use in terms of some very complex cap-and-trade scheme. I just got a synopsis of Congressman Boucher's letter to Congressman Waxman that is single-spaced, four pages of changes to the proposed cap-and-trade legislation. And that is just a summary of the changes.

So, in the Republican alternative that has yet to be unveiled, we are waiting to see the allocation scheme in the main bill, but we are going to have a Republican alternative. We use a performance-based standard for coal based on the best available clean coal technology, and then put some incentives in in terms of beating that standard of accelerated depreciation so that we could encourage new technology but at the same time allow coal to be used as a fuel source for electricity. Could you comment on that?

Mr. APT. Sure. Thanks very much.

In my view, best available technology has frozen technology in a lot of areas. I would encourage you to look, rather, at an emissions standard that lowers with time. As you know, the California standard is 1,100 pounds per megawatt hour. That has the effect of saying, okay, we will freeze things at natural gas or better. And that is okay if you just take a snapshot in time. But it would be better if it declined in time so that you know you have got to take 80 percent of the CO_2 out of the electric power industry by let's say 2040, 2050, so that if you had something like that that declined, then Mr. Briggs' plant that emits 400 pounds per megawatt hour looks pretty good.

On the other hand, if you think it is going to freeze at 1,100, it doesn't look so good. So that is a modification that I hope you would consider.

Mr. BARTON. Thank you, Mr. Chairman.

Mr. MARKEY. Does the gentleman from Vermont have any other questions? Okay. Well, let's do this then, with my apologies to the ranking member. I was going to give each one of these witnesses one minute to tell us what they want to remember. But given the size of the panel, that is double the time which any member would have to question a witness. But, with unanimous consent, I will make that motion that we give each one of you a one-minute opportunity to tell us what it is that you want the committee to retain as we go through the drafting and ultimate markup of this legislation. We will go in reverse order of the original panel. And we will start with you Dr. Apt.

Mr. APT. Well, since I have got to go back to Pittsburgh, I will be short. Two things. Focus on CO_2. Renewables and low carbon aren't synonyms. And two, allow efficiencies all through the sys-

tem, generation and transmission, as well as on the customer side of the meter, to count.

Mr. MARKEY. Thank you. Mr. Kerr.

Mr. KERR. I would adopt those two points. And I would also say focus on what you are trying to do, and not put inconsistent or contradictory pieces of policy together in a way that will operate to make things less efficient, more expensive to ratepayers. And, also, that aren't just jobs following renewables, there are jobs that are followed by CCS and nuclear and other noncarbon-emitting technologies. And a job is a job. They don't distinguish between renewable jobs or CCS or other sorts of jobs.

Mr. MARKEY. Thank you. Mr. Briggs.

Mr. BRIGGS. Well, first of all, I am very pleased that CCS seems to be given as part of the mix. I would also say there is a distinction, we haven't really touched on it too much, between our technology and Tenaska's technology pre and post. It doesn't really matter. CCS is available today. But I think the right incentive mechanism is important as we have covered, I think. And then one regulator to cover the actual policy framework around it is also vital.

Mr. MARKEY. Mr. Trisko.

Mr. TRISKO. Ensure that the targets and time tables that are adopted in the bill, particularly in the short term, are consistent with the expected widespread availability of CCS technology, so as to avoid the result, for example, evident in EPA's analysis—preliminary analysis of the bill that suggests that generation from fossil-based electricity would decline from 4.3 terawatt hours in the year 2050 to 1.3 terawatt hours in the year 2050 under scenario three. That, to us, is an unacceptable outcome.

Mr. MARKEY. Thank you. Mr. Hawkins.

Mr. HAWKINS. First, I would say avoid focusing on technologies, but keep in mind the facts on the ground that need to change to cut carbon emissions. And I feel quite confident in predicting that, regardless of technology pathways, 50 years from now we are going to have electricity, we are going to have vehicles, we are going to have fuels, and we are going to have buildings. And we need strategies that are going to drive decarbonization in each one of those areas. And you have got a lot of policies in the bill that are aimed at doing just that, and there can be good and useful debate about how to focus on harmonizing those so they integrate well. But those are the four big linemen that we have to think about, electricity, vehicles, fuels, and buildings.

Mr. MARKEY. Thank you. Dr. Kunkel.

Mr. KUNKEL. One of the most relevant things we can do as Americans on this large problem is to tackle the problem that the Chinese and Indians will have, which is CCS, basically. They are building a lot of coal-fired power plants, new ones, pretty good ones I bet, and improving ones. But they don't have this technology. If we can find cost-effective ways to employ it, if we can develop that, then that will be a huge contribution.

Mr. MARKEY. Thank you. Mr. Robo.

Mr. ROBO. Enacting a renewable electricity standard is really critical for the U.S. to continue to drive its success in the clean energy economy and to retain its competitiveness globally. Clean tech

is the way of the future, and we need to be competitive as a Nation in that industry.

Mr. MARKEY. Thank you. Ms. Grueneich.

Ms. GRUENEICH. Four points. One, the bill, you got it right. Let's get it passed. Two is we do need the renewable portfolio standard. We can't just say let's have carbon standards. To do transmission, you need to plan for something. And we are just not going to be able to get the transmission we need unless we have that renewable standard set out there. Three, States are your partners. In all of this legislation, think about how you can be really utilizing the States, helping the States working together. And four as I have two 15-year-olds, and they thank you. I don't want to go home without being able to say, you know, we have been working hard at the state level; we need the Federal level to step up, and my children need that. Thank you.

Mr. MARKEY. Mr. Reicher.

Mr. REICHER. Mr. Chairman, there are a broad array of ways that we can get at this climate crisis that we are facing, and there are smart ways from both an environmental and an economic perspective. Energy efficiency is indeed the low-hanging fruit. We ought to go out and pick it. It does grow back because of the improvements in technologies. Renewable is coming on strong. There was a huge array of opportunities. The resource base is vast in this country. We do need to crack the code on transmission, or a lot of what we need to get done isn't going to happen. I think the subcommittee's bill is headed in the right direction. Please do look at this issue of making sure there is adequate capital. And I do commend the work that Congressman Inslee and also Senators Bingaman and Murkowski are doing on that front.

And, lastly, let's take a look at this geothermal stuff. It is the sleeping giant. Whether it is Texas or it is Alaska or it is Florida, there is a lot there. The oil and gas industry is interested in it. Let's do a hearing and explore it.

Mr. MARKEY. Thank you. And Dr. Gruenspecht.

Mr. GRUENSPECHT. Mr. Chairman, beyond endorsing Mr. Reicher's surprise endorsement of my agency, I would say that EIA looks forward to providing the committee, both sides of the committee, with data and analyses to support your policy deliberations. EIA's first administrator, Lincoln Moses—great name—once said there are no facts about the future. However, I think policymakers can definitely benefit from considering how transparent and objective, if not always prescient, projections are affected by the different policies that they have under consideration. So, I am from the Federal Government, the executive branch. I am here to help you.

Mr. MARKEY. Thank you, Doctor. And we will leave you out of this final quick question.

I will ask each one of you, yes or no, do you think we can construct a cap-and-trade system that can work and can be done consistent with the long-term economic goals of our country? Mr. Reicher.

Mr. REICHER. We can and we must.

Mr. MARKEY. Ms. Grueneich.

Ms. GRUENEICH. Ditto.

Mr. MARKEY. Mr. Robo.

Mr. ROBO. Absolutely.

Mr. MARKEY. Dr. Kunkel.

Mr. KUNKEL. I think we can. I think the guy on the street needs to see the benefit to him, and he doesn't quite see it yet.

Mr. MARKEY. Mr. Hawkins.

Mr. HAWKINS. Absolutely. This is the most important work that you will do in your career.

Mr. MARKEY. Thank you. Mr. Trisko.

Mr. TRISKO. Absolutely. And the devil will always remain in the details.

Mr. MARKEY. Mr. Kerr.

Mr. KERR. Absolutely. But timing, technology, and the avoidance of severe economic disruptions in the early years are key to gaining the public support for the long-term success.

Mr. MARKEY. Thank you. Dr. Apt.

Mr. APT. Yes. I think it can. But I worry that you will labor mightily and give forth with a cap-and-trade that will produce a carbon price that is too low to affect physical change. And that really worries me.

Mr. MARKEY. Thank you. By the way, Doctor, you were born in Springfield, Massachusetts, and an astronaut. Congratulations. We are proud of you. Thank you. This is just a fantastic panel. Thank you all so, so much for your great contributions to this discussion. Thank you.

[Whereupon, at 5:58 p.m., the subcommittee was adjourned.]

THE AMERICAN CLEAN ENERGY SECURITY ACT OF 2009—DAY 4

FRIDAY, APRIL 24, 2009

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:20 a.m., in Room 2123 of the Rayburn House Office Building, Hon. Edward J. Markey (chairman) presiding.

Present: Representatives Markey, Inslee, Butterfield, McNerney, Welch, Dingell, Harman, Baldwin, Waxman (ex officio), Christensen, Sutton, Upton, Pitts, Walden, Burgess, Scalise, Barton (ex officio), Radanovich, and Blackburn.

Staff Present: Matt Weiner, Special Assistant; Melissa Bez, Professional Staff; Earley Green, Chief Clerk; Sharon Davis, Legislative Clerk; Caren Anchman, Communications Associate; Karen Lightfoot, Communications Director; Mitch Smiley, Special Assistant; Matt Eisenberg, Special Assistant; Alex Barron, Professional Staff; Alexandra Teitz, Senior Counsel; John Jimison, Senior Counsel; Ben Hengst, Senior Policy Analyst; Phil Barrett, Staff Director; Kristin Amerling, General Counsel; and Greg Dotson, Chief Counsel, Environment and Energy.

Mr. MARKEY. Good morning, and welcome to this historically important hearing.

When people look at Vice President Al Gore, they think of an award winning movie, "An Inconvenient Truth." I think, however, of a different movie, "Back to the Future." Thirty years ago, I sat in this same room with Al Gore, who left this committee to become an outstanding Vice President and to win an Oscar and a Nobel Prize for, imagine this, a documentary on climate change.

And with Henry Waxman and John Dingell and I, who, while we are kind of like Peter Pan, we stayed behind and debated a new generation, as others went off. But this is our Back to the Future moment, except today, we gather at a time when the Good Earth is calling us to energy Independence Day, and that goal should not take us From Here to Eternity.

Long before greenhouse gases and global warming became a subject of daily discussions, Al Gore, Henry Waxman, John Dingell, and I debated ways to improve the Clean Air Act. Vice President Gore was a leader of the debate in the 1980s, and now, the whole world knows that he has long been a visionary. It is sometimes said that a prophet is someone who is right but too soon. Al Gore is an example of someone who not only was right early, very early,

in fact, but who dedicated his life to educating our country, so that they, too, saw the threat he foresaw decades ago.

I am equally pleased to welcome Senator John Warner to our committee. Late last year, I was fortunate to be at a dinner honoring John Warner for his outstanding career in public life. His speech that night confirmed for me that John Warner is an outstanding leader, who is committed to our national security and our environmental security. He has given great service to his state and our country, as someone who stood for what he saw as the right policy, and did not bend to the politics of the day. His leadership on climate change legislation was the culmination of a great career, and we are indeed honored to have him here with us today.

So, we welcome you both to our committee, and I don't know if you have any welcoming comments.

Let me turn to the full committee chairman, Mr. Waxman, if you would like to——

Mr. WAXMAN. Well, thank you very much, Mr. Chairman, and thank you for all those references to the movies that are made in my district.

And I won't try to top you with any film references, but I think it is a great honor to welcome our two witnesses this morning. They are very distinguished gentlemen. Senator Warner, who has had an illustrious career in serving his country in many capacities. And Vice President Gore, we are always pleased to see and welcome back to the committee on which he served in the beginning of his Congressional career. He has gone on to do great things, and has become a spokesman for an issue that is very important to our deliberations.

Thank you both for being here.

Mr. MARKEY. Thank you, Chairman. Let me recognize Fred Upton, the Ranking Member of the subcommittee.

Mr. UPTON. Well, thank you. We welcome you gentlemen. This is, obviously, a timely issue. This is the third day of where we have had more than 60 witnesses this week. This is a day that we are not in session with votes on the House floor. I would ask unanimous consent that members not on this subcommittee have an opportunity to ask questions following the regular order of the subcommittee members, if I might.

Mr. MARKEY. Without objection, so ordered.

Mr. UPTON. We welcome your testimony, and we hope that you can be here a good part of the day to answer our many good questions.

Welcome, both of you.

Mr. MARKEY. Would the Ranking Member of the full committee like to——

Mr. BARTON. Simply to echo your introduction and Mr. Waxman's introduction, since you talked about Back to the Future, one of our questions that Dr. Burgess is going to ask the Vice President is if he is the inventor of the flux capacitor. But we welcome both of you gentlemen.

Mr. MARKEY. We thank the gentleman very much.

Now, we turn to our extremely distinguished panel. We welcome you back, Vice President Gore. Whenever you are ready, please begin.

STATEMENTS OF HONORABLE ALBERT GORE, JR., FORMER VICE PRESIDENT OF THE UNITED STATES; AND HONORABLE JOHN WARNER, FORMER UNITED STATES SENATOR

STATEMENT OF ALBERT GORE, JR.

Mr. GORE. Well, thank you, Chairman Markey and Mr. Upton, Chairman Waxman and Congressman Barton, Chairman Emeritus John Dingell.

I was telling Senator Warner in the cloakroom here that it was one of the greatest honors of my life to be a member of this committee, and my principal mentor in the Congress was John Dingell, and I told Senator Warner that just about everything I learned about the legislative process came from John Dingell, and it is with great emotion that I come back to this hearing room, and members of the committee, members of the subcommittee, members of the full committee, it is an honor to be able to appear before you here today.

Mr. MARKEY. Could you move the microphone in just a little bit closer, please?

Mr. GORE. Sure.

Mr. MARKEY. Thank you.

Mr. GORE. It is also my great honor to testify with my friend and former colleague in the Senate, John Warner. I served on the Armed Services Committee under his chairmanship, and his long record of service to the Senate and the country is truly remarkable.

Senator Warner has consistently looked with a steady gaze past the politics of the day, to thoughtfully and intensely focus on the national interest. His approach really reminds me of another great American from another era, the great Senator Arthur Vandenberg from Michigan, who helped to create the United Nations and NATO and the Marshall Plan. He understood that our Nation, when faced with great peril, must rise above partisanship to meet the challenge.

Mr. MARKEY. Mr. Vice President, can you push that button. Is the microphone——

Mr. GORE. There we go.

Mr. MARKEY. There. Good. Thank you.

Mr. GORE. You want me to repeat all of my words about Senator Warner?

I believe that we have arrived at another such moment. Our country is at risk on three fronts. The economic crisis is clear. Our national security remains at risk, so long as we remain dangerously dependent on flows of foreign oil from reserves owned by sovereign states that are vulnerable to disruption. The rate of new discoveries, as members of this committee know, is falling, even as demand elsewhere in the world is rising.

Most importantly, of course, we are, along with the rest of humanity, facing the dire and growing threat of the climate crisis. It is at the very heart of those threats that this committee and this Congress must direct its focus. I am here today to lend my support to what I believe to be one of the most important pieces of legislation ever introduced in the Congress. I believe this legislation has the moral significance equivalent to that of the civil rights legislation of the 1960s and the Marshall Plan of the late 1940s. By

repowering America with a transition to a clean energy economy, and ending our dangerous overreliance on carbon-based fuels, which is, after all, the common thread running through all three of these crises, this bill will simultaneously address the climate crisis, the economic crisis, and the national security threats that stem from our dependence on foreign oil.

We cannot afford to wait any longer for this transition. Each day that we continue with the status quo sees more of our fellow Americans struggling to provide for their families. Each day that we continue on our current path, America loses more of its competitive edge, and each day that we wait, we increase the risk that we will leave our children and grandchildren an irreparably damaged planet. Passage of this legislation will restore America's leadership of the world and begin, at long last, to solve the climate crisis, and it is truly a moral imperative. Moreover, the scientific evidence of how serious this climate crisis is becoming continues to amass week after week.

Let me share with you just a few recent examples. The Arctic is warming at an unprecedented rate. New research, which draws upon recently declassified data collected by U.S. nuclear submarines traveling under the Arctic icecap for the last 50 years, has given us for the first time a three-dimensional view of the icecap, and researchers at the Naval Postgraduate School have told us that the entire Arctic icecap, which for most of the last three million years has covered an area the size of the lower 48 States, may completely and totally disappear in summer in as little as five years.

Almost half of the ice in the Arctic cap has already melted during the last 20 years. The dark ocean, once uncovered, absorbs 90 percent of the solar heat that used to bounce off the highly reflective ice. As a direct consequence, some of the vast amounts of frozen carbon in the permafrost in the land surrounding the Arctic Ocean are beginning to be released as methane, as the frozen tundra thaws, threatening a doubling of global warming pollution in the atmosphere unless we take action quickly.

Melting of the Greenland ice sheet has reached a new record, which was a staggering 60 percent above the previous high in 1998. The most recent eleven summers there have all experienced melting greater than the average of the past 35 year time series. Glacial earthquakes have been increasing on Greenland as the melt water tunnels down through the ice to the bedrock below. Were the Greenland ice sheet to melt, crack up, and slip into the North Atlantic, sea level worldwide would rise almost 20 feet.

We already know that the Antarctic peninsula is warming at three to five times the global average rate. At the time when I participated in one of the first hearings on global warming on this committee in the 1970s, a researcher warned that an early alarm bell that this crisis was reaching emergency proportions would be if we saw the breakup of large ice sheets on the Antarctic peninsula. That is why the Larsen—and this warming has already caused the Larsen B ice shelf, which was the size of Rhode Island, to collapse. Several other ice shelves have also collapsed in the last 20 years. Another large shelf, the Wilkins ice shelf, which is rough-

ly the size of Northern Ireland, is now beginning to disintegrate right before our very eyes.

A recent study in the journal Science has now confirmed that the entire West Antarctic ice sheet is warming. Scientists have told us that if it were to collapse and slide into the sea, we would experience global sea level rise of another 20 feet. Each meter of sea level increase leads to 100 million climate refugees. Recent studies have shown that many coastal areas in the United States are at risk, particularly Southern Florida and Southern Louisiana.

Also, carbon dioxide pollution is now changing the very chemistry of the world ocean. Ocean acidification is already underway and is accelerating. A recent paper published in Science described how the seawater off the coast of Northern California has now already, for some periods of the year, become so acidic from CO_2 that it is actually corrosive. To give some sense of perspective, for the last 44 million years, the average pH has been 8.2, and the scientists at Scripps have now measured levels off the north coast of California and Oregon at a pH of 7.75. Now, the lower the pH, the more acidic the ocean water.

Coral polyps that make reefs, and everything in the ocean that makes a shell, are now beginning to suffer from a kind of osteoporosis, because the acidification levels have reached the state that it begins to dissolve the shells as they are formed. Salmon have now disappeared off the coast of California. Researchers are now working to determine the cause, and whether or not this is due to acidity and the relationship between acidity and the so-called "dead zones" of extreme oxygen depletion that now stretch from the West Coast of North America, Central America, and South America, almost all the way across the Pacific, in a wedge that stretches to the West. The health and productivity of the entire ocean is now at risk.

The Union of Forest Research Organizations, with 14 international collaborating partners, have reported that forests may lose their carbon regulating service, and that "it could be lost entirely if the Earth heats up 2.5 degrees Centigrade." Throughout the American West, tree deaths are now at record levels, with the records being broken year after year. That is the reason why Canada's vast forest has now become a net contributor of CO_2 to the atmosphere, rather than absorbing it. The Amazon, the forests of Central Africa, Siberia, and Indonesia, are all now at risk.

This year, a number of groups, ranging from the National Audubon Society to the Department of Interior, released the U.S. State of the Birds Report, showing that nearly a third of the Nation's 800 bird species are now endangered, threatened, or in significant decline, due to habitat loss, invasive species, and other threats, including climate change, the major shift attributed to the climate crisis related to the migratory patterns, and a large, consistent shift northward among a vast range of bird species in the United States.

Some of the most intriguing new research is in the area of extreme weather events and rainfall. A recent study by German scientists in the publication Climate Change, projects that extreme precipitation will increase significantly in regions that are already experiencing extreme rainfall. Manmade global warming has al-

ready increased the moisture content of the air throughout the world, causing bigger downpours. Each additional degree of temperature causes another 7 percent increase in the moisture content of the world's air, and leads to even larger downpours when storm conditions trigger heavy rains and snows.

To bring an example of this home, 2009 saw the eighth ten year flood of Fargo, North Dakota since 1989. Last year, in Iowa, Cedar Rapids was hit by a flood that significantly exceeded the 500 year floodplain. All time flood records are being broken in regions throughout the world. Conversely, those regions that are presently dry are projected to become much drier, because higher average higher temperatures also evaporate the soil moisture.

The American West and the Southeast have been experiencing prolonged, severe drought and historic water shortages. In a study published in January 2008 in Science, scientists from the Scripps Institute estimated that 60 percent of the changes in the water cycle in the American West are due to increased atmospheric, man-made greenhouse gases. It predicts that although Western states are already struggling to supply water for farms and cities, more severe climatic changes will strain the system even more. Agriculture in our largest farm state, California, is at high risk.

Australia has been experiencing what many there call a thousand year drought, along with record high temperatures. Some cities had 110 degrees for four straight days two months ago. And then, of course, they had the mega-fires that caused so much death and destruction.

Federal officials from our own National Interagency Fire Center report that we have seen twice as many wildfires during the first three months of this year, compared to the same period last year. Due to the worsening drought, the outlook for more record fires, especially in Texas, Florida, and California, is not good.

A number of new studies continue to show that climate change is increasing the intensity of hurricanes. Although we cannot attribute any particular storm to global warming, we can certainly look at the trend. Dr. Greg Holland, from the National Center for Atmospheric Research, says that we have already experienced a 300 to 400 percent increase in Category 5 storms in the past ten years in the United States. Last August, hundreds of thousands of people had to evacuate as Hurricane Gustav hit the Gulf Coast, and then, of course, there is the destruction of Galveston and areas of New Orleans, where the residents are still recovering.

The same is happening in the rest of the world. Last year, Cyclone Nargis killed 20,000 people in Myanmar, and caused the suffering of tens of thousands more. For these, and many, many other reasons, now is the time to act. And luckily, positive change is on the way.

In February, when the Congress voted to pass the stimulus bill, it laid the groundwork for critical investments in energy efficiency, renewables, a Unified National Smart Grid, and an historic transition to clean cars. This was a crucial downpayment that will create millions of new jobs, hasten our economic recovery, strengthen our national security, and begin solving the climate crisis.

But now, we must take another step together, and pass the American Clean Energy and Security Act. Chairman Waxman and

Chairman Markey have pulled together the best ideas in the Congress, to begin solving the climate crisis, while increasing our energy independence, and stimulating our economic recovery.

Let me highlight just a few items in the bill that I believe to be of particular importance. First, it promotes the rapid introduction of the clean and renewable technologies that will create new, good, sustainable jobs, and reduce our reliance on carbon-based fuels. It is time to close the carbon loophole, and begin the steep reductions that we need to make in the pollution that causes global warning.

Second, it helps us use energy more efficiently and transmit it over a secure, modernized, digital smart grid system. Of course, this move to repower America must also include adequate provisions to assist those Americans who would face a hardship. For example, we must recognize and protect those who have toiled in dangerous conditions to bring us our present energy supply. I believe we ought to guarantee good jobs for any coalminer displaced by impacts on the coal industry.

And this bill also focuses on intensive R&D to explore carbon capture and sequestration, to determine whether and where it can be a key part of the solution. I have always strongly supported intensive R&D on carbon capture and sequestration and demonstration projects, and I am happy that at long last, this committee has found a way to do that.

Our country cannot afford more of the status quo, more gasoline price instability, more job losses, more outsourcing of factories, more years of sending $2 billion every 24 years to foreign countries for oil, and our soldiers and their families cannot take another ten years of repeated troop deployments to regions that just happen to have large oil supplies. Moreover, the best way to secure a global agreement that guarantees that other nations will also reduce their global warming pollution is for our country to lead the world in meeting this historic challenge.

The United States of America is the world's leader. We are the only Nation in the world that can lead. Once we find and reestablish the moral courage to take on this issue, the rest of the world will come along. Now is the time to act, before the world gathers in Copenhagen this December to solve this crisis. Not next year, this year.

I strongly urge bipartisan support of this crucial legislation.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Gore follows:]

Statement to the Subcommittee on Energy and Environment
Committee on Energy and Commerce
As Prepared by
Hon. Al Gore
Friday, April 24, 2009

Mr. Chairman, Members of the Committee, distinguished guests; it is my great honor today to testify with my friend and former colleague, John Warner, whose long record of service to the Senate and to our country is remarkable.

Senator Warner has consistently looked with a steady gaze past the politics of the day to thoughtfully and intensely focus on the national interest.

His approach reminds me of another great Republican from another era, the great Senator Arthur Vandenberg, from Michigan, who helped to create the United Nations, NATO, and the Marshall plan. He understood that our nation, when faced with great peril, must rise above partisanship to meet the challenge.

I believe we have arrived at such a moment. Our country is at risk on three fronts. The economic crisis is clear. Our national security remains at risk so long as we remain dangerously dependent on flows of foreign oil from reserves owned by sovereign states that are vulnerable to disruption. The rate of new discoveries, as you know, is falling even as demand elsewhere in the world is rising. Most importantly, of course, we are—along with the rest of humanity—facing the dire and growing threat of the climate crisis. It is at the very heart of those threats that this Committee and this Congress must direct its focus. I am here today to lend my support to one of the most important pieces of legislation ever introduced in the Congress. I believe this legislation has the moral significance equivalent to that of the civil rights legislation of the 1960's and the Marshall Plan of the late 1940's.

By Repowering America with a transition to a clean energy economy and ending our dangerous over-reliance on carbon-based fuels, which is the common thread running through all three of these crises, this bill will simultaneously address the climate crisis, the economic crisis, and the national security threats that stem from our dependence on foreign oil.

We cannot afford to wait any longer for this transition. Each day that we continue with the status quo sees more of our fellow Americans struggling to provide for their families. Each day we continue on our current path, America loses more of its competitive edge. And each day we wait, we increase the risk that we will leave our children and grandchildren an irreparably damaged planet.

Passage of this legislation will restore America's leadership of the world and begin, at long last, to solve the climate crisis. It is truly a moral imperative. Moreover, the scientific evidence of how serious this climate crisis is becoming continues to amass week after week after week.

Let me share with you just a few recent examples:

-The Arctic is warming at an unprecedented rate. New research, which draws upon recently declassified data collected by U.S. nuclear submarines traveling under the Arctic ice cap for the last 50 years, has given us, for the first time, a three-dimensional view of the ice cap, and researchers at the Naval Postgraduate School have told us that the entire Arctic ice cap may totally disappear in summer in as little as five years if nothing is done to curb emissions of greenhouse gas pollution. For most of the last 3 million years, it has covered an area the size of the lower 48 states. Almost half of the ice has already melted during the last 20 years. The dark ocean, once uncovered, absorbs 90 percent of the solar heat that used to bounce off the highly reflective ice. As a direct consequence, some of the vast amounts of frozen carbon in the permafrost surrounding the Arctic Ocean are beginning to be released as methane as the frozen tundra thaws, threatening a doubling of global warming pollution in the atmosphere.

-Melting of the Greenland ice sheet has reached a new record, which was a staggering 60 percent above the previous high in 1998. The most recent 11 summers have all experienced melting greater than the average of the past thirty-five year time series (1973-2007). Glacial earthquakes have been increasing as the meltwater tunnels down through the ice to the bedrock below. Were the Greenland ice sheet to melt, crack up and slip into the North Atlantic, sea level would rise almost 20 feet.

-We already know that the Antarctic Peninsula is warming at three to five times the global average rate. That is why the Larsen B ice shelf, which was the size of Rhode Island, already has collapsed. Several other ice shelves have also collapsed in the last 20 years. Another large shelf, the Wilkins ice shelf—which is roughly the size of Northern Ireland— is now beginning to disintegrate right before our very eyes. A recent study in the journal *Science* has now confirmed that the entire West Antarctic Ice Sheet is warming. Scientists have told us that if it were to collapse and slide into the sea, we would experience global sea level rise of another 20 feet worldwide. Each meter of sea level increase leads to 100 million climate refugees. Recent studies have shown that many coastal areas in the U.S. are at risk—particularly Southern Florida and Southern Louisiana.

-Carbon dioxide pollution is changing the very chemistry of our oceans. Ocean acidification is already underway and is accelerating. A recent paper published in the journal *Science* described how the seawater off the coast of Northern California has become so acidic from CO2 that it is now corrosive. To give some sense of perspective, for the last 44 million years, the average pH of the water has been 8.2. The scientists at Scripps measured levels off the north coast of California and Oregon at a pH of 7.75. Coral polyps that make reefs and everything that makes a shell are now beginning to suffer from a kind of osteoporosis because of the 25 million tons of CO2 absorbed the oceans every 24 hours.

-Salmon have now disappeared off the coast of California. Researchers are now working

to determine the cause and whether or not this is due to acidity and the relationship between acidity and "dead zones" of extreme oxygen depletion that now stretch from the west coast of North, Central, and South America almost all the way across the Pacific. The health and productivity of all the world's oceans are at risk.

-The Union of Forest Research Organizations, with 14 international collaborating partners, reported that forests may lose their carbon-regulating service and that it "could be lost entirely if the earth heats up 2.5 degrees Centigrade." Throughout the American west, tree deaths are now at record levels, year after year. For the same reason, Canada's vast forest is now contributing CO2 to the atmosphere rather than absorbing it. The Amazon, the forests of Central Africa, Siberia, and Indonesia are all now at risk.

-This year, a number of groups ranging from the National Audubon Society to the Department of Interior, released the U.S. State of the Birds report showing that nearly a third of the nation's 800 bird species are endangered, threatened or in significant decline due to habitat loss, invasive species and other threats including climate change. The major shift attributed to the climate crisis related to the migratory patterns and a large shift northward among a vast range of bird species in the U.S.

-Some of the most intriguing new research is in the area of extreme weather events and rainfall. A recent study by German scientists published in *Climatic Change* projects that extreme precipitation will increase significantly in regions that are already experiencing extreme rainfall. Man-made global warming has already increased the moisture content of the air worldwide, causing bigger downpours. Each additional degree of temperature increase causes another seven percent increase in moisture in the air, and even larger downpours when storm conditions trigger heavy rains and snows.

-To bring an example of this home, 2009 saw the eighth "ten year flood" of Fargo, North Dakota, since 1989. In Iowa, Cedar Rapids was hit last year by a flood that exceeded the 500-year flood plain. All-time flood records are being broken in areas throughout the world.

-Conversely those regions that are presently dry are projected to become much dryer, because higher average temperatures evaporate soil moisture.

-The American West and the Southeast have been experiencing prolonged severe drought and historic water shortages. In a study published in January 2008 in the journal *Science*, scientists from the Scripps Institute estimated that 60 percent of the changes in the West's water cycle are due to increased atmospheric man-made greenhouse gases. It predicts that although Western states are already struggling to supply water for their farms and cities, more severe climatic changes will strain the system even more. Agriculture in California is at high risk. Australia has been experiencing what many there call a thousand-year drought, along with record high temperatures. Some cities had 110 degrees for four straight days two months ago. And then they had the mega-fires that caused so much death and destruction.

-Federal officials from our own National Interagency Fire Center report that we have seen twice as many wildfires during the first three months of 2009 as compared to the same period last year. Due to the worsening drought, the outlook for more record fires in Texas, Florida, and California is not good.

-A number of new studies continue to show that climate change is increasing the intensity of hurricanes. Although we cannot attribute any particular storm to global warming, we can certainly look at the trend. Dr. Greg Holland from the National Center for Atmospheric Research says that we have already experienced a 300-400 percent increase in category 5 storms in the past 10 years in the United States. Last August, hundreds of thousands of people had to evacuate as Hurricane Gustav hit the Gulf Coast. And then, of course, there is the destruction of Galveston and areas of New Orleans, where the residents are still recovering. The same is happening in the rest of the world. Last year, Cyclone Nargis inflicted catastrophic death tolls in Burma (Myanmar) killing twenty thousand people and leading to the suffering of many more.

For these and many other reasons, now is the time to act. And luckily, positive change is on the way.

In February, when the Congress voted to pass the stimulus bill, it laid the groundwork for critical investments in energy efficiency, renewables, a unified national smart grid and the move to clean cars. This was a crucial down payment that will create millions of new jobs, hasten our economic recovery, strengthen our national security, and begin to solve the climate crisis.

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It is time to close the carbon loophole and begin the steep reductions we need to make in the pollution that causes global warming.

It helps us use energy more efficiently and transmit it over a secure, modernized, digital smart grid system.

Of course this move to Repower America must also include adequate provisions to assist those Americans who would unfairly face hardship. For example, we must recognize and protect those who have toiled in dangerous conditions to bring us our present energy supply. We ought to guarantee good jobs for any coal miner displaced by impacts on the coal industry.

And this bill also focuses on intensive R & D to explore carbon capture and sequestration to determine whether and where it can be a key part of the solution.

Our country cannot afford more of the status quo, more gas price instability, more job losses, more outsourcing of factories, and more years of sending $2 billion every 24 hours to foreign countries for oil. And our soldiers and their families cannot take another 10 years of repeated troop deployments to regions that just happen to have large oil supplies.

Moreover, the best way to secure a global agreement that guarantees that other nations will also reduce their global warming pollution is for the U.S. to lead the world in meeting this historic challenge. The United States is the world's leader. We are the only nation in the world that can. Once we find the moral courage to take on this issue, the rest of the world will come along. Now is the time to act before the world gathers in Copenhagen this December to solve the crisis. Not next year, this year.

I urge bipartisan support of this crucial legislation.

Mr. MARKEY. Thank you, Mr. Vice President, very much. And now, we turn to welcome our other distinguished American, Senator John Warner. Thank you, sir.

STATEMENT OF JOHN WARNER

Mr. WARNER. Thank you, Chairman Waxman, Chairman Markey, and our good friend, Chairman Dingell, and the distinguished Ranking Members, Mr. Upton, Mr. Barton.

It is really a privilege to come back to the Congress in the retired status. I assure you that I checked the applicable laws and so forth, and I am delivering a statement this morning consistent with those regulations, which I shall follow carefully.

But I want to say a word about the fine gentleman on my left. We breakfasted together this morning, just as if we were still in the Senate together. Talked about the many men and women that mentored us in our legislative careers, and I just want to say to you, my dear friend, you have had an extraordinary public service career, and you are charging ahead as strongly today as you have ever done in the history of that career. And as you said, our parents are rather proud of both of us. So, I thank you, and I thank those in this room that I have served and worked with these years, and for the gracious statements.

This is serious business, very, very serious business. Having served 30 years in the other body, I have seen the panorama of legislative challenges in that period, and indeed, prior thereto, I served for five years in the Pentagon, in the Department of Defense, and testified before the Congress. But this particular moment in our history is critical, and future generations will look back at this day and tomorrow and in the future, and see what we did, and maybe, what we didn't do. So, I thank the leadership, both the Democrats and Republicans of this committee, for taking the initiative, and the members to make it work.

I think, also, the committee should pause to express its appreciation to the extraordinary number of organizations, largely the ones I work with today are the nonprofits, but indeed, the corporate and business center, sectors of our country, have come together, and I think there is a good, strong, constructive dialogue going on.

Unfortunately, we are greeted, the Vice President and I were talking this morning, by articles like the one in the New York Times this morning, but let us hope that is behind us, and that as Members of Congress, and as witnesses, we come here and speak the absolute truth, and if I may underline, speak in such a way that all levels of America can understand what the challenges are before us, the complexity, the long, rough road ahead to reach those goals, that hopefully this legislation will establish, and that my beloved Senate will join in a conference, and we will get a law.

All too often, I have watched and each of us have, the advertisements today. And they oversimplify the problem. I mean, you see very attractive actors and actresses get out and say well, clean coal technology is just around the corner. We know it is not around the corner. They talk about well, wind power, wind and solar are vital parts of working a way out of this situation, but each of those requires substantial planning, engineering, tax subsidies, support.

Take, for instance, we are talking about the smart grid. It looks to be a quicker approach to begin to correct things with that smart grid, but to do it, we are going to have to work through condemnation laws, to get the land over which those grids have got to travel, particularly, to convey the energy from the very valuable and abundant source of wind.

I saw the other day where, in California, the solar panels are using an extraordinary amount of water, so when you go into one situation, you have got to figure out what it affects adversely in the other. So, this is a tough road ahead of us, and I am glad the leadership of this House of Representatives has tackled it and is going to move forward.

The Vice President very carefully carried a lot of the factual material here this morning, and I won't try and repeat it. I would ask unanimous consent my entire statement go in.

Mr. MARKEY. Without objection.

Mr. WARNER. Because I want to move through, somewhat swiftly, so we can take the questions, and actually hear from the membership. Since I have retired or left the Senate, I have continued to work in this area, and will continue to do so, because I feel very strongly committed.

I was privileged, for 14 months in the Senate, to join with my very good friend, Joseph Lieberman, an extraordinary, courageous legislator, in putting together our bill, and with the support of our chairman, Senator Boxer, and a lean, but nevertheless majority of the Senate, I was the only Republican that cast a vote to get that bill out. And I don't say that in any derogatory sense towards my colleagues. I respect their views, but I think, as we go along, and one of the things that, as I go back and wish we had done, was to give a little territory to get that bill through, and we didn't perhaps give enough territory to begin to get at least a greater deliberation than the few days on the Senate floor, to have laid a stronger foundation for this committee and other elements of the Congress to cover this subject.

I want to talk about that foundation. In my judgment, this subject of climate change, the future of energy, and our national security are all interwoven very closely, and I hope that the Congress recognizes that they have got to build their legislation on a foundation with three legs on it: the energy leg, the global climate change leg, and the national security leg.

And it is that national security that I want to dwell on here for a few minutes, because I think that is the most significant contribution I can make. I want to credit many national security experts who have expressed their concerns, most of which I share. Many senior retired officers, and I say with a sense of humility, I have had an opportunity, many years in the Pentagon, many years in the Congress on the Armed Services Committee, to work with the same officers today who are retired. They don't have a political bone in their system. They are only speaking out in terms of their projection of the responsibilities for the Armed Forces of the United States, as this global situation appears to worsen. And I will address the specifics on that.

But I want to take, I don't often like to take quotes, but this one, I think, is worthy of your attention. One extraordinary soldier, one

I worked with, and you did, too, Mr. Vice President, the former Chief of Staff of the United States Army, General Gordon Sullivan, who chaired the Military Advisory Board on the Center for Naval Analysis—that Center has done a lot of valuable work in this area—succinctly framed the situation as follows: "The Cold War"—and he is referencing, of course, our, the former Soviet Union—"the Cold War was a specter, but climate change is inevitable. If we keep on with business as usual, we will reach a point where some of the worst effects are inevitable. Back then, the challenge was to stop a particular action. Now, the challenge is to inspire a particular action. We have to act if we are to avoid the worst of the effects."

If I may, I was hoping that Chairman Dingell would be here today, I want to go back and, just a brief personal recollection. I grew up during the Great Depression, and then, the years of World War II. I was privileged to, in the last year of the War, wear the uniform of a young sailor, when my distinguished colleague, Chairman Dingell, was really in the thick of the fighting. Well, you are now.

Our generation was referred to as the Greatest Generation, but the thing about it is, and I don't want to be too prosaic, but I think back, of the inspiration that it took to get through those periods in American history. Went back and read that wonderful speech given by Franklin D. Roosevelt in his first inaugural. "The only thing we have to fear is fear itself."

There is a very substantial element of fear attached to this subject. Now, we are, as a Nation, together with other nations in the world, facing one of the most unprecedented and difficult economic situations ever in history. We also have our brave men and women of the Armed Forces fighting two wars. And the question is raised, is this the time to challenge an issue of this magnitude, which has ramifications of cost to everyone here in this country, and is going to require sacrifices? And I say to you, as my distinguished colleague said, yes, it is the time.

I witnessed personally the Nation survive those trials of the Depression and the War, and it emerge and redevelop itself, and become a stronger Nation, stronger than any of us ever imagined we could achieve in the late '40s and '50s. We can do that again, but it is going to take your leadership. We will do it again. We have to, because every day that goes by increases the cost, as I understand it, involved in this situation.

Let me say that one thing that we have got going for us as legislators, is that there is a desire among a broad cross-section of the American people to do something. They want it done. They don't understand all of the complexity and all the technical things, but instinctively, they are saying we are with you. But the duty we have is to be honest with them, tell them it is going to be a burden, and tell them it is going to take time. I mean, clean coal technology, which is so important to my state, Virginia, and I have looked into this question of capture and sequestration, and transfer and sequestration.

That is going to take big bucks and a lot of time to perfect it, so I say to you most respectfully, as I look back at the legislation that we put forward in the Senate, we had in there provisions, and

I used to characterize it, is that the President of the United States is the engineer driving this big train. He had the throttle to push, he had the brake to slow down. In order to allow our power sector, our engineering sector, transportation sector, manufacturing sector, to do the job that I think in their heart instinctively they want to do, we have got to give them the assurance that the timetables we establish have got to be such that they can keep pace with their responsibility to meet the needs of the citizens today, and at the same time, engage in the research and development of the solutions that we have, but do it in a timely fashion.

The most challenging thing for this committee in this legislation is to devise that language, to give the President, and the President has stepped forward, and shown a measure of strong leadership on this subject, and a willingness to work with the Congress, but we have got to devise that language that enables the President, indeed the people in this country, to do the work that has got to be done in such a way that we don't put on the burden that they have to bear before the technology has been done and the infrastructure installed for them to continue.

I mean, in the coal industry, if we move too swiftly, coal is likely to switch to natural gas. Now, natural gas, people think is, you listen to some of them, it is fewer, but it has 50 percent of the greenhouse carbon and so forth, am I not correct, as does coal, and we don't have identified yet the sources of gas to meet the demand if the power industry suddenly were forced, as a matter of necessity, so as not to violate the law, to shift to gas.

So, give to the President the language, I wrote it in the previous bill, and I hope that you can even do a better job, to give the President the authority to correct certain situations if this country cannot meet its obligations under the law.

So, if I were in the Senate today, I would be doing one other thing, and that is, I would be working to try and incorporate language, I hope in both bodies, that would recognize the enormous benefit of bringing to the table, you had commerce, you had energy, you had transportation at this table, but bring to the table the defense sector, the Department of Defense, the intelligence community, and certain elements of the infrastructure in the private sector that support our defense, and let them express their views. Let them be charged by the Congress in this legislation for the accountability to do their share to reach these goals, because as the Vice President recited, the effects of climate change, and I am not here to argue the science, but certainly, the reality, he spoke about the Arctic, the Antarctic and the North Pole and so forth. We were talking about those submarines, and how they had to do the scientific work to determine the thickness of the ice, and how that database, which was begun in 1958, now shows you how much that has shrunk over a period of time.

But it is the members of the military that will be called upon to help those nations who, as a consequence of the erratic nature of climate change, could be losing their sovereignty, suffering mass migrations, political instability, creating a vacuum. So, many of these nations are now on the verge of political collapse, and this push from a climatic condition could shove them over where they

lose their sovereignty. Somalia is an example of that with the drought, on that littoral of Africa.

We have got to be sure that we are doing everything to alleviate these situations, because we are the only country that has the military capability, particularly the lift capability, the transportation capability, to get there in a timely way, and do what we can in a humanitarian way to alleviate the suffering that is occasioned by these situations.

Stability in the world is absolutely critical, and we are called upon, as you said, Mr. Vice President, we are the leader, we are the one that has the strongest of the militaries, and we will be called upon. To the extent that our military has to perform missions occasioned by climatic conditions or others, is the extent to which they have less ability to do missions elsewhere, so there is a direct cause and effect between what our military are called upon to do, to do our normal role of protecting freedom in the world, and to meet these situations. Whether it is crop failures or famine, disease, mass migration of people across borders, destruction of the vital infrastructure, all of these things can lead to failed nations and instability.

So, I just want to conclude by saying we are the best equipped. We are prepared. The United States has always been of a soft heart, to help those less fortunate than ourselves, and this poses a real problem.

I go back to one other admiral. I served with him when he was NATO Commander, NATO South. And he said, as part of the Military Advisory Board, national security and the threat of climate change, he said, this is Admiral Joseph Lopez, I think Joe has only voted. I don't know if he has ever done anything in the political world. I have known him that well. And he said: "You have a very real change in natural systems that are most likely to happen in regions of the world that are already fertile ground for extremism." That sums it up, and delaying action on this just raises costs, leaves us less prepared to try to alleviate the stress that we have put on our military.

So, I strongly urge that you look at the possibility of injecting in this record somewhere the views of our departments, and hopefully, language which will hold them accountable, and make them as much a partner as the other departments and agencies of our government. And I am sure my good friend Congressman Ike Skelton, can work with you to see that happens.

Thank you very much.

[The prepared statement of Mr. Warner follows:]

Testimony by Senator John Warner (Retired)

House Energy and Commerce Committee

April 24, 2009

Mr. Waxman, Mr. Markey, Mr. Burton, and Mr. Upton, thank you for the invitation to provide this important committee with my thoughts on the pressing issues of a new energy future, global climate change, and the potential consequences to national security, of not only the United States, but the security of many nations worldwide.

The views that I express are my own and do not necessarily represent the views of my law firm, Hogan and Hartson, and I provide them consistent with the rules of the U.S. Senate and the statutes which are applied to all retiring members of the U.S. Senate.

It is a particular pleasure to appear with my former colleague, whom I served with in the Senate, the former vice president, Al Gore. We shared many years working together on two important Senate Committees, the Environment Committee and the Armed Services Committee.

On behalf of the people of the United States, I thank the Committee for recognizing the need for America to have a framework of laws to guide our future on these issues of energy and climate change.

Having had the privilege of serving my state of Virginia and indeed the people of the United States for 30 years in the U.S. Senate, I believe this framework of issues poses one of the greatest challenges to the Congress that I have ever witnessed.

I thank Vice President Gore for his leadership in bringing not only attention to the issue of climate change but providing

recommendations and solutions to this Committee on tackling this difficult subject matter before you today. His leadership benefits many nations beyond our borders.

Mr. Chairman and members of the committee, I believe that it is the duty of this Committee, the witnesses who have shared and continue to share their views, and the Congress at large to engage the American public in a straightforward and honest manner. These are highly technical and complex issues before us today, and we must find a way to have a continuing dialogue with the public in a manner – and with words -- that can be understood by all.

It is the level of enthusiasm of the American pubic, their willingness to listen and learn, and reach into their pockets and give that measure of financial support required, that will continue to drive forward the solutions to reach our goals.

As the Committee well knows, in the last Congress, I was privileged to work with an extraordinarily capable legislator, Senator Joe Lieberman, with members of the Senate Environment Committee, under the able chairmanship of Senator Barbara Boxer, to produce the only climate change bill to reach the Senate floor.

I have continued my study and work and now realize that we should have incorporated in our legislation a greater emphasis on national security.

Accordingly, I firmly believe that the challenge before us is to build a foundation resting on three legs: energy, climate change and national security. Eventual success requires all three legs to remain equally strong.

The very comprehensive body of opinion and fact that has been submitted to this committee by witnesses this week

covers the energy and climate change legs of the foundation; I address the third leg -- national security.

I want to credit the many national security experts who have expressed their concerns, which I share. Many senior retired officers, from all branches of our services, have come forward and joined in the public debate, expressing clearly their views in support of action on climate change. One extraordinary solider, the former Chief of Staff of the United States Army, General Gordon Sullivan, who chaired the Military Advisory Board of the Center for Naval Analysis, succinctly framed what we face: "The Cold War was a specter, but climate change is inevitable. If we keep on with business as usual, we will reach a point where some of the worst effects are inevitable... back then, the challenge was to stop a particular action. Now the challenge is to inspire a particular action. We have to act if we are to avoid the worst effects."

Mr. Chairman and members of the Committee, I would like to share a personal experience. I grew up with the World War II generation and was privileged to serve in the U.S. Navy, at the age of 18, in the last year of that conflict.

Americans were inspired in the darkest hours of the Great Depression, and that war, by the immortal comments of President Franklin D. Roosevelt, given in his first inaugural address, in 1933: "the only thing we have to fear is fear itself." The U.S. emerged from a depression, World War II, and rebuilt a strong nation that exceeded all our dreams and expectations

Today our nation and much of the world is in the grips of an economic crisis without precedent. The brave men and women of our armed forces and that of other nations are engaged in two wars. Understandably there is a measure of fear in our hearts as to whether we should undertake at this time such an enormous and uncertain challenge as posed by the issues

before us in this hearing. But I say, in the spirit of the past generation, that it is our duty to dispel fear and press on.

We as a nation can do it again, provided we come up with sound solutions, solutions understood and acceptable to the American people.

Our President has committed to work with the Congress, and I hope the resulting legislation will rest on the tripod that I have described.

If I were serving in the Senate today, I would be working with others to incorporate legislative language in any future bill that would give a seat at the table -- equal to other cabinet members who testified earlier this week -- to the Department of Defense, to the Intelligence Agencies and to representatives of the industrial complex which supports our national security. They bring to this issue a very different and critical

perspective, but also vast knowledge and resources to get this job done.

I urge members of this committee to see whether or not, as part of the forthcoming markup, you add this concept to your bill.

Looking back, we should have included such language in the Lieberman-Warner bill. We could have garnered more support. A reasonable objective analysis of polling data today shows that the American public is motivated toward action on climate change by the likelihood that more jobs will be created and our national security strengthened.

To be specific, in the arena of national security, one of the most critical components is maintaining stability in the world.

Many factors can lead to instability. To name a few associated with global climate change: severe droughts, excessive sea level rise, erratic storm behavior, deteriorating glaciers, pestilence, shift in agriculture ranges.

These factors can result in water wars, crop failures, famine, disease, mass migration of people across borders, and destruction of vital infrastructure, all of which can further lead to failed nations, rise in extremist behavior, and increased threat of terrorism. Much of this is likely to happen in areas of the world that are already on the brink of instability. In other words, climate change is a "threat multiplier" making worse the problems that already exist.

Global climate change has the potential, if left unchecked, of adding missions to the already heavy burdens of our military and other elements of our nation's overall national security.

To the extent we can plan today how best to minimize these contingent disasters means, the less we may have to call upon our armed forces tomorrow.

Whose military is best equipped, most capable to help with the evacuation of distressed areas? Who is going to be called upon to intervene in such humanitarian disasters? The United States military will be called to action. Such action will not only bear financial costs to our military, and thus our taxpayers, it will divert resources and troops from other areas of the world.

For those volatile nations that are not capable of dealing with the pressures of climate change, governments can fail and extremism and terrorism can fill the void.

In 2007, the Military Advisory Board (MAB) of the Center for Naval Analysis, a non-profit think tank, issued a report titled "National Security and the Threat of Climate Change." The MAB

is comprised of many of the most distinguished and highest ranking retired military leaders in the United States. They made several of the conclusions I have shared with you in today's remarks. To quote from that report, in the words of Admiral T. Joseph Lopez, USN (Ret.), "You have very real changes in natural systems that are most likely to happen in regions of the world that are already fertile ground for extremism."

Delaying action on global climate change will exacerbate these threat multiplying effects and will cost the U.S. more in the long run. The difference is that these later costs will not only be economic; there will be a human cost.

On the battlefield, we never wait until we have 100 percent certainty or wait for the conditions to be 100 percent ideal. We have to act when we have enough information to act. And I think the information we have is clear.

The last point I would like to make is that we cannot and should not wait for other countries to take the lead. Their participation in a global treaty is critical, but the United States is a world leader, and it is upon us to act now and join other nations in exerting leadership. Only then can we expect others to follow.

Thank you.

Mr. MARKEY. Thank you, Senator, very much.

And now, we will turn to questions from the committee, and the chair will recognize himself, and let me ask you this, Vice President Gore.

We are in an economic recession right now. Our energy policies in the past have not protected us against price spikes, or the impact on our economy, our national security. Could you talk a little bit about what your view is with regard to how the legislation pending before this committee could actually have a positive impact upon the workers of our country, in the long run?

Mr. GORE. Mr. Chairman, thank you.

I believe that one part of the answer to the economic crisis is to create jobs with public investments in infrastructure. Economists across the spectrum, from liberal to moderate to conservative, all agree that these are the unusual circumstances where both sides say yes, we need to have public investment to get the economy moving more quickly again. And all sides agree that the best short-term investments to create jobs quickly is in infrastructure.

The focus on green infrastructure, to lay the foundation for our 21st century economy, is the logical place to make those investments. Prior to the current era, the largest surge in economic growth and productivity was the Industrial Revolution. Historians say that one among many reasons for the onset of the Industrial Revolution was the perception in England and Scotland, where it began, that they were running out of trees, and so, that gave them an extra impetus to go for the coal, and the new steam engine and the other devices ran on coal.

Now, it is obvious that we are either at or near peak oil, especially for, people argue about this, but the affordable light, sweet oil, of course there is more of this heavy, dirty oil that is very high priced, and that is a different story altogether. But we are at or near the peak for the oil that dominates the market today.

As the rate of new discoveries declines, the secular demand in places like China and India is rising. If we didn't have a global recession today, the oil price would be truly at all time record levels. For the last 35 years, since the fall of 1973, when President Richard Nixon responded to the Arab OPEC oil embargo by saying we have got to have, become energy independent, we have been on a rollercoaster, with the price going up, delivering body blows to our economy, and just as we summon the political will to do something about it, the price collapses again, and that political will dissipates.

As President Obama put it, we have gone from shock to trance. But this rollercoaster is headed toward a crash, and we are in the front car. So, when you talk about energy prices, remember last summer, and what happened then. And remember what is going to happen as the global economy recovers, and the price skyrockets again, what are you all going to say to your constituents about what you can do then? Well, you can say well, we don't have any control over OPEC. We don't have any control over the world oil markets.

Well, this bill makes it clear that we do have some control over OPEC. We can form a bipartisan national will to shake off the trance and keep our eyes on the ball, and protect the American

people from the skyrocketing prices that are in our future if we just do the same old thing, and expect the same old results.

So, we can create jobs by putting people to work, building the Unified National Smart Grid, building the solar panels, building the windmills, building the geothermal installations, insulating homes, changing out the heating and lighting systems. And those jobs can't be outsourced. They are here, right here, and as the work is done, it makes our country stronger, and positions us to lead the world in this new energy revolution.

Mr. MARKEY. OK. Thank you. My time has expired. I am going to turn and recognized the Ranking Member, Mr. Upton.

Mr. UPTON. Thank you, Mr. Chairman. I want to ask two questions.

I will ask them in somewhat rapid fire, and let both of you respond, but it may take me a minute to finish the first one. All of us here want to reduce emissions, and we want to reduce emissions without losing jobs, and we want to do it in such a way that the costs will not impact our Nation's capability to be competitive with other countries overseas. But we know that the most contentious issue is cap and trade, which may of the panelists, the last two days, have said, in fact, it would increase costs. Last year, Senator Warner, you knew well your bill failed to get the necessary votes to pass with cloture. Another 12 that voted for that said that they would vote no on final passage in a letter, including my two Senators, Senator Debbie Stabenow and Carl Levin.

This month, April, by almost a two to one margin, the Senate rejected cap and trade as part of reconciliation, which of course, would have required only 50 votes instead of 60. You have seen the headlines. This from last week in the Washington Post, India rejects calls for emission cuts. The same has been broadcast as it relates to China. And I would note that it is pretty interesting to me that some of the same folks in the Congress who were opposed to entry of the WTO of China, because the conditions on China weren't tough enough, now are in favor of, in fact, believing that the WTO will have the framework to provide for the tariffs on goods produced in China.

But there is a legitimate fear that there is going to be serious leakage of jobs to China and India, and frankly, my state can't afford to lose any more. We have lost 150,000 jobs in Michigan this year already. If somehow, cap and trade defied all the odds and got to the President's desk, legal challenges probably taking years will start, not knowing how many jobs will depart, as it relates to WTO.

As it impacts the planet, by the way, the steelworkers have indicated that they emit only 1.4 tons of carbon for every ton of steel produced in the U.S., versus about 4 tons of carbon per ton in China. What would be wrong with the WTO taking up the cap and trade debate, and requiring all member nations to, in fact, have a plank, an enforcement plank, as part of their participation in WTO, so that we know in advance whether or not they would comply or not, and would be in agreement?

The second question that I have is, doesn't nuclear have to be part of this equation? Senator Gore, when you testified, or Vice President Gore, when you testified before this committee in the last Congress, many of us noted that there wasn't a word in your book,

or a scene which would have been worth a thousand words, right, a picture, in the movie about nuclear. EPA's own analysis said that in order to meet the targets set in this bill, there has to be a 200 percent increase in nuclear. The President has called for doubling or tripling renewables. Shouldn't we be doing the same thing with nuclear?

Mr. WARNER. I will be very brief.

On the nuclear, I am proud to say I was part of a Navy that ran ships all over the world with those plants. We had the best safety record, still have it. Nuclear power is safe. It is relegated to the sidelines because of the cost and lack of the industrial base, and fear. We have got to do a frontal assault, and explain the safety is there, that it is zero greenhouse emissions, but the cost initially is pretty heavy, and we have got to encourage the Congress to put forth the tax provisions, the guarantees, and other legislation is needed to jumpstart this industry. I couldn't agree with you more the need to have nuclear power as a part of it.

As to the WTO, we recognize that greenhouse emissions know no border. They come from all the countries, and if we in the United States and other countries begin to take up and burden our taxpayers with costs to achieve some reduction, and the others go full-bore in the opposite direction, they will just cancel out our efforts. The WTO provides a forum in which we can begin to induce, particularly for China and India, to come and join. I somehow hope there is a sense of consciousness in those governments that they are duty bound to step up this time, at the fourth time international conference in Copenhagen, and begin to pull on the oar with the rest of us.

Mr. GORE. Thank you, Congressman Upton.

First of all, I am glad you cited the steelworkers, because the steelworkers have formally endorsed this. They are strongly in support of this legislation and the cap and trade approach generally.

Secondly, you mentioned India and China. I think it is important to have that discussion, and while they are often lumped together, in my view, they are actually very different, as they relate to the challenge of the climate crisis. Partway through this century, India will surpass China in population, and at some point, may rival China in industrial power.

But the reality today and for the near term future is very different. China is one of the two largest emitters, along with us. India really is not. It is growing, but the significance of China is way larger than that of India, where this crisis is concerned. And while it is true the headline you quoted, with respect to India. I gave my slideshow in the Indian parliament. I have met with them and their leaders numerous times, and I can tell you, there is a lot of movement in India. But the position you quoted, at present, is correct.

With China, it is a little bit different. They are now actively moving. They have far larger investments in green infrastructure than the United States does, even after the stimulus bill, even after this bill is adopted. They see the future. They have, by far, the largest solar installations. They are moving on every single front, and there have been active discussions between Beijing and the provincial governments about internal reduction targets, a kind of re-

gional cap, region by region, in China. And they have left the door open to a very different approach at the meeting in December, compared to what they have done in the past.

Just last week, the head of the International Energy Agency, in consultation with Chinese authorities, issued a report showing why it is absolutely essential for China to reduce their CO_2 emissions. So, I think that if the United States takes the lead, I think it is very likely we will see a very different response from China this time.

Now, on the WTO issue that you mentioned, there are provisions in this bill that accomplish substantially the result that you talk about in your question, and there are those who say a nondiscriminatory approach, taken by a country that has established limitations on carbon, if it is applied evenhandedly, might well survive in the WTO. I wouldn't leave it up to them to come to an answer, because it might be like the Doha Round. It might be endless.

I think we can't turn it over to the WTO. I think we have got to be in charge of our own destiny, and then, if it has an international dimension, where we say oK, we have got to even this out, if some Country X doesn't have any limitations, we will find a legal way to even that out. This bill puts in place mechanisms to go down that road, if it becomes necessary. So, I think that is excellent.

Now, finally, the nuclear discussion would take more time. I don't want to impose on the time restrictions here. But I will give you a brief answer. I am anti-nuclear. I am skeptical that will play a much larger role than it does now. And I won't go through all the reasons. Let us assume, for the moment, that we solve the nuclear waste storage problem. Let us assume that we solve the problem of accidents by the people who are operating these reactors. They are all one-offs. There is not a single one that is like another one, so they are a little bit vulnerable. But let us assume that we can solve that.

For the eight years I was in the White House, every single nuclear weapons proliferation problem we had to deal with was connected to a reactor problem, and though the technologies are somewhat different, if you are a dictator in a country that has a reactor program, and you have got a team of scientists and engineers capable of managing that and a fuel cycle, you can force them to work secretly at night to build you nuclear weapons. That is what North Korea did. That is what Iran is trying to do. That is what has happened elsewhere.

So, in some of these unstable regions, if we modeled the behavior to put these nuclear reactors everywhere in the world, we would rue that day. We would also run out of fuel pretty quickly, and have to go to these other cycles that enrich the fuel even more, which would make the weapons problem much, much worse.

But the final issue is cost. There is not a single engineering or construction firm anywhere in this country who can give you an accurate cost projection for what it takes to build a nuclear reactor, not a single one. And the utilities are scared of those overruns.

And there is another issue. Along with the expense, they only come in one size, extra large, because the economies of scale for the foreseeable decades ahead mandate a very large size. I know that

there are research projects on smaller reactors. They are at least 15, 20 years away. I hope they get one.

But here is the problem that the current generation of reactors poses. The utility managers face an uncertain future on demand projection. You had a witness earlier this week who pointed out what the projections for energy use in the 1970s were, and how high they went, and what the actual results were. I remember in the Tennessee Valley, TVA, in response to demand projections showing an annualized compounded 7 percent increase in electricity demand, started 20 some odd reactors, and then after that embargo that I mentioned earlier, oil prices shot up, coal prices ought not be tied to oil, but they are, because of the substitution, and then electricity prices went up. That 7 percent figure went down to 1 percent, and most of those reactors had to be canceled, and that is the real reason why there weren't any orders after 1973. It is the expense, and the lack of flexibility. If you are looking 15 years out, in a time which like the 1970s, once again has a lot of uncertainty about what the future demand is going to be, and what the future price is going to be, you want more flexibility, smaller increments.

That is why for each of the last two years, the largest new increments for electricity generation in the United States were wind, because they are going for these smaller increments that give them more flexibility. So, again, I am not opposed to nuclear. I think it ought to compete in the marketplace. I do think that for all of those reasons, it is likely to play only a small increased role from what it does now.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the chairman of the full committee, Henry Waxman.

Mr. WAXMAN. Thank you, Mr. Chairman. To Vice President Gore and Senator Warner, I thank you for your testimony, and for your leadership on the energy and the global warming issues.

Two days ago, we had testimony from a group called the United States Climate Action Partnership. It is a coalition of industry and environmental leaders, and their testimony was remarkable, because instead of corporate CEOs and environmental leaders opposing each other, which is what usually happens when we deal with environmental bills, they were united in calling for strong, effective energy and climate legislation.

And your testimony today is remarkable in a similar way. You come from opposing political parties, yet you are united in calling for enactment of market-based controls on carbon emissions. To succeed, we are going to have to bridge differences between environmentalists and industry, Democrats and Republicans, and your testimony shows that we can do that.

In my conversation with my colleagues, I often hear from Members who tell me they want to do something, but they are worried about their districts and what will happen in the transition to a clean energy economy. They are concerned about meeting the costs of this transition.

How would each of you answer Members of Congress who raise those concerns? They are legitimate concerns. What would you tell them, Mr. Gore and Mr. Warner?

Mr. WARNER. I would give a short answer. I was privileged to be in the Senate when we did the Clean Air Act, second round, the Clean Air Act, and I watched that unfold. I was privileged to work with George Mitchell, Pat Moynihan, John Chafee. They were the three, the triumvirate, the three, they were sort of the Four Horsemen. And it was strong leadership from the top down in the Senate.

When the bill came to the floor out of the committee, we recognized that it was bogged down. George Mitchell then undertook around the clock, to see Members individually, singly, and so forth, to try and work through their constituencies, which oftentimes is different, as we well know, in different portions of the country. But it was that strong leadership that got it done, and you ought to go back and research some of the rhetoric and the press at that time. They thought the sky was going to fall in if that Clean Air Act were passed.

Well, what is the result? Energy and the clean air did survive. The industrial base formulated a means to do it, and are doing it far below the original cost projections. So, I would just say we have to muster the courage, and point to those chapters in history when the Congress has led forcefully and achieved it, and this time, I think fortunately, the President is going to be a strong ally.

Mr. GORE. I think that the cost of energy will come down when we make this transition to renewable energy. Look at electric cars, for example. The internal combustion engine, for most of the time it has been used, has had an efficiency of about 15 percent. An electric motor has an efficiency of about 90 percent. You can run an electric car on the equivalent of $1 a gallon gasoline.

How do we get from here to there? We have to make the investments, and make the adjustments in the energy marketplace to accomplish this transition. We have two paths that we can pick. One is to keep on being hostage to OPEC, even as we know this marketplace is leading to sky high prices, as the oil reserves begin to deplete, and as the demand rises. Or we can decide we are going to control our own destiny, and put in place this infrastructure that will allow us to give the American people lower energy prices.

Now, what is the cost of the transition? The latest and most, what I regard as the most authoritative estimate of the cost of the transition, is about $0.30 per day. As you said, Mr. Chairman, the cost of a postage stamp. And that doesn't even take into account the savings that the same household paying that $0.30 a day can make if they take advantage of the other provisions that will allow them to insulate and change out the windows and lighting, and have sharp decreases in their energy consumption.

Mr. WAXMAN. Well, I think you are making a very valid point. We do have regional differences. We represent different parts of the country and different constituencies, but we have a national interest to figure out how to get this done, and to recognize that we have to reconcile these concerns, that are very legitimate.

I think the two of you illustrate that. As we heard from the USCAP the other day, we have got to keep working at it. I remember that Clean Air Act reauthorization. We worked hard on this committee, and under the leadership of Chairman Dingell, we got a bill out 41 to 1 out of committee, and the first cap and trade pro-

gram was in that legislation to deal with the acid rain problem. Industry told us it would cost billions of dollars, and instead, it was a tenth of what they predicted. So, I think we need to push things forward, do it in a responsible way, try to bring everybody along with us, because we all have a national concern, international concern, as we address our regional ones as well.

Thank you, Mr. Chairman.

Mr. MARKEY. Thank the gentleman. The chair recognizes the gentleman from Texas, the ranking member of the full committee, Mr. Barton.

Mr. BARTON. Thank you, Mr. Chairman. I want to point out, since we keep talking about the Clean Air Act, amendments of 1990, that I was on the committee, and I was one of those Republicans who voted with Chairman Dingell. In fact, I was a cosponsor of the bill, and I know most people think I have gone over to the dark side now, but at least in my early years in the Congress, I was in the light. And I think I still am, in some regards.

I want to point out, before I ask my question, that we have Lord Monckton in the audience. Republicans had asked that he be allowed to testify today, and that wasn't possible. He did testify earlier, as Mr. Markey has pointed out, but we appreciate you coming over from London to at least observe the hearing.

I was somewhat taken aback, Mr. Vice President, by your listing of current environmental problems attributed to global warming. You did miss a few, though. The Dallas Cowboys have not won a playoff game in ten years. You didn't mention that. And you also, as Mr. Markey pointed out to me, the Boston, the New England Patriots didn't make it to the Super Bowl. I would add those to the list of problems that you enumerated.

I do want to directly go to one of the problems that you talked about. You talked about CO_2 concentrations rising in the oceans, and the effect that that is, or could be having. I have a book here, called CO_2, Global Warming and Coral Reefs, by Dr. Craig Idso, I-d-s-o, who has a magazine that he publishes each month called CO_2 Science, and I am going to read the summary from the book, and I will put it in the record. "The rising CO_2 content of the atmosphere may induce changes in ocean chemistry pH that could slightly reduce coral calcification rates, but potential positive effects of hydrospheric CO_2 enrichment may more than compensate for this modest negative phenomenon. Theoretical predictions indicate that coral calcification rates should decline as a result of increasing CO_2 concentrations by as much as 40 percent by the year 2100. However, real world observations indicate that elevated CO_2 and elevated temperatures are having just the opposite effect. In light of the above observations, and in conjunction with all the material presented, it is clear that climate alarmist claims of impending marine species extinctions, due to increases in both temperature and atmospheric CO_2 concentration are not only not supported by real world evidence. They are actually refuted by it."

Now, I just put that into the record, to point out that some of the phenomena that you indicate are obviously occurring. You know, if they are occurring, they are occurring, but to lay that at the feet of global warming is not substantiated by the science, and

some of these alarmist predictions are just that. They are predictions. They will not be fact.

Now, let us get to some things that are fact. We know that the United States each year creates manmade CO_2 emissions in the neighborhood of 7 billion metric tons, 7 billion. If you cost that manmade CO_2 at $100 a ton, which most of the experts who have looked at the cap and trade system say that the tons cost is going to be between $100 and $200 billion, if you take the $100 a ton number, that is $700 billion a year. Now, my friend Mr. Markey and Mr. Waxman are engaging in some trading right now. They are trying to give free allowances to perhaps get votes. I won't say they are doing that, but it appears to me that they are doing that. So, they are going to give some allowances away. Let us say they give 3.5 billion tons of allowances away. That still means that there is going to be 3.5 billions of tons that have to be costed.

Let us say that we take the EPA estimate, that it is only $20 a ton, not $100. I think it is going to be a lot more than $20, but we will take the EPA number. That is still, if they give away half the allowances, and they only cost $20 a ton, that number is $70 billion a year. How in the world can we have a cap and trade system that doesn't cost jobs and doesn't cost the economy, even if it is only half the tons at $20 a ton?

Mr. GORE. Congressman Barton, I want to address your, the point that you made about the science. I don't question your sincerity for one moment.

Mr. BARTON. And I don't question yours, so we are equal on that.

Mr. GORE. Thank you. I believe that it is important to look at the sources of the science that we rely on. With all due respect, I believe that you have relied on people you have trusted, who have given you bad information. I don't blame the investors who trusted Bernie Madoff, but he gave them bad information. And——

Mr. BARTON. I have never talked to Bernie Madoff.

Mr. GORE. I am not saying that you have. But he gave them bad information, and committed a massive fraud that ended up hurting, most of all, the people who trusted him.

Senator Warner made reference in his opening statement to the story on the front page of the New York Times this morning. Absolutely incredible. The largest corporate carbon polluters in America, 14 years ago, asked their own people to conduct a review of all this science, and their own people told them what the international scientific community is saying is correct. There is no legitimate basis for denying it.

Then, these large polluters committed a massive fraud far larger than Bernie Madoff's fraud. They are the Bernie Madoffs of global warming. They ordered the censoring and removal of the scientific review that they themselves conducted, and like Bernie Madoff, they lied to the people who trusted them in order to make money. And the CEO——

Mr. BARTON. Mr. Vice President——

Mr. GORE. —of the largest, if I could just finish my response, Congressman.

Mr. BARTON. Well, I don't—look, I will stipulate that CO_2 concentrations are going up. There is no debate about that. There are about 380 parts per million, and they are going to rise in the neigh-

borhood of 500 parts per million in the next 50 to 100 years. I will stipulate that. Now, the consequences of that, and whether that is because of manmade CO_2, I think are debatable, and I don't know about this scientific peer review that you just talked about, but if somebody lied about something 14 years ago, I am sure Mr. Waxman and Mr. Markey will conduct an investigation and oversight hearing into that.

My question to you was about the cost of the allowance system. How are we going to pay for it, and how many jobs are we going to lose? Now, if you have got information about something that happened 14 years ago, I am sure, again, our chairman and subcommittee chairman, Mr. Stupak, who is the Oversight Subcommittee chairman, we will look at it. But answer my question about the cost, please.

Mr. GORE. Yes, it is on the front page of the New York Times today, by Andrew Revkin.

The leading corporate carbon polluters themselves conducted a review of the science and found that it is valid, and to the point you made a moment ago, they verified in their own studies that manmade global warming is raising temperatures and causing this crisis.

Mr. BARTON. I don't think that can be proven.

Mr. GORE. Like Bernie Madoff, they lied about it in order to make money, and they themselves profited. The CEO of the largest got a onetime payment of $400 million. Now, again, those who have trusted them and believed them are due an apology. These corporations ought to apologize to the American people for conducting a massive fraud for the last 14 years.

Mr. MARKEY. The gentleman's time——

Mr. BARTON. My time has expired, Mr. Chairman.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the Chairman Emeritus of the committee, the gentleman from Michigan, Mr. Dingell.

Mr. DINGELL. Mr. Chairman, thank you for holding this hearing. Thank you for recognizing me. You have made me very happy today. I get to welcome back two very dear friends, great public servants, real patriots, men of distinction and ability, wonderful leaders. My old friend John Warner, who lived down the street from me, and who has shown himself to be a man of extraordinary courtesy and decency in all of his activities. My very special friend Albert Gore, whose father and my father and families were friends for many years, who served with distinction on this committee, and I want to say we had a lot of fun here working on the same questions in earlier days that we are today. And I want to say how proud I am to see him back, and to thank him for being here with us today.

Gentlemen, when I was at Kyoto, the Chinese, I asked them, I said now, you are not going to be covered by this agreement. They said no. And they said, I said when will you be covered? They said well, we are a developing country, so we are not going to be, we are not going to ever be covered by it. And they indicated that they really didn't intend to be covered by it.

So, now, we have got ourselves in a situation where we are going to go forward, and I think we have to go forward, but the question

is how are we, if we go forward, are we going to see that we don't carry the burdens of the whole situation? Kyoto gave us the situation where the Eastern Europeans were out, because they were former Communists, and they were excluded. The Europeans all had rightly excluded themselves from coverage. The developing nations were excluded. And when I looked around the room to see who was going to be covered by this proposition, I found it was only one country, the United States.

Now, how do we see to it that these other countries do things, that we are going to do and that we agree have to be done, and that we are not the only country who is going to suffer the economic penalties of going forward on this, while these other folks ride on our back?

Mr. GORE. Congressman Dingell, thank you for your kind words.

Mr. DINGELL. I meant them.

Mr. GORE. Senator Warner—I know, and I appreciate it. Senator Warner mentioned your work, others did on the Clean Air Act. I want to also recall that you were the principal author of the National Environmental Policy Act, and in the same year that was passed, the first, the original Clean Air Act was carried by Ed Muskie, and our good friend Howard Baker, my fellow Tennessean. It passed 425 to 4 on the House floor, and because of the bipartisan leadership in the Senate, I believe it passed unanimously, and I think, I would just express the hope that we can find our way back to that kind of bipartisanship.

Now, on your question. I believe that the provisions in this bill put in place a mechanism for dealing with any recalcitrant nation that does not go along, and I believe we have the legal authority under the WTO to do that. But before we ever get to that stage, I honestly believe that when the United States leads the way, we are going to see a big shift with a momentum toward a truly global agreement. We talked a little bit about India and China earlier. There was a story and a study last week showing, according to one scientist, 75 percent of all the ice and snow in the Himalayas could be gone in a decade, partly because of global warming and the black——

Mr. DINGELL. I want to make it clear, I don't quarrel with the——

Mr. GORE. I know you don't, sir.

Mr. DINGELL. You and I know each other for a long time, and I am concerned that other folks are going to skin us.

Mr. GORE. Yes.

Mr. DINGELL. We are going to do the things, and they are going to derive the benefits, and we are going to spend the money, and we are going to lose the jobs. Now, how do we protect our people, and how do we see that we provide protection for the trade exposed industries?

Mr. GORE. Right.

Mr. DINGELL. And I am not satisfied that this bill has an adequate protection for our workers and our industries in those area, particularly given the attitudes of other countries, which expect us to carry the load, while they get a free ride.

Mr. GORE. Well, just to briefly finish the point, because it is in direct response to that question. I was citing that particular science

study as an illustration of why I believe that China in particular is moving much closer to joining a global agreement. And I believe that if the United States leads, we will get a global agreement that avoids the problems that you are talking about.

Were it not to unfold in that way, I believe that we would have the means to protect against the problems that you worry about rightly, and I believe that we should afford ourselves of that protection, and use those tools.

Mr. DINGELL. Now, let me get to one more question, because the time is running out.

We have a choice between, we have got to finance this, and we have got to enforce it. Cap and trade is one mechanism. Energy tax is another. Every economist says that a carbon tax is a better, more efficient, fairer way of doing it. The Europeans have had two, and maybe three, fine failures in their application of cap and trade. How do we avoid the mistakes that they made, and how do we come up with something that gets us the best?

Nobody in this country realizes that cap and trade is a tax, and it is a great big one. And so, I want to get a bill that works. How do we choose the best course, cap and trade, carbon tax? At times, my dear friend Albert, you have been an advocate of a carbon tax as the better way to go. How do we address this problem?

Mr. GORE. Well, I have, for 20 years, supported a CO_2 tax that is given back to the people, so that it is revenue neutral, but accomplishes the desired effect, but I have never proposed it as a substitute for cap and trade. I am in favor of both.

And a number of the countries around the world that have done the best job of addressing the climate crisis and strengthening their economies, have in fact put both in place. But I believe that the cap and trade approach is the essential first step, partly because it is the only basis upon which we can envision a truly global agreement, because it is very difficult to imagine a harmonized global tax.

Mr. DINGELL. I apologize, my dear friend, for interrupting you, but how do we avoid the mistakes that the Europeans made? They screwed it up twice real good. How do we avoid those? How do we get a program that really carries out our responsibility and our trust to the American people?

Mr. GORE. I know Senator Warner wants to make a comment, but just briefly, I think by learning from the mistakes that they made, as they themselves have learned from their own mistakes.

Mr. DINGELL. I am not satisfied——

Mr. GORE. Their initial allocation was off. They have gone back and made significant changes. I think that it is beginning to work very effectively there, and country by country, we are seeing the results there. So, I think we can learn from what they have already learned.

Mr. WARNER. Just a brief reply on the issue of China. You put your finger on, the man on the street out here is asking us that very same question. And my response would be as follows. Because of our inability to reconcile differences in the last international round, the United States gave cover, they gave protection to China and India, to stand back behind us and say they are not going to go, we are not going to go.

That is why I urge this committee, in its deliberations, you may not achieve all that you set out to do in this very courageous bill thus far, but as we say, get a beachhead on this issue in this Congress, because it is only going to get more complicated and tougher for successive Congresses. Lay the beachhead, and let us hope that we can build on that foundation, and go forward in the coming years and achieve totality of our goals.

Mr. MARKEY. Thank you, Senator, very much. The gentleman's time has expired. The chair recognizes the gentleman from Pennsylvania, Mr. Pitts.

Mr. PITTS. Thank you, Mr. Chairman. Welcome, Mr. Vice President and Senator. Since we don't have the allocation language yet. It hasn't been released. Whether it is auction or allocation of free credits or carbon tax, do you think that Congress and the American business community, and the American people would benefit from a complete and open hearing on this allocation language once it is released, whatever it might be? Should we have open, transparent hearings on this before we act?

Mr. GORE. I mean, I support the leadership of the committee and its approach to gathering information, and that would be my answer.

Mr. PITTS. OK. Senator Warner.

Mr. WARNER. Well, I would join my colleague on that point. I mean, I think transparency is more vital with this legislation than anything I have seen in recent times, because——

Mr. PITTS. So, we should have a hearing if—once we have the language——

Mr. WARNER. Well, I am presumptuous to come over here, as a member of the former body, and tell you how to go about your business.

Mr. PITTS. All right.

Mr. WARNER. I just strongly urge you to do something in this Congress. Now, the cap and trade is tough. It is a tough issue, but we don't want to appear that we are using cap and trade as a means to just tax those who can pay to distribute it all over.

Mr. PITTS. OK. Thank you, Senator.

Mr. WARNER. Thank you.

Mr. PITTS. Mr. Vice President, I did not hear your answer to Mr. Barton's question. What is the cost of this bill to every American family?

Mr. GORE. Well, the study that I think that is most authoritative, before taking into account the savings in their energy use that this bill will occasion, is around $0.30 a day. But again, let me emphasize that I think there will be actual reductions. And the reason is actually very simple. During the days of very cheap energy earlier in the century, we developed patterns that led to huge amounts of waste in energy that we all began to just kind of take for granted. And with the better engineering and the better science, the retrofitting and installation of more efficient ways of using energy really allow sharp reductions.

In the State of California, which adopted some of the provisions that are similar to those in this bill, for the last 30 years, there has been a zero increase in energy use per capita, but while the

economy has grown in California, GDP by 80 percent over the same period of time.

Mr. PITTS. OK. Is that $0.30 per family per day, or per person?

Mr. GORE. I believe it is per household.

Mr. PITTS. Per household.

Mr. GORE. Yes.

Mr. PITTS. And do you concur with that, Senator Warner?

Mr. GORE. About a postage stamp per day, but again, I think that much more than that will be saved by implementing the other provisions of the bill.

Mr. PITTS. And can you supply us with the study, or the reference to the study?

Mr. GORE. I believe that it is the EPA study that was produced two days ago, three days ago.

Mr. PITTS. All right. Thank you.

Mr. GORE. And I believe it has been presented to the committee.

Mr. PITTS. Thank you. William Nordhaus, one of the most distinguished experts on the economics of climate change, has pointed out that the Kyoto Protocol would have imposed disproportionately large costs on the U.S., yet it would have had almost no effect on global temperatures. In large part, the lack of results stem from the refusal of China and India to adopt firm, binding caps on their domestic emission. How do you explain the statements of China and India, that they made at Bali, demanding that the developed world pay them for any greenhouse reduction costs that they incur? They have demanded that the developed world pay them for any greenhouse gas reductions that they make.

Mr. GORE. Well, the rhetoric between the developed and the developing countries has been in a rut for years and decades. The reality of the world today is that China has moved a long way. China is ready to move at Copenhagen. I think you have got a very different situation with China today.

Mr. PITTS. So, you do not feel that this principle of income transfers to the developing countries is valid.

Mr. GORE. I think that technology assistance and adaptation, I think adaptation to the impacts of climate change is particularly important, and I think the way it is addressed in this bill is excellent.

Mr. WARNER. I associate myself with the comments of my colleague here. We just dismiss that type of argument out of hand. I think world condemnation of China and India will come about shortly, if there is some foundation in fact, and I believe it is, of the EPA finding that this is detrimental to health, those two nations ought to be high on the areas where that health is going to be affected, and this may change their thinking.

Mr. PITTS. Thank you, Mr. Chairman. Yield back.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentleman from Washington State, Mr. Inslee.

Mr. INSLEE. Thank you. Mr. Vice President, I hope you will convey our thanks to Tipper Gore for her work on this cause as well. I have got two questions today.

First, I want to ask about a position a relatively well known individual has taken at one time about a cap and trade position. I just want to read a question and an answer, a quote from February 15,

2007. This former Congressman was asked in 2000: "Candidate George Bush pledged mandatory carbon caps. It was a campaign pledge. What did you think of it at the time? Were you for that?" This former Congressman answered: "I think if you have mandatory carbon caps, combined with a trading system much like what we did with sulfur, and if you have a tax incentive program for investing in the solution, that there is a package there that is very, very good. And frankly, it is something I would strongly support."

This action plan is essentially what we are doing in this bill, of a carbon cap, a trading system, and incentives for the development of entrepreneurship. This former Congressman went on to say that caps with a trading system on sulfur has worked brilliantly, because it brought free market attitudes, entrepreneurship, and technology, and made it very profitable to have less sulfur. So people said wow, it is worth my time and effort.

Now, that former Congressman who said that on February 15, 2007 was former Congressman Newt Gingrich, who will shortly come into this room and testify that this bill is a combination of bubonic plague and Ebola virus for the U.S. economy.

Is there any scientific reason, of which you are aware, that would make a carbon cap system, of the type we have proposed, productive economically, and a wise move on February 15, 2007, and today, unfathomably destructive?

Mr. GORE. I think I will try to dance around that question.

Mr. INSLEE. You are entitled to, as a former Vice President. You have that right. We will take that as a rhetorical question, and——

Mr. GORE. Well, see, I think that one of the great questions here, for those of us who believe in capitalism and the power of the marketplace, is why don't we use this great tool to solve the biggest crisis we are facing? CO_2 is invisible, tasteless, and odorless, and more importantly, it is not registered on the accounting ledgers. It has no price associated with it. So, the old aphorism, out of sight, out of mind, applies. As a consequence, we in this world, today, will put 70 million tons of it into the thin shell of atmosphere surrounding the planet.

Scientists have known for 150 years that CO_2 traps heat, and for 100 years, have worried that a massive increase would trap so much heat that it would cause big changes. And for the last 25 years, we have had the preeminent scientific organization in the world, the 3,000 best scientists in the world, from 113 countries, have issued four unanimous reports saying we have got to deal with it.

So, how are we going to deal with it? The best way to deal with it is to use the marketplace.

Mr. INSLEE. Mr. Vice President, I want to ask you about, in a local impact, how that would work. I was happening to talk a guy who runs Taylor Shellfish. They have an oyster farm in Puget Sound, really reputable business for a long time. They can't grow oyster seed now in Puget Sound the last couple of years, and there is a very strong suspicion it is associated with the acidification of the ocean, which you educated us about.

By the way, the NOAA research is that this is happening in the West Coast United States, probably twice as fast, which is now 30 percent worse than preindustrial times, there is new research on

this. He could lose his business as a result of a policy of inaction, which some are suggesting here, that we should not act. And many of us believe that the costs of inaction here are much greater than the cost of action, that we will reduce the cost to the U.S. economy by actually acting. And I have got a lot of business in my district, like right across the right, Sapphire Energy. They are doing algae-based biofuels, Infinia Energy, doing Stirling Engine solar. We can grow the economy and avoid the devastation a lot of these businesses, like the Taylor Oyster Farm may have. Is that a fair projection of what the future could be?

Mr. GORE. Well, I think it is, and it is a challenge to the moral imagination, to deal with the scope and scale of these changes. The idea that the entire world ocean would grow so acidic that everything that makes a shell will be unable to do so, unless we take action, is just astounding. And at the base of the food chain are these tiny little critters that have very thin shells. They are already being affected. If the base of the food chain is affected, then everything up the food chain is affected.

The coral reefs are already under stress, great stress. A study just came out showing the Great Barrier Reef of Australia, the largest reef system in the world, thousands of miles, will be functionally dead by 2050 without action. Now, it is a combination of the warming water temperatures and the acidification, but yes. No, I think you are right on target. We need to address this.

Mr. INSLEE. Thank you.

Mr. GORE. And thank you, Congressman Inslee, for your outstanding leadership and initiative on this issue over the years.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentleman from Oregon, Mr. Walden.

Mr. WALDEN. Thank you very much, Mr. Chairman, Mr. Vice President, Senator. It is good to have you before the committee.

I wanted to just note that Mr. Vice President, your reference to $0.30 a day comes from an EPA study, I believe. Unfortunately, that EPA study also assumes 150 percent growth in nuclear power in order to achieve that $0.30 a day, and that nuclear part is not in this bill.

I know there is concern about worker retraining. Mr. Vice President, you have said you wanted every coal worker who lost his job to get a job. Unfortunately, the worker transition piece in this bill, all we have is in parentheses, to be supplied, page 568 of the bill. And I have asked every other witness this, have you each read the bill in its entirety? Can I get a yes or no?

Mr. GORE. Congressman, I have read all 648 pages of this bill. It took me two transcontinental flights on United Airlines to finish it.

Mr. WALDEN. And I get another one at 2:00. Senator Warner, have you read the bill?

Mr. WARNER. The answer is no, I have not.

Mr. WALDEN. All right. Let us, then let us go on to a couple of points, because——

Mr. WARNER. I am trying to——

Mr. WALDEN. Mr. Vice President, because you talked about an issue that is dear to my heart, and I have raised it at every hearing I have participated in, and that is the health of America's for-

ests. I come from a district with 11 National Forests in it, with 20 percent unemployment in some of these counties, because nothing is happening meaningful in these forests. I am a big advocate of biomass. Do you support, yes or no, because we are tight on time, biomass from federal forests as a renewable energy source?

Mr. GORE. You know, I think the protection of the federal forest is important, and Congressman, as a matter of curiosity, are you seeing the tree death in your forests from the——

Mr. WALDEN. Yes.

Mr. GORE. —beetles and the drying?

Mr. WALDEN. In fact, this is from 1989. Tanner Gulch fire. It wiped out Spring Chinook Salmon Run in Oregon's Upper Grande Ronde River. This is an overchoked forest, although it looks fairly healthy from this picture. In California federal forests, here is what happens after you treat it and get it in, sorry. I am sorry. Here is what happens when you treat it, and try and manage it for old growth. This is the Malheur National Forest. It is out in Harney County. They have 20 percent unemployment right now. This is what happens when you don't treat it, and it burns.

Mr. GORE. When you say treat it——

Mr. WALDEN. Get in and manage it the way the biologists believe it should be managed. We have a 79 year backlog at the rate we are treating right now, to get these forests into balance, to deal with the climate change that you outlined. And the Forest Service, as you know, has done terrific research work over the years, trying to figure out climate change, and what needs to be done as management in these forests.

That Malheur National Forest I referenced, they are at least 25 years out, based on the limited amount of acreage. We had investors that were ready to go into that county with 20 percent unemployment, and do woody biomass production of renewable energy, and they cannot even get certainty from the forest of supply.

This legislation, on page 8, says woody biomass is not renewable if it comes off federal ground, period. Beyond that, the way it is written, I have had private land foresters tell me, even off their private land, it would shut down biomass facilities if you followed this.

Does that make any sense to you?

Mr. GORE. Yes, sure. Yes. No, I understand exactly what you are saying.

Mr. WALDEN. Do you agree with shutting it down? Do you agree with this language?

Mr. GORE. I don't have a lot of confidence, based on what has happened in the past, when something, you know, I think that if you and I could sit down and talk about every little detail of which tree and so forth. You know, in Canada, they have this kind, a management approach.

Mr. WALDEN. Right.

Mr. GORE. And yet, their forests are being devastated.

Mr. WALDEN. And why is that?

Mr. GORE. It is primarily because the warmer temperatures are allowing that——

Mr. WALDEN. OK. So, doesn't that——

Mr. GORE. If I could finish my—you asked me a question. If I could finish my answer. It is primarily, according to them, because the warmer temperatures——

Mr. WALDEN. Right.

Mr. GORE. —due to manmade global warming, are causing the pine beetles and bark beetles to——

Mr. WALDEN. Right.

Mr. GORE. —go on the rampage——

Mr. WALDEN. Right.

Mr. GORE. And they have lost many billions of dollars of——

Mr. WALDEN. Right.

Mr. GORE. And when they die and get dry in the higher temperatures, they are vulnerable to fire——

Mr. WALDEN. Right.

Mr. GORE. —and we have had all time record forest fires.

Mr. WALDEN. So, doesn't that speak to managing those forests, to thin them out, when you know you are going to have drought, to open up the stands, get them back in balance with nature, and to be able to—the thing I am fighting here is, when you take——

Mr. GORE. No.

Mr. WALDEN. —that material out, to do exactly what Canada is doing, to do exactly what needs to happen on the Fremont-Winema National Forests, where you have more than 200,000 acres of federal forestland that is exactly that way, bug-infested lodge pole pine, when that material comes out, why in the Devil do we say it is not renewable, and can't be turned into pucks like this, to help reduce carbon from coal? This could be put in a coal plant in my district, if they could get enough of this made. This comes out of Canada, by the way. They are doing that. Why do we preclude it in this bill?

Mr. GORE. Well, I think the record of what has happened when it has been opened up in the past has given a lot of people pause, and diminished their confidence that it could be managed in a way that resembles the right result, but——

Mr. WALDEN. Now, as you know, Mr. Vice President, every forest has a management plan, and every activity on that forest requires full NEPA. Mr. Chairman.

Mr. MARKEY. I am just tapping you to just, I am not gaveling you, I am just tapping to let you know that you are past.

Mr. WALDEN. Because a lot of these answers have gone on for twelve minutes after the five. I guess the point here is every activity on a federal forest already is covered by NEPA, isn't it? Every management activity.

Mr. GORE. I don't think those provisions of NEPA have been effective in preventing some of the abuses that occurred during some times in the past.

Mr. WALDEN. I will tell you this. I will close. Why don't you come out, and I will take you to the Malheur National Forest. And together, we will walk in these stands, or the Winema, Fremont-Winema National Forests, and we will meet with the professionals. Or up in the Wallowa-Whitman, where they are heating the school with biomass. Or the Harney County—apparently, I am out of time.

Mr. GORE. I appreciate your invitation, Congressman. I have been to the forests of Oregon. I would love to come back. I was active in forming the Forest Plan of 1994 for the Pacific Northwest.

Mr. WALDEN. The Northwest Forest Plan.

Mr. GORE. Yes.

Mr. WALDEN. Which has its own set of issues being implemented.

Mr. GORE. Yes, but it has been largely a great success.

Mr. WALDEN. I dispute that.

Mr. GORE. Well——

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentleman from North Carolina, Mr. Butterfield.

Mr. BUTTERFIELD. Thank you very much, Mr. Chairman. Let me also thank both of you for your testimony today, and for your extraordinary service to our country.

Let me try to go in a little different direction if I can, and this time goes very quickly, as you can imagine. But I represent a very low income district in Eastern North Carolina, Greenville, Rocky Mount, Elizabeth City, very low income district. We are the fourth from the bottom in the United States of America, in terms of median family income. I think the income is like $30,400 per year. And so we are, essentially, a poor district.

And so, I am obviously concerned about the costs of this legislation, and what it will do to low income families, not just for electricity, but for everything that we consume, plastics and rubber, and food and the like. And so, my question to you is, Mr. Gore, what do I tell a single parent, for example, in my district, with two children, two young children, making $8 an hour? What can I say to reassure her that she will be able to afford the cost of this legislation?

And it may be $0.30 a day, it may end up being much more than that. I hope that you are right, and that the, those on the other side of the aisle are wrong, but if it happens to be expensive, my families, my low income families, cannot absorb the cost of this legislation. I need some help with that.

Mr. GORE. Well, I think other provisions of this bill can lead to reductions in the cost for that family. And as we saw in Hurricane——

Mr. BUTTERFIELD. But not immediate reductions.

Mr. GORE. Well, it depends on how quickly they are implemented, and how they are taken advantage of. And let me say that, as we saw with Hurricane Katrina, low income families are often the most likely the suffer the harmful consequences if we do not address the global warming issue. And the new job creation that comes from the green energy jobs that are being created, are going to benefit the same communities of low income families.

Mr. BUTTERFIELD. Well, that is very difficult to explain to a low income family that is already in the deficit, in deficit spending. It is very difficult, and we need to do a better job in crafting this legislation, to make sure that we have an economic offset, some type of assistance for low income families, to make sure that they do not pay an inordinate price for this legislation.

Senator Warner, as you can see from the ebb and flow of the testimony today, there are some who criticize this legislation as a measure that will result in fewer American jobs and fewer invest-

ment opportunities. You talked a few minutes ago about creating a beachhead. I know what that means in military language, but how can we develop a political beachhead to make sure that the American people understand this, and to make sure that the element of fear does not dominate this conversation?

Mr. WARNER. I shared the burdens you have, of talking to my people when I was leading the effort in the Senate. It was a brand new concept, and we couldn't establish clear cost parameters. But I would say to that wonderful family, the cost today, hopefully, will result in an America that they pass on to their children that they can enjoy, as did their parents.

I do believe, and I say this respectfully, Mr. Chairman, and when we worked on our bill, I tried to resist a lot of the efforts, good intentioned, to take such funds that were going to be developed by the cap and trade concept, and spread them around in areas other than directly for the goals of increasing our energy, clean energy output. I think if you begin to try and utilize this bill as another means by which to take care of well deserving families and well deserving causes, you are going to lose public support.

They will pay if they are confident that the dollars in this bill go towards the goal of clean energy, cost effective energy, and improved health.

Mr. BUTTERFIELD. So, you would not support the concept of offsetting the economic impact on low income families.

Mr. WARNER. Well, there may be other ways to do it than this piece of legislation. If we make this, I would say, when I talk to my colleagues, a welfare bill, I don't think the public is going to begin to support it.

Mr. BUTTERFIELD. On the question of the loss of jobs, the——

Mr. WARNER. The loss of jobs——

Mr. BUTTERFIELD. Does taking action on this legislation come at the expense of American jobs?

Mr. WARNER. No, I think quite the contrary. There, authoritative polling that shows that the American public looks at this bill as a means to increase the number of jobs, as well as help improve health conditions, and they are quite anxious to see that it will help our national security.

Mr. BUTTERFIELD. Thank you. Mr. Chairman, I yield back.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentleman from Texas, Mr. Burgess.

Mr. BURGESS. I thank the chairman. I appreciate both witnesses being with us today. I appreciate your willingness to hear from members of the subcommittee.

Vice President Gore, when you were here in our subcommittee, maybe it has been two years ago, as you were leaving, I recall the statement was made that, about a carbon tax that would just replace the existing payroll tax and income tax, and there is a, certainly Tom Friedman writing in the New York Times a couple of weeks ago, asked the very same question. Would we not be better, rather than trying to play hide the ball with cap and trade, would we not be better just being honest with the American people, and saying we are going to tax energy? We are going to tax carbon.

And perhaps to the extent that we tried to make that revenue neutral by replacing the payroll tax, replacing at least a portion of

the income tax with this new carbon tax, would that not be a straightforward way for us to go about this, rather than us try to pick winners and loser?

Mr. GORE. As I said earlier, Congressman, thank you for your question, as I said earlier, I have supported a revenue neutral CO_2 tax, with the money given back. It could be given back to the people in a variety of different ways. But I do not support it to the exclusion of cap and trade. I think that cap and trade is the essential first step in order to use the market forces to address this problem, and to secure a global agreement around that principle, which already has broad support throughout the world.

Mr. BURGESS. And I actually would dispute that concept, but here is part of our problem. I absolutely agree with both of you about the economic factors. There is no question that the energy, cost of energy, the burden of energy costs on our families has been significant, and it will be significant again in the future. So, finding ways to deliver energy at a reasonable cost is important, and I—no argument with that.

No argument about the security question. Our good friend, Boone Pickens, said it so eloquently last summer, that we are funding both sides of the War on Terror. People get that. Our trade deficit that has been so high recently, people get the negative impact that that has on our economy, and I think one of you even references peak oil to some degree. At some point, oil likely is going to be a finite resource, and looking for other sources. Absolute agreement to that point.

But we always, then, come down to arguing about, did global warming cause Katrina? Did global warming cause the death of a polar bear? And there are going to be arguments on both sides. Why not just leave that aside? Why not focus on the security? Why not focus on the economy? Why do we have to be in a position of picking winners and losers?

We have just watched a financial meltdown in this country the likes of which hasn't been seen in some time. Now, if people like credit default swaps, they are really going to like the carbon swaps that are going to occur, and the carbon futures swaps. We spent a full day in this committee last summer, talking about the manipulation of the energy futures market in oil. We are going to create, I fear, another such system that people who are, have an inclination to react dishonestly to systems, are going to actually have a new opportunity. Is that not a problem?

Mr. GORE. Well, let me look at your analogy in a slightly different way. There were warnings that the credit default swaps and the subprime mortgages, and the other activities that caused the financial crisis were going to bring us ruin if we didn't address them, and nothing was done about it. If I could finish my answer.

There are warnings now of a far worse catastrophe, and they are coming from a unified IPCC representing the global scientific community, and if nothing were to be done about it, the results would be far worse. Now, let us look at the subprime mortgages. I remember the days when you made a down payment and proved you could make the monthly payments. And the risk, we were told the risk was washed away by securitizing them and lumping them together, and that assumption collapsed.

We now have several trillion dollars of subprime carbon assets, whose value is based on an assumption that it is perfectly OK to put 70 million tons of that pollution up there every 24 hours——

Mr. BURGESS. And this is what——

Mr. GORE. So, the reason, in answering your first question.

Mr. BURGESS. I am going to have to interrupt you.

Mr. GORE. Why we—why can't we ignore it——

Mr. BURGESS. I am going to run out of time.

Mr. GORE. —because it is the biggest crisis we have ever faced.

Mr. BURGESS. And no one who has come before this committee from a scientific basis can show us the smoking gun that mankind is causing this to happen. There are, you can create relationships between the number of sunspots and the partisan makeup of the Senate. Anything can be proven, if you are willing to take the time to have the numbers.

Mr. GORE. Congressman Burgess.

Mr. BURGESS. Let me just go to another point, because it was a terribly important——

Mr. GORE. Could I respond to that?

Mr. BURGESS. No, I need to make this point. Dr. Apt, who was with us yesterday, and he said it so eloquently, that we have to focus on reducing carbon dioxide, rather than trying to pick winners and losers in this. If we will focus on what is the reasonable thing to do, whether we want to focus on security, whether we want to focus on the economy, or we can spend a lot more time arguing about the science of climate change.

When we construct this bill, and Senator Lieberman, or Senator Warner said it so well, when we construct this bill, we have to have the flexibility that we give people credit for doing the energy efficiency things that we want them to do. We give people credit for creating the newer technologies that we want them to do, rather than us pick every jot and tittle of winners and loser in the bill, which is unfortunately the draft that we have in front of us.

I will yield back, Mr. Chairman, thank you.

Mr. MARKEY. Vice President?

Mr. WARNER. Could I have just a minute, less than a minute? I think a carbon tax is very simple, very understandable, but I think it would bring the bill down. I don't think you will get the votes to support it. The inherent advantages——

Mr. BURGESS. And just for the record, I would not support a carbon tax.

Mr. WARNER. Yes, well, all right. The inherent, I think inherently, in a cap and trade system that can be devised, is the incentive for the industrial base of this country, the technological base, to solve the problems and to go forward. It also, if we have a bill, it begins to enable that same base to do its long range planning. The power industry has to look forward 10, 12, 15 years out, as to their requirements, and if we keep hanging over this, global warming thing over their head, they can't make their orderly planning. We have got to get the beachhead. We have got to tell them here is what we are trying to do, and can you do it, if we give you this flexibility and this support. And they did it in clean air. They can do it in this.

Mr. MARKEY. The gentleman's time has expired.

Mr. BURGESS. I would just make the point, this bill does not have the flexibility inherent in the language as it is before us today.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentleman from California, Mr. McNerney.

Mr. MCNERNEY. Thank you, Mr. Chairman. First of all, I would like to ask the committee, with unanimous consent, that I be allowed to submit comments for the record on behalf of the National Association of Realtors.

[The information was unavailable at the time of printing.]

Mr. MARKEY. Without objection, so included.

Mr. MCNERNEY. Thank you. Mr. Gore, I have to, Vice President Gore, I have to just admire how you have been willing to put your personal reputation on the line year after year, for something that you truly believe in, despite the most vicious attacks on your character, that are totally without merit. And that takes a great amount of bravery, and I have the greatest amount of respect for you for doing that.

Mr. GORE. Thank you, sir.

Mr. MCNERNEY. Well, you have been pretty explicit about the economic rollercoaster that we have been on, due to energy instability, the price instability of energies. Do you believe, that I believe, like I believe, that by increasing energy efficiency, and finding new sources of energy, that we can get ahead of the energy cost problem, and ultimately, pay less for energy, for better results with the cap and trade system, which will also create jobs, and stabilize the economy, and get rid of that rollercoaster?

Mr. GORE. I certainly do agree with that. I think that if we made up our minds to lead this transition, we would benefit not only with millions of new jobs, but also, with lower energy costs and a much more productive economy. I don't think there is any question about it. The only question is whether we are going to lead the world, or whether we are going to follow those who provide leadership elsewhere. If we lead, we get the jobs. We get the technologies to sell elsewhere, and we get the productivity gains. That is the role I think we ought to adopt.

Mr. MCNERNEY. Thank you, Vice President. Senator, do you want to respond to that?

Mr. Gore, you mentioned the smart grid as a part of the solution to reducing our carbon emissions. Can you explain the connection there? I think it is something that a lot of people don't quite understand.

Mr. GORE. Yes. The phrase smart grid is confusing to some, because in many parts of the world, it is used to describe the distribution of energy, and the use of smart meters that give homeowners and business owners a better way to reduce the wasteful use of energy, and use efficiency and conservation more effectively.

But maybe we ought to call it a supergrid. That is what the Europeans call one of their proposals, because it essentially has two components. It makes it possible to transmit over high technology lines, over a long distance, renewable electricity from the areas with high sunlight, in the desert, for example, to the cities where it is used. And from the wind corridor, that my friend Boone Pickens talks about a lot, running up north and south along the High Plains and the Mountain States, and take that electricity to the cit-

ies where it is used, and from the geothermal areas. That is the first part, long distance, low loss transmission, from areas that don't have a lot of people, but do have a lot of renewable resources, to the places where it can be used.

The second feature of it involves the use of data processing, chips, a very cheap but very powerful and effective information technology, to empower the end users to use less and get more, and to sell electricity back into the grid, if they put photovoltaic cells on their roof, or use small wind, or other forms of what is called distributed power generation.

Mr. MCNERNEY. Thank you. That was a fairly detailed discussion.

Do you have any comments about the value of using a Green Bank, in terms of making the transition easier for the American people, or for the individuals and families in our country?

Mr. GORE. Well, that is not in the draft of this legislation, and I want to reiterate and make it clear that I support this legislation, but I am familiar with the proposal that my friend of 50 years, Reed Hunt, has put together, with others, called a Green Bank. I think it is a very imaginative, very excellent idea, and I commend it to your attention.

Mr. MCNERNEY. Well, thank you. You know, your list of impacts due to global warming was fairly sobering. And if we are marching along that path, it is fairly risky. Do you think that that is, do you think we are sort of on a steady state, or do you think we are accelerating our march down that path?

Mr. GORE. Well, we are presently accelerating in a direction toward a precipice. We still have time to change course, and I will answer in a way that is also relevant to the answer. The time ran out on the exchange that I was having with Congressman Burgess.

Mr. MCNERNEY. Feel free to end, to respond to that earlier question.

Mr. GORE. Not too long from now, the next generation is going to look back at the beginning years of this century, and ask one of two questions. Either they will ask what were you thinking? Didn't you hear the scientists? Why did you prefer to listen to some outlier quack that got money from these carbon polluters that were engaged in a massive fraud? Why didn't you listen to the global scientific community? Just because you didn't have access to the scientific studies of the carbon polluters themselves, because they hid them, is no excuse. What were you thinking? Why did you let this happen?

Or they will ask a second question, the one I want them to ask. How did you find the moral courage to look past the short term controversies of the day, and rise to solve a crisis that so many said was inconvenient to address? Thank you.

Senator Warner's generation won a war in the Pacific and in Europe simultaneously, and then put down the Marshall Plan and the United Nations and the post-War recovery. It wasn't very convenient for them to do, but they did it because our national security was at stake. Our national security is at stake now, and it is a challenge that this Congress must rise to.

I don't know how to say it. I wish I could find the words, to get past the partisan divide that both sides have contributed to, but I

really wish I could find the words to, that would unlock this. It shouldn't be partisan. It should be something we do together in our national interest. The next generations are calling out to us.

Mr. MARKEY. The gentleman's time has expired. The chair recognizes the gentleman from Louisiana, Mr. Scalise.

Mr. SCALISE. Thank you, Mr. Chairman.

As we debate what I agree is a very important piece of legislation, a piece of legislation, in my opinion, and many others would have very detrimental effects on our economy if it was implemented the way it has been drafted. We have been trying to get a quantifiable grasp on the cost of this bill, how much it would actually cost American families, how many jobs would be created and lost, and we have, number one, on the science side, we have had very divergent views. We have had dozens of experts come over the last few days and testify, giving very different opinions on the science.

On the economics of it, we have not had the same kind of divergence. In fact, most economists and experts that have testified on the cost acknowledge, in fact, I will refer to President Obama's own budget, that was just passed two weeks ago. If you go to page 119 of the President's budget, he is anticipating generating $646 billion in new tax revenue from this bill. So, clearly, the President expects this bill to generate $646 billion in new taxes, that even his own Budget Director has said would be passed on to consumers.

Senator Warner, we had seen numbers on the Lieberman-Warner Bill, the President's Budget Director today, he was the head of CBO last year, when he testified on your bill, he said it would have cost consumers about $1,300 a year more in their average utility bills, in addition to everything else they buy that is related to electricity, gasoline, food, anything else.

Can you, and then Senator Gore, talk to the numbers that the Congressional Budget Office, and now, the President's Budget Director, gave to your bill, and how that would relate to this bill, in terms of the cost to American families, of implementing a cap and trade energy tax?

Mr. WARNER. I would say that the work done by the Budget Office on the bill that I was privileged to be working with, is a good foundation, and that you can, I think many of the assumptions would carry over to this legislation.

But Congressman, we have got to make a start. If we are looking for absolute certainty, we are never going to get a bill. We have to start the learning curve, start the process, and then build on it. And that is why I strongly urge that you incorporate language, to give to the Chief Executive Officer of this country the authority to move in when he believes that corrections have to be made.

Mr. SCALISE. And of course, we don't see that in this, and I am sorry to interrupt, but I know my time is limited. Vice President Gore.

Mr. GORE. Congressman, you began by denying that there is a consensus on the science. There is a consensus on the science.

Mr. SCALISE. Well, you mustn't have been listening to our testimony that we have had for the last few days with dozens of experts that have come in, who have given completely different views. So, I would——

Mr. GORE. Well, there——

Mr. SCALISE. I would encourage you to go back and look at the testimony this committee has heard.

Mr. GORE. There are people who still believe that the Moon landing was staged on a movie lot in Arizona.

Mr. SCALISE. And neither of us are one of those, and I know you like giving those cute anecdotes. This is not a cutesy issue. We are talking about——

Mr. GORE. No. That——

Mr. SCALISE [continuing]. Export millions of jobs out of our economy, out of our country, and testimony has been given just to those numbers. And so, we are talking about a serious consequence that there would be on this country, and the carbon leakage that would occur, where the carbon would be emitted, but it would be emitted in China, in India, and the jobs would go to China and India. And that has been testified before this committee in the last few days as well.

Mr. GORE. Man——

Mr. SCALISE. Would you testify about the actual cost. Do you want——

Mr. GORE. Man——

Mr. SCALISE [continuing]. To testify about the cost?

Mr. GORE. Manmade global warming pollution causes global warming. That is not a cutesy issue. It is not an open issue.

Mr. SCALISE. And it is your opinion. Obviously, you have stated it many times.

Mr. GORE. It is the opinion of——

Mr. SCALISE. Would you talk to the cost?

Mr. GORE [continuing]. The global scientific community, and more importantly——

Mr. SCALISE. And not in unanimity. There are others on the other side.

Mr. GORE. More importantly, Congressman, that opinion is the opinion of the scientific studies conducted by the largest carbon polluters 14 years ago, who have lied to you, and who have lied to the American people for 14 years.

Mr. SCALISE. And you talk about carbon—and I have got— I am running out of time. We talk about carbon polluters. You talk about them. It is my understanding that back in 1997, when you were Vice President, Enron's CEO, Ken Lay, was involved in discussions with you at the White House, about helping develop this type of policy, this trading scheme. Is that accurate, is it inaccurate? It has been reported.

Mr. GORE. I don't know. But I met with Ken Lay, as lots of people did, before anybody knew that he was a crook.

Mr. SCALISE. Right. And clearly, you can see why so many of us are concerned about this type of cap and trade energy tax, that would be literally turning over this country's energy economy——

Mr. GORE. I didn't know him well enough to call him Kenny Boy.

Mr. SCALISE. Well—but you knew him well enough to help him devise this trading scheme, and obviously, we know what Enron and these big guys on Wall Street, like Goldman Sachs, and I know you have got interests with Goldman Sachs.

Mr. GORE. No.

Mr. SCALISE. These people—well, it is—that has been reported. Is that not accurate?

Mr. GORE. No, I wish I did. I don't.

Mr. SCALISE. With executives from, you are partnered in companies with executives from Goldman Sachs. Well, if you are not. Either way, Enron clearly had an interest in doing this. When they were around, we saw what they did, and when you see the types of people involved in wanting to set up this kind of scheme, you can see why so many of us are concerned about turning——

Mr. GORE. Are you——

Mr. SCALISE [continuing]. Our energy economy over to a scheme that was devised by companies like Enron and some of these Wall Street firms——

Mr. GORE. Well, that—I mean——

Mr. SCALISE [continuing]. That have wrecked our financial economy.

Mr. GORE. I don't really know if you want me to respond to that. I guess what you are trying to say, you are trying to state that there is some kind of——

Mr. SCALISE. I mean, clearly, there would be big winners and big losers.

Mr. GORE. You are trying to say that there is some kind of——

Mr. MARKEY. Mr. Scalise, please allow the Vice President to answer.

Mr. GORE [continuing]. Guilt by association. Is that your——

Mr. SCALISE. Not association. I am saying that there are going to be big winners and big losers in this bill, and that has been discussed by everybody talking. Big winners and big losers, but some of the big winners are some of the very financial experts that helped destroy our financial marketplace, and I think that should be noted, that companies like Enron helped come up with this trading scheme that we are going to vote, in cap and trade.

Mr. GORE. Enron didn't create this proposal in any way, shape, or form. That is a false accusation.

Mr. SCALISE. Well, the details are not in this bill. The details are not in this bill, and I would suggest that they are.

Mr. WARNER. Mr. Chairman, I do need a few minutes. I really have had a marvelous opportunity to work with many, many interested parties across this country on this subject, including corporate America and the business community. And I hope that those following this hearing don't get the views that the wrongdoing by what I hope is a very small minority should not be brushed across the whole spectrum.

Indeed, if we are going to solve this problem, we have got to rely on the corporate America, the financial America, the technical America, to work our way out within the constraints and directions of the legislation. But I find that there is far, in the majority, most people are trying to responsibly come up with solutions to this problem.

Mr. SCALISE. And here is an alternative. The American Energy Act, which was filed last year——

Mr. MARKEY. The gentleman's time——

Mr. SCALISE [continuing]. Which I still think is a better alternative——

Mr. MARKEY. The gentleman's time——

Mr. SCALISE [continuing]. To cap and trade is still out there.

Mr. MARKEY. The gentleman's time has expired, and for the record——

Mr. SCALISE. I yield back.

Mr. MARKEY. For the record, the proposal that we are considering has had the CEO of General Electric, of Alcoa, of Rio Tinto, of corporations across the country, who have testified in conjunction with major environmental groups. That is the proposal that we are considering.

The chair recognizes the gentleman from Vermont, Mr. Welch.

Mr. WELCH. Thank you, Mr. Chairman. Thank you, Senator. Thank you, Mr. Vice President.

I am a new member of this committee, and as I have listened to the questions of my colleagues on both sides, I have come to the conclusion that there are those of us who, I think, basically take the view that you have advocated, that we have to act, and then, some of the opposition comes from folks who don't believe it is necessary. They essentially deny the existence of the problem. But there are many good faith questions about what the impact will be on jobs, the dislocation, the economy. People like Mr. Burgess, Mr. Walden, have asked that questions that, frankly, I think those of us who are advocates have the burden of doing our best to answer.

But at times, it sometimes seems as though those concerns become not so much addressed to solve the problem, but to avoid action. And Senator, I am going to ask you, based on your 30 years of service in the United States Senate, having to find common ground with people on the other side of the aisle, what advice do you have to those of us who share your view that this is a bill that has to be passed? How do we find a way to reach agreement with the good faith objections that come from people who don't agree with us quite yet?

Mr. WARNER. Well, that has been the history of our Congress since its very inception. We are admired by the world for many reasons, and one is that we have the longest continuously surviving form of government, and it provides for healthy debate. It provides, to the extent possible, for full debate.

Unfortunately, our chamber, the Senate, now has had less and less debate, because of resorting to certain rules which are on the book, created by ourselves, but it is important that the views of those in opposition be heard, respected, because I think most people are conscientious, who object to this. But we have got to find a way. You cannot just accept, throw up your hands. We can't do it. We just must do it.

Maybe you are not going to, and I hope you get as much as you think you can, but you are not going to get the whole loaf. You are going to get a part of it, but you will have sent the signal across America that the Congress is ready to move forward on this issue, and that will get the attention here at home, and that will get the attention of the world.

Mr. WELCH. Thank you, and Mr. Gore, I want to ask you your thoughts on a couple of approaches that I think make sense to take, in order to try to build some of these bridges.

One is efficiency. You have talked about that. My view, and I have some aspects in this bill, that say we start addressing this by efficiency. It is within our control. We have got a provision in the bill, a small one, but important one, to allow homeowners to get tax credits, businesses to get tax credits and incentives, for saving. The more they save, the more of an incentive they get. It is the local jobs that you spoke about. I would hope that that would be a way of finding some common ground.

And a second issue may be to incorporate into this legislation a monitoring device to basically ask these questions every three months or six months, about what is, in fact, the job impact, because those are fair questions.

And I want to get your advice and thoughts about suggestions you might have to try to provide some legitimate reassurance to legitimate questions that are raised about dislocation and economic impact.

Mr. GORE. Yes. Well, I think the provisions of the bill in the current draft adequately and imaginatively address that question. I think there would be potentially massive job losses, if we did not adopt this legislation, because if we just continue on with business as usual, ignoring the warnings, and then, just sit and wait until the oil prices go sky high again, that is what would cause the massive job losses.

I think that the creation of jobs by this bill will far, far outstrip any losses that would be associated with it. I genuinely believe that.

Mr. WELCH. OK. And what do you think about having in the bill some provision to actually try to monitor that, some referee that is actually looking at the data, what is the impact of each provision of the bill, and providing, as we go along, some data that hopefully is credible?

Mr. GORE. Well, that sounds like a good idea to me. I know that there are provisions in the legislation now that require regular reports and regular analyses of several matters, some of which do relate to this. If they need to be fine-tuned, then maybe that is a good thing.

Mr. WELCH. OK. Thank you very much. Senator.

Mr. WARNER. While I haven't read the whole bill, I have studied those portions I felt that would be addressed today, and particularly, the area of national security.

So, I think you should monitor. In order to give the President the guidelines as to move forward with the throttle or pull back on the throttle.

Mr. WELCH. OK. Mr. Chairman, I will yield back, but I just want to tell the Vice President that my office in 1404 Longworth, I believe was your dad's, that is what they were saying, when he was in Congress.

Mr. GORE. Oh, that is great. I didn't know that.

Mr. WELCH. And I am living in an apartment that you may be familiar with, it is the Tennessee Apartment in the Methodist House with Congressman Cooper.

Mr. GORE. Oh, great.

Mr. WELCH. And I don't know if you left anything behind, but we will check.

Mr. GORE. Not that I know of, but thank you.

Mr. MARKEY. OK. The gentleman's time has expired. The chair recognizes the gentlelady from Wisconsin, Ms. Baldwin.

Ms. BALDWIN. Thank you, Mr. Chairman, and thank you to our witnesses, Mr. Vice President, Senator Warner. It is an honor to have you here, and we appreciate your knowledge and insights on this issue.

Our Nation's security, our planet's sustainability, and our children's future really do hang in the balance at this moment. And the world is watching our every step. They are looking to us, with the largest economy, the greatest innovations, the richest resources, to bring leadership and commitment to this issue, and to Copenhagen and beyond. I believe we absolutely cannot show up to Copenhagen empty-handed.

Mr. Vice President, I know you have met with leaders from all over the globe on this issue and many others. And so, I would like you to speak, in perhaps a little bit of a crystal ball, looking into the future, how would the world respond to our bringing the policies in this bill to the table in Copenhagen, and how would the world react if we fail to act, and we don't have those policies to bring to the negotiating table in Copenhagen?

Mr. GORE. I think the enactment of this legislation and the adoption of a position by the Obama Administration, that was in keeping with this legislation, would be met with great relief and approval, although I must tell you that the reductions in this legislation and those proposed by the Obama Administration are far short of what would cause cheering and celebration in the rest of the world, because so many other parts of the world have already gone much farther.

But I think that it would be met with a sigh of relief. I think there would be, I think it would lead to a major shift by countries around the world, and would lead to an agreement that would put in place a mechanism for solving the climate crisis.

Were this legislation not to pass, and if the Administration went to this global negotiation without this legislation, then I think we might well see a slow motion collapse of the negotiation, much as the Doha Round has all but collapsed. And I think that would be awful to contemplate.

I have no idea how the world could regroup and come up with some other approach, without wasting decades, and of course, as many of you are well aware, some of the leading scientists in the world have said for some time now that we may be within a decade or so of crossing a tipping point beyond which this could unravel on us.

I mentioned in my opening statement that the disappearance of the ice in the Arctic is already leading to methane releases from the thawing tundra. If that were to accelerate, it would be one of several tipping points that we really ought to avoid crossing.

Ms. BALDWIN. Well, I have fairly recent recollections of the December 2007 round in Bali, where one negotiator, I think it was from Papua New Guinea, was famously quoted as saying to the U.S., we look to your leadership, we yearn for your leadership, but if you are not going to lead, please get out of the way. And I do

not want to see any sort of repeat of that type of thing on the world stage.

Now, I want to relate to your struggle a few moments ago, to come up with the right words to define this moment, because we are talking and asking questions based on the concerns that our current constituents raise with us about this measure. And I wonder, what if the future generations had a voice, and if people living in our districts in 2080 or 2090 could speak to us now, what would they be saying? And I think we would be acting fairly hastily, if indeed, we could hear their voices as we hear our constituents today.

I will give you one piece of poetry, actually, that I think brings it out pretty well, by a fellow named Drew Dellinger. He says: "It's 3:23 in the morning, and I am awake, because my great great grandchildren won't let me sleep. My great great grandchildren ask me in my dreams, what did you do when the planet was plundered? What did you do when the Earth was unraveling?"

And with that, I want to ask Senator Warner if——

Mr. MARKEY. If you could ask one quick question.

Ms. BALDWIN. I had heard an anecdote, and I wanted to hear from you if it was true, that you came to your position on climate change, and your leadership role, at the urging of your grandchildren. Is that correct?

Mr. WARNER. Yes, that is quite true, in many ways. But I also, the gentleman that came from forest country, I went out in 1943, of course, that was before you were born, and worked in the forest as a firefighter and a trailblazer. And those were pristine forests. A couple of years ago, I was out there in the same region. I asked the Forest Service to take me in. I didn't know where I was. I couldn't recognize it any. We drank out of the streams. We swam in the streams. We enjoyed the pristine forests. It is gone.

So, my children and grandchildren hold me accountable, and indeed, my own personal experiences were a factor. But it came always back to national security, as I am urging this committee to incorporate.

Mr. MARKEY. The gentlelady's time has expired, and all questions from the subcommittee members has now expired. Now, consistent with a prior unanimous consent request to allow members of the full committee, who are not members of the subcommittee, to ask questions of our two witnesses, we will proceed to recognize those members.

However, I want them to know that I am going to rigidly employ the five minute rule with those four members, and I urge you, if you want an answer from the witnesses, not to have a five minute statement with a question at the five minute point, because you will not be receiving an answer, because we have Speaker Gingrich waiting for us in the anteroom, and each of you will be given five minutes, so please try to give the witnesses time to answer your question in the five minute time period.

We will begin by recognizing the gentleman from California, Mr. Radanovich.

Mr. RADANOVICH. Thank you, Chairman Markey, and I want to welcome Mr. Vice President and Senator to the committee hearing.

I was born and raised in the Sierra Nevada Mountains in California, right next to Yosemite, and I just, this debate, listening to this debate is very interesting, but I am very intimate with forest policy, forest management practices in the Sierra Nevada Mountains, very intimately involved with the California drought and what is going on out there. And I can tell you that the things that more adversely affect California's water supply and forest management practices in California is environmental alarmism, and it has resulted in some very bad management of our national forests. Has led to fuel buildups, more intense fires, that leave the area more devastated.

In the San Joaquin, in the water supply in California, it is due to three different lawsuits that have restricted water deliveries for agriculture for a delta smelt, a worthless little worm in the delta that needs to go the way of the dinosaur, you know, and they have shut pumps down and restricted water deliveries to California over that thing, when what is eating it is a striped bass, which is a nonnative species in the delta, and yet, the collaboration between environmentalists and sport fishermen has led to the dealing with the truth of the situation in the delta. As a result of that, there are zero water deliveries to my farmers. It is costing 40,000 to 60,000 jobs this year, and a $6 billion hit to our economy.

That is not global warming. That is not global warming that is causing problems in our forests. It is the result of bad policy, because of environmental alarmism. And I think that the current debate over global warming and cap and trade is another result of environmental alarmism. And I want to, you know, there is a couple of transitions we have made in the history of the country.

We had the light bulb came up, and we had either to move from candle power to light bulbs. We had cars. Finally, Henry Ford came up with the car. We needed to move from horses to cars. Hell, even when we went to the Moon, we had a Moon to shoot for. But you are saying on fossil fuels, and setting up a scheme, frankly, that is causing to leave fossil fuels for an unidentified replacement. And the notion that you can do that on renewable energies, and the technology that we have right now, to me is disingenuous. The fact that you can rely on this transition with solar and wind energy, and enhance the economy, and reduce our reliance on foreign fuels, that to me is the biggest fraud that is being perpetrated in this country right now.

I think that there is ample evidence that the planet is warming. I think it is debatable whether it is manmade, caused. I think that if you want, if you are even concerned about the world coming to an end, there is nothing that we can do to prevent that from happening, and that kind of alarmism.

My problem is that you can't make this transition without breaking the back of the economy of the United States, unless you have a new fuel that you can jump to. I would much rather spend billions of dollars that you are planning on spending, identifying a new energy source, and then let us identify that, and then we can make the transition to the new energy source. But I have got to tell you, your notion that this planet is going to fry in 30 years. This Congress doesn't know what is going to happen in a week, let alone 30, 40 years.

I think if you, that the way to address this problem is to put our efforts behind identifying a reliable replacement for fossil fuels, and you have not identified it so far, and any transition that you think you are going to make is going to be so heavily subsidized that you are going to bankrupt this country on this notion of cap and trade.

I am—no. I am all for efficiencies. We have air problems in California, renewable energies, things that keep the air clean out there, but unless you come up with a replacement to fossil fuels, you are not going to be able to make that transition, and I think that aside from the sky is falling, we are going to be dead in 30 years and the planet is going to burn up, I think the reasonable approach to this problem is innovation, efficiency, a robust economy, which you will destroy with cap and trade, and moving toward a new energy source that we can all start to rely on——

Mr. MARKEY. The gentleman's time has expired.

Mr. RADANOVICH. Thank you very much, Mr. Chairman. I have said what I want to say.

Mr. MARKEY. I know you have, but I think I am going to modify my earlier statements.

Mr. GORE. Could I respond briefly?

Mr. MARKEY. And allow the witnesses—no further interventions by the members after five minutes will be allowed. Mr. Vice President.

Mr. GORE. Congressman, I think we actually do have an excellent idea of where the renewable energy can come from. The very best——

Mr. RADANOVICH. If you would like—explain to Congress—if you are going to bankrupt this country.

Mr. MARKEY. The gentleman's time has expired.

Mr. RADANOVICH. So—I should be able to respond.

Mr. MARKEY. If the gentleman is going—you did not give him time within your five minutes, which was the request which I made of the gentleman, is now being given this time under a unanimous consent request. The Vice President sought several times to gain your attention to answer your question within that five minute period.

You did not choose to recognize him.

Mr. RADANOVICH. If he would give, then——

Mr. MARKEY. The Vice President is now——

Mr. RADANOVICH. If he would, then, give me the benefit of explaining the costs of this——

Mr. MARKEY. The Vice President is now——

Mr. RADANOVICH [continuing]. Program to the American people, then I will——

Mr. MARKEY [continuing]. Going to answer your question.

Mr. RADANOVICH [continuing]. Then I would love to hear that response from the Vice President. Thank you, sir.

Mr. MARKEY. The Vice President is going to answer your question. Thank you.

Mr. GORE. I will just say briefly that I think we do know pretty well exactly what the sources of renewable energy can be. And the cost is coming down almost as rapidly as in the early days of computer chips, when you got that Moore's Law curve. We are begin-

ning to see something like that in photovoltaics. Concentrating solar thermal, photovoltaics, wind power, geothermal, efficiency, and conservation are, I think, now ready to go.

So, I will—well, let me just make one other point. Enough sunlight falls on the land surface of the Earth in 45 minutes to provide a full year's worth of energy use for the entire planet. And the engineers and scientists in this country have been making fantastic breakthroughs in how to innovate more efficient versions of it.

Mr. MARKEY. The gentleman's time has expired. Nothing—Senator Warner.

Mr. WARNER. Something that I said this morning, and I don't think that my colleague, either, is predicated on we are going to abandon fossil fuels. It is more how can we do it more efficiently, and in such a way, consume them so as to have minimal damage to the environment and to health. So, we are always going to have that.

But we put such emphasis as we can to encourage wind, solar, and the like, but it is not going to transplant fossil fuels.

Mr. MARKEY. Thank you, Senator. The chair recognizes the gentlelady from the Virgin Islands, Ms. Christensen.

Ms. CHRISTENSEN. Thank you, Mr. Chair, and I would like to welcome Vice President Gore and Senator Warner, and to thank you for your service, as well, and for the leadership you have provided on this issue, which has really brought about the consensus that we have in this country, that we must act today.

I guess I would ask both of you, many in the committee have complained about the 25 percent reduction in greenhouse gas emissions, in poor communities especially. The American Public Power Association on the panel yesterday recommended 15 percent reduction by 2025.

Is that good enough, and what would you suggest to help communities and power companies reach that 25 percent that they don't think they can reach today?

Mr. GORE. No, I don't think that would be good enough at all. The committee draft already represents a significant compromise, compared to what the, what others in the global negotiation are already doing, and what the scientific community says is advisable.

I support the committee bill, regardless of that, because I think it is an excellent bill, and will set in motion a process of change that will lead to steeper reductions in a way that benefits our economy tremendously. But to cut back from the reductions in the bill, I think would cross a line that we should not cross at all.

Ms. CHRISTENSEN. Did you want to add anything, Senator Warner?

Mr. WARNER. Again, I come back to a basic premise I have. Let us draft the legislation, so we are directing ourselves towards resolution of the problems of how do we take our existing and additional energy sources, and do it efficiently and healthy.

I tried, as best I could, not to let the Senate bill begin to be a welfare, or to help the needy. Those needs are there. They are definite, and how well you know that. But this legislation is directed towards a new energy policy.

Ms. CHRISTENSEN. But that being said, and this was my second question anyway, there are many communities, especially African-

American, Hispanic-American, Native American, that have not been really benefiting from our economy as it is today. Do you think that our new green economy can be a vehicle to help close the gaps for those communities, and bring them into the mainstream? And I would ask both of you that question.

Mr. WARNER. I would say to those groups that you have identified, who are just as, have every right to the clean air and clean water and good food as do I, that this bill is directed to help them improve their quality of life, no matter what their economic status may be.

Mr. GORE. I will, you know, Van Jones, who is now a part of the Administration in charge of green jobs, is the most eloquent spokesman I know on this point. But just to give a couple of examples. This bill will have a lot of incentives to unleash many jobs in insulating homes, changing out lighting and windows, and those jobs can't be outsourced. They are in the community, and they are good jobs, and there are a lot of them.

Ms. CHRISTENSEN. Thank you. It has been mentioned several times throughout the hearings that the benefits of addressing the concerns discussed in the bill, as both of you have basically just said, will over the long term, buffer the costs for the American people. The bill discusses the necessity for the Federal Government to establish measures to assist natural resources adapting to climate change. Are there one or two specific strategies that we should focus our attentions on?

And additionally, to what extent will support of international adaptation strategies, such as preventing deforestation, assist in reducing the pressures levied on the United States and territories?

Mr. GORE. The U.S. Conference of Catholic Bishops issued a very eloquent statement this past week, and part of their statement supports robust measures for adaptation, and both here at home and internationally. And I think that is very crucial, and I commend the authors of the bill for including it, and I agree with you that it is very important to do it.

We look at the fact that poor and disadvantaged people in our country, as well as in the rest of the world, are those most likely to be victims of this. Indeed, many already have been, and so, adaptation is a crucial part of the response.

Mr. MARKEY. OK. The gentlelady's time has expired. The chair recognizes the gentlelady from Tennessee, Ms. Blackburn.

Ms. BLACKBURN. Thank you, Mr. Chairman, and thank you to both of you for your patience today. Vice President Gore, you and I have had the opportunity to represent some of the same people from a truly wonderful state. And you talked a little bit about people have to have trust in what you are doing, and I think you know that this bill is going to fundamentally change the way America works, and it is going to affect families. We have all talked about how it affects individuals, and what it is going to do to their budgets, and what it is going to do to jobs in this country.

And given the magnitude of those changes, I think it is really important that no suspicion or shadow fall on the foremost advocates of climate change legislation, so I wanted to give you the opportunity to kind of clear the air about your motives, and maybe set the record straight for some of your former constituents.

And I have got an article from October 8, New York Times Magazine, about a firm called Kleiner Perkins, a capital firm called Kleiner Perkins. Are you aware of that company?

Mr. GORE. Well, yes. I am a partner in Kleiner Perkins.

Ms. BLACKBURN. So, you are a partner in Kleiner Perkins. OK. Now, they have invested about $1 billion in 40 companies that are going to benefit from cap and trade legislation. So, is the legislation that we are discussing here today, is that something that you are going to personally benefit from?

Mr. GORE. I believe that the transition to a green economy is good for our economy and good for all of us, and I have invested in it, but every penny that I have made, I have put right into a nonprofit, the Alliance for Climate Protection, to spread awareness of why we have to take on this challenge.

And Congresswoman, if you are, if you believe that the reason I have been working on this issue for 30 years is because of greed, you don't know me.

Ms. BLACKBURN. Sir, I am not making accusations. I am asking questions that have been asked of me.

Mr. GORE. Well.

Ms. BLACKBURN. And individuals, constituents, that were seeking a point of clarity. So, I am asking——

Mr. GORE. I understand exactly what you are doing, Congresswoman. Everybody here does.

Ms. BLACKBURN [continuing]. You for that point of clarity. And well, you know, are you willing to divest yourself of any profit? Does all of it go to a not for profit that is an educational not for profit?

Mr. GORE. Every penny that I have made has gone——

Ms. BLACKBURN. Every penny——

Mr. GORE [continuing]. To it. Every penny from the movie, from the book, from any investments in renewable energy.

Ms. BLACKBURN. OK.

Mr. GORE. I have been willing to put my money where my mouth is. Do you think there is something wrong with being active in business in this country?

Ms. BLACKBURN. I am simply asking for clarification of the relationship.

Mr. GORE. I am proud of it. I am proud of it.

Ms. BLACKBURN. Thank you, and I appreciate the answer. And Mr. Chairman, I yield back.

Mr. MARKEY. The gentlelady yields back, and I will, for the record, say that for eight years, I sat next to Al Gore on this committee, and on every one of these issues, he took a stand, he took a stand decades ago that is identical to the stand which he is taking as he sits here before our committee today, and there is one thing that I can say about the Vice President, is that he was a visionary. He identified these issues. He forced this committee and the Senate to consider it long before it was ready to deal with it, and his time has come on this issue. A prophet is being honored in this committee today, but by the world. He won a Nobel Prize for his work on this subject. The world has come to recognize that, and I think that his service to our country and our planet is something that I think is absolutely unchallengeable.

We will complete the questioning of our special guests with the gentlelady from Ohio, Ms. Sutton.

Ms. SUTTON. Thank you very much, Mr. Chairman, and thank you to our witnesses. I regret that this very serious subject sometimes has turned into something that has resulted in sort of personal and somewhat, sometimes partisan appearing attacks.

And Senator Warner, if I could just begin with you. You spent a good deal of time serving this country in the United States Senate, and one of the questions that I have, as a Member sitting over here, and certainly dedicated to trying to find a way to work this out.

I come from Ohio. It is a challenging issue for us, but I believe in the science, and I believe in the merits of the potential. I do worry about the transition, and we can talk about that, so I am looking for solutions, to find a way to get from here to there. But Senator, in the Senate, I am concerned about the Senate, and whether or not they will pass a significant global climate change bill.

Do you foresee that any time in the near future, based on your experience?

Mr. WARNER. I would have to respond that I think the Senate will, in a very serious and conscientious way, review such legislation as may be generated by this committee, and hopefully will, in my own judgment. And I have learned that the distinguished chairperson of our committee, former committee, Senator Boxer, is laying plans, possibly, to introduce a bill in the Senate.

I do believe the time has come that both parties will conscientiously work on this issue, but quite frankly, I think it would be not in my province to try and predict what that outcome will be. We are at the basic threshold of the legislative process, going through this very important and extraordinary hearing agenda. We took 14 months to cover much of the same territory.

But nevertheless, I have faith in the Congress to objectively and honestly look at this situation, and hopefully come up with a bipartisan solution.

Ms. SUTTON. Thank you, Senator.

Vice President Gore, again, thank you for your work on this issue, and for the consensus that has finally come to be. And I just want to talk to you, just very briefly, or get your opinion very briefly. You mentioned in your testimony about the need for coal miners to have access to a job. And the question is kind of twofold. It would, well, threefold, perhaps. How would that work, and how fast would that happen? And are there other workers who are going to be similarly displaced, who should be given that kind of guarantee as well? Thank you.

Mr. GORE. Yes. Yes, I think there ought to be attention to that. Absolutely. The bill already devotes considerable attention to it, but I have always had the position that anyone displaced by this has a right, not just to job training, but to a job. And I think that we have to manage the transition in a way that takes care of those who. I think the society as a whole benefits. I think the economy grows. But those who are especially affected, I think they have a right to it.

Ms. SUTTON. How about manufacture, employees in manufacturing plants, and that may be impacted by some of the things that we heard discussed here today, in the moment?

See, my concern is that while I believe in the potential of green jobs——

Mr. GORE. Yes. Yes.

Ms. SUTTON. And we have a very different problem in Ohio than my dear friend Congressman Inslee described it, as the causes of global warming, or not the causes, but global warming is causing job loss for him, you know, in this moment. So, he wants to stave off that, and I understand and respect that, and I am with him in trying to address that. But we also have a lot of, our folks, they care about this issue. They care about the environment.

Mr. GORE. Yes.

Ms. SUTTON. But if you don't have a job today, the concerns of this bigger issue, and where we need to go, become very difficult to address, when you have kids you can't, you know——

Mr. GORE. Yes.

Ms. SUTTON. You can't get what they need, and——

Mr. GORE. Yes.

Ms. SUTTON [continuing]. Put food on the table, so it becomes almost a luxury to try and deal with that.

Mr. GORE. Yes. And I understand your question very well. It is very well put, and we would still face that challenge, if the legislation didn't pass. In fact, we have been facing that challenge. I believe this bill will make it better.

I will give you an example from Ohio. There is a company that famously, very proud of the fact that they made the giant bolts for the Golden Gate Bridge, and they went through some hard times, and had to lay a lot of people off. They are now hiring people, or have been, to make windmills, to make parts for windmills.

And I think it is a good example of how new jobs in Ohio will be created, are being created by the shift to green energy, and will be created in significantly larger numbers with the incentives and motivations in this bill.

Mr. MARKEY. The gentlelady's time has expired.

Let us complete this way. Let us ask each of you to give a summary statement to the committee before you leave. It has been our honor to have you with us here today.

Could we begin with you, Senator Warner?

Mr. WARNER. Well, thank you, Mr. Chairman. I would say, very briefly, that the Congress today, in this hearing, has served their respective constituents well. We have had an open and free debate. We have clearly expressed to one another our concerns about this legislation, but it, I hope, renews our strength to go back and counsel with our constituents, and listen to our constituents, and seek out a way to lead. The country has to lead on this issue.

Thank the chair. Having been a chairman myself, I know the challenges, and I think you have fulfilled them very well.

Mr. MARKEY. Thank you very much, Mr. Chairman.

Vice President Gore.

Mr. GORE. Mr. Chairman, I began by noting how it brings a lot of emotions for me to walk in at the beginning of the hearing this morning, and be, once again, in this room, where I spent eight

years. I have sat through many hearings like this one in this chamber, many markups like the one you are about to embark upon.

Having gone through many bills, I have to tell you that I am extremely impressed with what you and Chairman Waxman and others have done in really drilling deeply into so many aspects, virtually all of the aspects of this issue, and I want to compliment you and Chairman Waxman and the others for the work product you have produced.

I know that in the committee process, there will be debates. There will be changes and so forth. That is the way it works. I would urge you, during that process, to stay on this side of the line that preserves the effectiveness of this legislation. And I know you will.

My main point is, I compliment you on the bill. It is an honor to appear before this committee, agree or disagree with the views of some. I appreciate the questions and the exchanges, and thank you very much for inviting me.

It is good to be back.

Mr. MARKEY. Thank you. And it is our honor to have two of our greatest citizens of our country to appear before the committee today with the thanks of the committee and our country.

We will take a brief recess, while our two witnesses are able to leave, and before we introduce Speaker Gingrich. Thank you.

[Recess.]

Mr. MARKEY. Our next one person panel features another familiar face to many of us, former Speaker of the House, Newt Gingrich.

If the last panel was Back to the Future, then I guess this second panel is Back to the Future II. And the Speaker is gracing us with his presence here today. He served as Speaker from 1995 until 1999, and it is an honor for us to have you with us here today, Mr. Speaker.

We welcome you, and I will turn to the gentleman from Michigan, if you would like to extend——

Mr. UPTON. We are grateful that he is here, and in the interest of time, I think we will get started.

Mr. MARKEY. I turn to the chairman of the full committee. I turn to the gentleman from Texas, Mr. Barton, as well.

Mr. BARTON. Just simply say since we are Back to the Future II, where they went out to the Wild West, your bill would give us a carbon footprint equivalent to 1875, which is about when that movie was, so we appreciate our Speaker being here.

Mr. MARKEY. That is your introduction, Speaker Gingrich. We look forward to hearing from, your testimony here today. Whenever you are comfortable, please begin.

STATEMENT OF HONORABLE NEWT GINGRICH, FORMER SPEAKER OF THE HOUSE

Mr. GINGRICH. Well, let me thank you, Mr. Chairman, and I appreciate the sheer endurance you and the members of this committee have shown so far.

Mr. BARTON. Make sure that microphone is on.

Mr. GINGRICH. I am sorry. It should be on. Is it not on?

Mr. BARTON. Is the light on.

Mr. GINGRICH. Yes, the green light is on. So, this should be all right. OK.

I just want to thank you, and commend you for the endurance that you all have shown so far today.

Mr. MARKEY. Can we say, Mr. Speaker, there are 21 witnesses after you, if you want to get a sense of the place we are in the hearing today.

Mr. GINGRICH. And I want to ask permission for my written testimony to be placed in the record.

Mr. MARKEY. Without objection, in its entirety, it will be included in the record.

Mr. GINGRICH. I, to meet Greg Walden's permanent question, I did begin reading the draft bill, but to be candid, I stopped around page 236, where it describes the Secretary of Energy as a Jacuzzi Czar, under the title portable electric spa. Actually, it is page 233. And at that point, I decided I had the gist of the bill, and decided I would develop my testimony.

Let me just say, I want to begin with, from a background, I taught environmental studies at West Georgia College. I was coordinator. I participated in the second Earth Day. I supported the clean air system that we developed for sulfuric oxide, which actually involved a very limited number of sites in the initial application. It was 263 units at 110 plants. Later on, it was expanded to a total of 2,000 units, which the Jacuzzi section alone would dwarf. And so, I do think there are some substantial differences between what we did in 1990, and the bill that as the Republican Whip, I helped pass, and what you are looking at today.

I want to start with two general observations. One from, I guess, my namesake, King Canute, and the other, from the Polish resistance to Communism, which adopted the principle of two plus two equals four. Canute was asked, in the Middle Ages, by, his staff had been telling him how powerful he was. And so, he went down to the ocean, and told the waves to stop. And the waves did not stop. And he turned to his staff, and said this is a hint that I am not as powerful as you have been saying.

This bill strikes me as a remarkable inability to learn the lesson of King Canute. If you look at the housing disaster, where the Congress decided 15 years ago, people who couldn't afford houses should buy houses, and banks should loan money to people who couldn't afford to buy houses, and then you look at the Federal Reserve, which decided that interest rates should be kept low enough to create a huge bubble on Wall Street. We don't seem to be able to learn from any of this. This bill massively expands the Department of Energy's power, gives all sorts of authority to the Secretary of Energy. Let me just quote two examples of why this is a huge mistake.

The General Accounting Office said on the FutureGen Project, which is very important to this country's future, and very important to getting to green coal and carbon sequestration: "Contrary to best practices, DOE did not base its decision to restructure FutureGen on a comprehensive analysis of factors such as the associated costs, benefits, and risks. DOE made its decision largely on the conclusion that costs for the original FutureGen had doubled, and would escalate substantially. However, in its decision, DOE

compared two cost estimates for the original FutureGen that were not comparable, because DOE's $950 million estimate was in constant 2004 dollars, and the $1.8 billion estimate of DOE's industry partners was inflated through 2017."

So, you end up in a situation where, in the most important clean coal project of our time, the Department of Energy, which had promised in 2003 to deliver a working plant in 2008, announced in 2008 it might get to a working plant in 2016. On efficiency standards, the General Accounting Office said: "DOE has missed all 34 Congressional deadlines"—all 34 Congressional deadlines—"for setting energy efficiency standards for the 20 product categories with statutory deadlines in the past. DOE's delays range from less than a year to 15 years. DOE has yet to finish 17 categories of such consumer products as kitchen ranges and ovens, dishwashers and water heaters, and such industrial equipment as distribution transformers. Lawrence Berkeley National Laboratory estimates that delays in setting standards for the four consumer product categories that consume the most energy, refrigerators and freezers, central air conditioners and heat pumps, water heaters, and clothes washers, will cost at least $28 billion in foregone energy savings by 2030. DOE officials could not agree on the cause of delays."

Now, I just want to suggest to you, to take this Department, and give it 646 pages of additional power, is an astonishing avoidance of King Canute's record.

The second is, on page 362 in this bill, you in effect mandate an 83 percent reduction in carbon by 2050. Now, that is exactly like telling the ocean to quit moving. The idea that we are actually going to get an 83 percent reduction in carbon, in my judgment, is a fantasy, barring a major scientific breakthrough, which legislators have zero ability to legislate. You can invest in it, you can hope for it, but to legislate, it strikes me, is exactly King Canute's rule.

On two plus two equals four, I just want to put in the record a quote from George Weigel, and a quote from Orwell's 1984, both of which point out that the State can tell you two plus two equals five, but it isn't true.

Now, Congressman John Dingell captured the two plus two equals four exactly right, when he said earlier today, this bill is a big tax increase. And I want to make this quite clear. This bill is an energy tax. President Obama's budget makes clear it is a $646 billion energy tax. That is what he has in the budget with an asterisk that says it will raise more than that.

The press reports indicate the Administration believes that that energy tax would actually raise around $1.9 trillion, which for a 648 page bill means it is between $1 billion and $3 billion a page.

Now, energy tax kills jobs, and Vice President Gore was talking earlier about how China is improving. I just want to quote, about India and China, two things. And this is from my written testimony. India is saying no to crippling its economy, no to stemming its growth, and no to punishing its citizens. One particular member, actually, of the Indian delegation to the U.N. conference in Bonn, said: "If the question is whether India will take on binding emission reduction commitments, the answer is no." He went on to say: "This sort of energy tax is morally wrong for India."

China, too, believes emission caps are the wrong answer. The lead climate negotiator for China said the following regarding who should pay to cut emissions: "As one of the developing countries, we are at the low end of the production line for the global economy. We produce products, and these products are consumed by other countries. This share of emissions should be taken by the consumers, not the producers." And in fact, what the Chinese are saying is, they want us to pay for their emissions, on the grounds that we buy their products, which I think is actually a pretty large amount of chutzpah.

As Energy Secretary Steven Chu has said: "If other countries don't impose a cost on carbon, then we will be at a disadvantage." And I think in this economy at this time, that is the number one thing to look at. An energy tax punishes senior citizens. It punishes rural Americans. If you use electricity, it punishes you. If you use heating oil, it punishes you. If you use gasoline, it punishes you. This bill will increase your cost of living, and may kill your job. The Tax Foundation estimates this bill, that an energy tax, could kill 965,000 jobs, and reduce the economy by $138 billion a year.

What is even more troubling about this bill, though, is it continues the recent tradition that Congress has adopted, and that is to move from Lincoln's government of the People, by the People, and for the People, towards a government which punishes the People into behavior. I favor incentivizing the future. I am opposed to punishing the present.

We did not create the transcontinental railroads by punishing stagecoaches. I could strongly support an incentivized bill to maximize new technologies and to maximize green technologies. I would also point out that Vice President Gore's reference to $0.30 a day came from an intellectually dishonest EPA study which included 150 percent increase in the number of nuclear power plants, and the EPA study itself indicated that it had been instructed by the committee staff not to, in fact, base its study on the bill. It is a footnote in the EPA study.

Now, prudence suggests that we do need to consider the facts and that there are reasonable, affordable steps that might work. This committee should look at where we Americans as a country can move forward. Vice President Gore cited three risks we face; economic concerns, national security concerns, and the environment. I would add a fourth risk, which is the threat of big government, big bureaucracy, big deficits, and political manipulation.

And I would be glad to engage in a dialogue on how we can meet these threats, because I think we do need a serious dialogue. You know, at Vice President Gore's request I made a commercial with Speaker Pelosi. We said that we would address climate change, that we needed cleaner energy sources, and that we needed a lot of innovation. I can accept all three of those, but a dialogue ought to be both ways. It ought to be not an automatic agreement or a salute but rather a genuine conversation.

Vice President Gore made some startling and in some cases I think deeply misleading assertions. He cited Bernie Madoff and described bad information and talked about massive fraud, but, in fact, I think that it is very important to look in detail at his on testimony. He pointed—he said, for example, the rate—this is a quote.

"The rate of new discoveries is falling for energy." That is factually not true. In the last 3 years we have found 100 years of natural gas in the United States, because we now have new technology drilling at 8,000 feet, and we have literally found 100 years of natural gas in the last 3 years.

In Brazil they found three fields, the Tupi field alone in 2007, a second field recently, and just in January an Exxon, Hess consortium found a third field. Brazilian reserves have gone from ten billion barrels to 100 billion, but, of course, that is an off-shore Atlantic Ocean field, which was up until last October illegal to look for in this country.

The Bachen field in North Dakota and Montana has jumped from a 1995, U.S. geological survey estimate of 151 million barrels in April of 2008, they raised it by 2,500 percent. They now believe there are between three and four billion barrels of oil in the Bachen field.

What Vice President Gore does not tell you is that having supported the government stopping the exploration for oil, having supported the government stopping the development of shale oil in Colorado, having supported the reduction in the use of coal where we have 27 percent of the world reserves, we are then told that these government-imposed shortages prove we have no resources. That is fundamentally not true, and yet the Obama budget proposes to raise taxes on oil and natural gas development at exactly the time this economy needs more development and more jobs.

On the facts of climate change, we need a national inquiry, and let me be quite clear in the spirit of the commercial I did with Speaker Pelosi at Vice President Gore's request. I want to invite Vice President Gore to join in a non-partisan inquiry, and I would love to have this committee agree to help sponsor it, so that every high school and college campus this coming October could have a discussion about the facts.

For example, Vice President Gore in his testimony talked about the likelihood of a 20-foot rise in sea level. Let me say if we had a catastrophic 20-foot rise in sea level, that would be bad. I am happy to stipulate. That would be bad. However, even the intergovernmental panel on climate change said the probable maximum is between 7 and 23 inches over the next 100 years.

Now, 7 and 23 inches over 100 years is radically different than 20 feet, but let me go a couple stages further. A recent report on Greenland, this is from the American Geophysical Union, a report said the following. "So much for Greenland ices Armageddon." This is a quote within that. "It has come to an end. Glaciologist Havey Murray of Swanson University in the United Kingdom, said during a session at the meeting, "There seems to have been a synchronous switch off of the speed up." She said, "Nearly everywhere around southeast Greenland outlook glacial flows have returned to the levels of 2000." That is from January of this year.

On the question of whether or not Antarctic ice is, in fact, shrinking, let me just quote from the Australians who said, slightly longer, "Antarctica has 80 percent of the earth's ice, 90 percent of the earth's ice and 80 percent of its fresh water." According to the Australians, "Extensive melting of Antarctica ice sheets would be required to raise sea level substantially. Ice is melting in parts of

western Antarctica. The destabilization of the Wilkins Ice Shelf generated international headlines, however, the picture is very different in East Antarctica, which includes the territory claimed by Australia. East Antarctica is four times the size of west Antarctica and parts of it are cooling." The Scientific Committee on Antarctic Research report prepared for last week's meeting of Antarctic treaty nations in Washington noted the South Pole had shown significant cooling in recent decades. Australia Antarctic Division Glaciology Program head Ian Allison said, "Sea and ice losses in west Antarctica over the past 30 years had been more than offset by increases in the Ross Sea region, just one sector of east Antarctica. Sea ice conditions have remained stable in Antarctica generally," Allison said.

"So ice core drilling and the fast ice off Australia's Davis Station in east Antarctica by the Antarctic Climate and Ecosystems Cooperative Research Center shows that last year the ice had a maximum thickness of 1.8 nine meters, its densest in 10 years."

Finally on coral die-offs it is hard to understand why carbon dioxide or current temperatures would lead to coral die-offs. Coral was very abundant in earlier eras when the earth's temperature was as much as 10 to 15 degrees warmer and atmospheric CO_2 was two to seven times higher. I am an amateur paleontologist. I would be glad to take the vice president to the Smithsonian or the American Museum of Natural History where we can look at all sorts of marine invertebrate life, which is collected as fossils, because, in fact, they used carbon quite effectively.

All I am suggesting is that there is a sufficient debate over facts, not over theories, over facts, that will be very useful to have an inquiry on every college and high school campus, allow everyone to present their evidence, and discuss in a way, a genuine dialogue about this.

But while I think there is no evidence that we need to rush to a massive energy tax increase or a massive increase in government, there are many steps we could take that are reasonable and that are legitimate. I suggest 38 of them in my testimony. I am just going to mention a couple quickly here.

First, I think we should rebuild the American economy with American energy, both for jobs and for national security. I think it is very important that we have a pro-American energy bias in our system.

Second, I do think that green coal and carbon sequestration is the most important single breakthrough we could make because the objective fact is China is adding one coal-burning plant a week. There is no evidence they are going to slow down, and unless you get to an affordable green technology for coal, there is no possibility that American developments are going to affect the volume of carbon in the atmosphere because the Chinese will more than offset any savings we have.

Third, I think that enhanced oil recovery as a component of carbon sequestration could lead to up to 100 billion barrels of additional oil coming out of existing fields, which is a key answer to the peak oil question, which creates jobs in the U.S., keeps money in the U.S., helps our foreign exchange rate, solves an environmental challenge, while also solving an economic challenge.

Fourth, the U.S. should expand the use of biofuels, including ethanol, and I agree with two questions. One on page 8, why would you exclude biomass from federal forest lands. I mean, I think that is a—makes zero sense in terms of the sound management of federal forests and in terms of biomass, and second, on page 110 why would you exclude energy from municipal wastes. If we can get methane production from municipal waste, why isn't that a totally legitimate use of biofuel on a renewable basis?

Number five, you should add a section on nuclear energy. I thought the dialogue between the committee and Vice President Gore was fascinating. China has the largest nuclear building program in the world. Now, if the vice president wants to come here and tell this committee he is encouraged by China, then he has to confront nuclear energy. The French produce 80 percent of their electricity from nuclear energy. If we maxed that, we would take 2 billion, 100 million tons of carbon dioxide a year out of the atmosphere. The fact is that Vice President Gore mentioned one off reactor. That is entirely a function of government policy. If we wanted to, we could follow the Japanese and Canadians develop a clear model of a routine, repetitive nuclear reactor, build a huge number of them.

If you want to lower the cost to building nuclear power plants, streamline the permit system and streamline the litigation system, bring American production down to the rate of Japan or France. It takes 5 years to build a nuclear power plant in Japan. It takes 15 to 20 if you can get past the litigation in the United States.

And finally, any notion that civilian development of nuclear reactors by the United States has any impact on nuclear weapons worldwide I think requires you to ignore that North Korea and Iran are doing quite fine on their own, and they don't seem to have any need for an American nuclear program to develop their nuclear weapons.

Sixth, I want to just close by recommending something that, not just to this committee, but to the whole Congress, and this may be bolder than anything that is in the current bill. We are on the edge of a huge opportunity in science. There is going to be four to seven times as much new science the next 25 years, 65 percent of it coming outside the United States. We have more scientists alive than all of previous human history. They are every year getting better computers and better instruments, they are connected by e-mail and by zip code. I mean, by e-mail and by cell phone. Today they are then connected to licensing and venture capital and royalties so they can move from the laboratory to the market more rapidly than ever.

We recently had an Alzheimer's study group report that you know fully well about, Chairman Markey, where we proposed a very bold, fundamental change in the budget act to go from an accountant design science budget to ask the scientific community to optimum they could invest. There is no zone other than health where it would be more appropriate than in the field of energy and the environment to fundamentally reshape how we invest in science and to set as a goal very radical, dramatic breakthroughs to get affordable, reproducible, and scalable breakthroughs in energy, which I think are possible. I do think that part of this bill

is moving in the right direction. I would love to find a way to design a very bold breakout, whether it is hydrogen, new materials technologies, or a variety of other things. I think they could be there.

But I would just close by urging you don't mandate beyond the technology. When we passed the act in 1990, we actually knew the technology existed for sulfuric acid to be dealt with. We didn't—and we did it for a very limited number of sites. This is a fundamentally different question, and it threatens the entire American economy.

But I appreciate very much the chance to be here.

[The prepared statement of Mr. Gingrich follows:]

STATEMENT OF

FORMER SPEAKER OF THE HOUSE NEWT GINGRICH

BEFORE THE

HOUSE COMMITTEE ON ENERGY AND COMMERCE

SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT

FRIDAY, APRIL 24, 2009

In the end the Party would announce that two and two made five, and you would have to believe it. It was inevitable that they should make that claim sooner or later: the logic of their position demanded it. Not merely the validity of experience, but the very existence of external reality, was tacitly denied by their philosophy. The heresy of heresies was common sense. And what was terrifying was not that they would kill you for thinking otherwise, but that they might be right. For, after all, how do we know that two and two make four? Or that the force of gravity works? Or that the past is unchangeable? If both the past and the external world exist only in the mind, and if the mind itself is controllable—what then?

- George Orwell, *1984* (1947)

They began with an ancient conviction-they would be radically realistic about the world and about the human capacity to know it. If our thinking and choosing lacks a tether to reality, the KUL [Catholic University of Lublin] philosophers believed, raw force takes over the world and truth becomes a function of power, not an expression of things-as-they-are. A communist-era joke in Poland expressed this realist imperative in a way that everyone could grasp: "Party boss: 'How much is 2+2?' Polish worker: 'How much would you like it to be?'" The political meaning of the realist assumption of the KUL philosophers was later expressed in this famous Solidarity election poster that read, "For Poland to be Poland, 2+2 must always = 4." Human beings can only be free in the truth, and the measure of truth is reality.

- George Weigel, *Witness to Hope* (1999)

(This testimony is adapted in several places from my recent book "Drill Here, Drill Now, Pay Less: A Handbook for Solving Our Energy Crisis" (Regnery 2008).

Chairman Markey, Ranking Member Upton, and members of the subcommittee:

I appreciate the opportunity to testify today about the American Clean Energy and Security Act of 2009.

Last year some were surprised that I appeared in a commercial next to Nancy Pelosi agreeing that our country must take action to address climate change, that we need cleaner forms of energy, and that we should spark the innovation we need to move quickly.

Others were surprised when I wrote, along with Terry Maple, *A Contract with the Earth*, which outlines "green conservatism," and made the case that we can protect the environment better with incentives and encouraging innovation rather than through taxes and punishment. I continued to make the case for protecting the environment while producing more American energy in my book *Drill Here, Drill Now, Pay Less: A Handbook for Solving Our Energy Crisis.*

But as a former environmental studies professor who lectured on the second Earth Day, and as someone who was named Legislative Conservationist of the Year in 1998 by the Georgia Wildlife Federation, it should be no surprise that I care deeply about and am committed to the protection of our environment.

In this commitment, I echo the conviction of two great American leaders. The first is President Theodore Roosevelt, who said that "the nation behaves well if it treats the natural resources as assets, which it must turn over to the next generation increased, and not impaired, in value." The other was then-Governor Ronald Reagan who, upon the occasion of the first Earth Day, affirmed the "absolute necessity of waging all-out war against the debauching of the environment."

It was in this spirit that I read the bill that is being discussed before this committee and it is in this spirit that I report to you today my conclusion that this is the wrong bill.

This bill is wrong for our national security.

This bill is wrong for our economy.

This bill is wrong for government of, by, and for the people.

The framework in which I have analyzed this bill can be captured in a very simple phrase: 2+2=4, which was a prominent rallying cry in the late 1980s when the Solidarity free trade union movement was campaigning in Poland's first free elections.

The core idea behind 2+2=4 is that citizens must tell the truth even when governments lie. 2+2=4 forces you back to reality.

As matter of reality, the United States faces three enormous threats: threats to our national security, a threat of further economic decline, and a threat of government for the government (and not government for the people), which leads to corruption, political favoritism, and the fundamental breakdown of the rule of law. On all three of these bases of reality, this is the wrong bill.

THIS BILL IS WRONG FOR NATIONAL SECURITY

For over 30 years we've proclaimed the need for energy independence, but bad policies have forced us to become more and more reliant on dictators and kings for our energy. Instead of being independent, we are now bowing to kings and shaking hands with dictators to get our energy.

Vice President Gore was right today when he said "Our national security remains at risk so long as we remain dangerously dependent on flows of foreign oil reserves owned by sovereign states that are vulnerable to disruption. The rate of new discoveries, as you know, is falling even as demand elsewhere in the world is rising."

However Vice President Gore's analysis was wrong. Our current energy import strategy is entirely a function of our own government's anti-domestic energy policies. The United States government blocks the development of new energy sources and inhibits the use of existing energy and then explains that we will have a shortage of energy. It is an artificial, government imposed shortage not a naturally occurring phenomenon.

Put simply, the government's decision to make us more dependent upon foreign sources of energy means that we often fund the behavior and

activities abroad of dictators who compromise our own national security.

Iran exports 2.3 million barrels of oil per day, meaning they make billions a year from exporting their oil' This means more money to allow Hezbollah and Hamas to buy more rockets, more money to finance their terrorist operations throughout the Middle East, and more money for propaganda to convince that part of the world to hate America. This is a path to eventual destruction of our freedoms.

What this bill will do is continue to push us along that path to destruction. Instead of rewarding innovation, this bill punishes Americans into living lives that the government wants them to live. Instead of recognizing that the energy crisis was and is purely politician-driven, this bill punishes Americans for the faults of politicians and bureaucrats. Instead of opening up America's vast resources of oil, natural gas, and coal, this bill guarantees that we will remain reliant upon OPEC if we want to continue to drive cars, heat our homes, and run our appliances.

The fact is we have more energy resources than any other country in the world. Our estimated shale oil resources in the Rocky Mountains alone are three times the size of the Saudi Arabian oil reserves. We have 27 percent of the world's coal. We have huge potential in wind power. We have enormous opportunities in solar power. We have the largest number of scientists, engineers, and entrepreneurs of any country in the world.

If we adopt the right strategies and implement the right policies we can finally ignore the dictators of the world and never again have to beg any country for our energy.

AN ENERGY TAX IS WRONG FOR THE ECONOMY

When you consider President Obama's budget, this proposed legislation has a price tag for the American people of at least $646 billion. We know from news reports that senior Obama administration officials have indicated that $646 billion is a conservative amount and that the overall figure may be as much as three times that amount or $1.9 trillion in new taxes.

This is currently a 648 page bill, or, put another way, $1-3 billion per page. This is quite a costly bill, even for the standards of this Congress. It would be two and a half times the size of the giant stimulus package passed

earlier this year. And it would be a tax burden not a spending stimulus so it would deeply burden the American people and the economy.

While our economy is in deep recession and Americans are losing jobs by the thousands each month, this bill would worsen both. Make no mistake about it: This bill amounts to a $1-2 trillion energy tax levied on a struggling economy, which is destructive and wrong. With this glorified $1-2 trillion new energy tax, expect utility bill increases up to $3,128 per year per household. Filling up your gas tank will cost anywhere from 60 percent to 144 percent more, your electricity bill will increase by 77 to 129 percent, and the cost of home heating oil and natural gas could nearly double.

If enacted, this energy tax will increase the electricity bill of every American, increase the cost to drive a car, and increase the cost of doing business. This will punish every retired American, every rural American, and every person who drives to work, uses heating oil, or has electricity in their home. This will kill jobs and lead American jobs and investment being shipped to China and India, two countries that have made it quite clear that they will not levy such an enormous tax on their own economies.

But this is not my own opinion. Independent research, the Congressional Budget Office (CBO), and the President all agree that the costs of a cap-and-trade energy tax will be passed onto consumers.

President Obama, whose energy tax plan formed the foundation for this bill, said that under his plan "electricity rates would necessarily skyrocket." Director Peter Orszag, former CBO director and now Obama's director of the Office of Management and Budget (OMB), has said that consumer price increases "would be essential to the success of a cap-and-trade program."

According to the Heritage Foundation, the cost of cap-and-trade, with even only a small percentage of allocations being auctioned, would be $1.9 trillion. To put that in perspective the Vietnam War cost only $698 billion, the New Deal cost $500 billion, and NASA since its inception has only cost $851 billion, all amounts adjusted for inflation.

And these costs will be unfairly distributed.

In a recent paper for the Tax Foundation, Andrew Chamberlain concludes

that the costs of this energy tax would be "disproportionately borne by low-income households, those under age 25 and over 75 years, those in Southern states, and single parents with dependent children."

Imposing stunningly high taxes on an economy in the middle of a recession is fundamentally wrong, and guarantees that our economic competitors in the global marking will be in a dramatically better economic position. They recognize that artificially capping their economy is the wrong approach for developing their societies.

A member of the Indian delegation to the recent U.N. conference in Bonn, Germany, said the following: "If the question is whether India will take on binding emission reduction commitments, the answer is no."

India is saying no to crippling its economy, no to stunting its growth, and no to punishing its citizens for using energy. This particular member actually described implementing this sort of energy tax as "morally wrong" for the country.

China, too, believes emissions caps are the wrong answer. The lead climate negotiator for China said the following regarding who should pay to cut emissions: "As one of the developing countries, we are at the low end of the production line for the global economy. We produce products and these products are consumed by other countries...This share of emissions should be taken by the consumers, but not the producers."
China sees no fault of its own in emitting carbon dioxide, and thus they, like India, are not going to impose on themselves an economically destructive energy tax.

We are told by advocates of this energy tax that if the United States leads the way with energy taxes, countries like China and India will follow. This is fantasy. India refuses to pass a cap on emissions because it does not want to stifle its own economic growth. China believes that Americans and all other nations who purchase Chinese products should bear the costs of emissions reductions.

Energy Secretary Steven Chu has said "If other countries don't impose a cost on carbon, then we will be at a disadvantage." How much more evidence is necessary, then, to show that this bill will put America at a distinct economic disadvantage?

And why should other nations pass emissions caps when the United States is going to give them a handout in the form of investment and employment? A recent estimate from the Tax Foundation shows that cap-and-trade could cost America 965,000 jobs, and reduce economic output by $136 billion per year. Last summer, the Congress tried and failed to pass a similar energy tax which would also have cost America up to 4 million jobs by 2030 and would have ultimately cost America over $1 trillion, while also increasing electricity prices 44% and causing gasoline prices to nearly double.

These jobs and dollars will go somewhere, and this bill guarantees that they will not stay here in America.

If we increase the cost of doing business in America, our chief economic competitors around the world will be the ones who gain. This bill paves the way for fewer jobs in America, fewer opportunities for investment, and a reduced overall competitiveness in the global market.

THIS BILL IS WRONG FOR GOVERNMENT OF, BY, AND FOR THE PEOPLE

If we have learned any lesson out of the decay of government over the last twenty years, it ought to be that the scale of bureaucracy and the scale of micromanagement as laid out in this bill are an invitation to corruption and an invitation to more politicians playing games. The idea that the Secretary of Energy is now going to be the czar of Jacuzzis is just absurd. (If you don't believe me, check page 230 of the draft discussion bill.)

The kind of centralization that is needed to implement a government-run, government-manipulated marketplace for carbon such as this bill proposes will inevitably lead to fraud and corruption.

In a 2007 study, economist Robert J. Shapiro noted that "when a company fraudulently understates its energy production and emissions so it can sell some of [its permits], the buyer on the other side of that transaction has no incentive to uncover or reveal the fraud." Later he said, "Even in the most transparent and democratic society, distributing a scarce and valuable benefit through the normal political process invites enormous pressures that produce typically special preferences for influential interests and companies." Shapiro continued by saying that "political favoritism and

corruption may largely determine how the permits are distributed."

When it comes to increasing the power of government to influence the economy, have we learned nothing during the past six months?

Consider:

The United States government failed to regulate Wall Street correctly, and the result has been trillions of dollars of taxpayer money to clean up the mess that politicians and bureaucrats created.

Fannie Mae and Freddie Mac were charged with managing mortgages, and in 2008 we saw a collapse of the United States housing market. In response, Washington politicians determined that the best course of action was to force the American taxpayer to foot the bill for their mistakes.

And now the bill before you would create a multi-billion dollar artificial market for carbon, regulated and managed by the United States government, paid for by taxing every American who uses energy.

With the prospect of up to $2 trillion dollars being collected by the federal government under this massive new tax proposal and ready for redistribution, are we surprised that so many companies are lining up like panting dogs, vying for their cut of the green spoils? With $2 trillion up for grabs, the environmental pieties begin to be a little difficult to take seriously. Lobbyists have not been hired for good citizenship and idealism. Lobbyists have been hired to ensure their clients get rich off this new government managed flow of cash.

Our politicians have reversed Abraham Lincoln's understanding of America. In a free society governments should serve the people. But bills like this are the opposite of Lincoln's call at Gettysburg. It's not government of the people, by the people, for the people; it's government over the people, punishing the people, and telling the people how they can and cannot live their lives.

GETTING TO THE RIGHT BILL

There are a few points of hope in this bill, but nothing to encourage the dramatic scale of change we need to address our energy needs.

The first good thing in it is a provision that restricts the Environmental Protection Agency (EPA) from regulating carbon, which the EPA is currently positioning itself to do. This would be a power grab of staggering proportions and completely antithetical to historic American rallying cries of "no taxation without representation". We didn't win a revolution to replace taxation by an unaccountable King for taxation by unaccountable bureaucrats.

The Congress should immediately pass a stand alone bill that cuts off any appropriations funding to the EPA that would be used to regulate carbon dioxide. Then Congress should reform EPA to eliminate the bureaucratic arrogance which led to this power grab.

This bill also supports technologies that will allow coal to grow in importance, while reducing any possible harmful effects on the environments. Since over 50% of America's electricity comes from coal, the most abundant and affordable source of energy in this country, it is important to develop technologies that will make it clean and affordable. The bill supports a carbon capture and sequestration (CCS) demonstration program to jumpstart innovation, reversing the utterly irrational 2008 decision by the Department of Energy to postpone the development of the FutureGen Clean Coal plan.

Before anyone gives the Department of Energy sweeping new powers they should consider the absolute failure of the Department of Energy to keep its 2003 commitment to build an innovative "green coal" pilot project by 2008. In 2008 the failing energy bureaucracy announced it would try to get it done by 2016.

Similarly, before giving the Department of Energy new powers Congress should review the stunning failure of the nuclear waste cleanup program, its failed schedules and its ballooning costs. There is no evidence the Department o Energy bureaucracy could manage any large program and every evidence it would make a total mess out of the assignment.

On the positive side this bill also provides incentives for the wide-scale commercial deployment of CCS.

The decisive requirement for "green coal technology" (enabling very high

percentage of carbon recapture) is driven by the fact that by some estimates China will be adding one new coal plant every week from now to 2020. Without the development of an affordable green coal capability it is inevitable that carbon loading of the atmosphere will expand. The highest value for reducing carbon in the atmosphere is a Manhattan project type effort to develop affordable green coal technologies for use worldwide. Anything short of that is a strategy for crushing the American economy while exporting jobs overseas.

The bill also promotes the development of a smart electric grid that will help prevent blackouts like the ones that happened in 2000 and 2001 in California and in the Northeast in 2003, while helping to reduce peak loads on the system. This is an important step toward being able to transport variable wind and solar power across the country.

The right bill, as Secretary Chu said, would have a section on nuclear power, which this bill does not.

But so much more needs to be done to create the dramatic breakthroughs we need, in efficiency, in new energy sources, in cleaner fuels.

But this is a bill that punishes way more than incentivizes. Strangely, we are in a cycle where politicians have decided that they can punish their fellow Americans and they can do it when they can't get the bureaucracy to deliver. It is a fundamental violation of faith with the American people.

And even if you accept that we are going to ignore national security, ignore the economy, and ignore the risk of bigger bureaucracy, more politicians, and greater corruption, the underlying reality is that this bill will not solve the problem of carbon emissions.

It won't solve it because it is ridiculous to believe that we are going to eliminate 83% of carbon use with current technologies. This is the strategy imposed in the bill and it is a fantasy. Nothing in this bill leads to the level of breakthrough that you need to reduce carbon not only here at home but also reduce carbon generated by China and India.
Remember, by some estimates, China is building a new coal fired power plant every week. Chinese and Indian leaders have made it quite clear that their countries have no plans to go along with any carbon regulation scheme. That means any carbon reductions achieved under this plan

by the United States would be overwhelmed by the net new carbon China, India, and the rest of the developing world will produce.

Innovation is necessary to cut carbon, not regulation. But the policies to spur innovation and utilize the creativity of America's scientists and engineers are not in this bill.

The policies needed to expand all of America's energy resources, from oil to natural gas to the use of coal to nuclear to renewables such as ethanol, solar and wind to new breakthroughs such as hydrogen, are not in this bill.

The policies necessary to achieve energy independence are not in this bill.

Yet we are told that this bill will harness the imagination of America and lead to breakthroughs in new technologies. We are told that we will have more energy resources at our disposal. We are told that we will become energy independent.

Here, 2+2 does not equal four; this is simply an intellectually dishonest bill. It promises what it cannot deliver and then punishes what currently exists.

CONCLUSION

For the last thirty-six years, I have watched the anti-energy, pro-regulation, pro-litigation, pro-taxation environmental extremists label themselves as the only Americans who care about the environment.

These extremists would have you believe that to protect clean air and water, biodiversity, and the future of the earth, we have to buy into their catastrophic scenarios and sign onto their command-and-control, anti-energy, big-bureaucracy agenda, including dramatic increases in government power and draconian policies that will devastate our economy.

But this is just extremism. The truth is that we can produce more American energy and do it responsibly. We will not – and cannot – eliminate all risk of harm to the environment as we produce more energy. All energy sources have risks, but the key is to take measures to minimize the risks. More important, it's vital that we understand and appreciate what we've been able to accomplish in minimizing risks to the environment as we've developed more American energy.

The truth is that there is a pro-American energy and pro-environment approach that is a better choice for our economy and our environment than the bureaucratic, litigation-focused approach of environmental extremism. (See **Appendix 1** for a roadmap of solutions for addressing our energy needs that I originally proposed in *Drill Here, Drill Now, Pay Less.*)

It is possible to be totally committed to American principles -- to individual liberty, a market economy, entrepreneurship, and lower taxes -- and still be pro-environment. It is possible that with the sound use of science and technology and the right incentives to encourage entrepreneurs, American principles can provide a better solution for the health of our planet than can environmental extremism.

A ROADMAP FOR MORE AMERICAN ENERGY NOW

The best way for us to get started on solving our energy needs is with the same Manhattan Project like urgency that we displayed during World War II. We need a program to foster bold scientific innovations and transform them into engineering achievements in record time. Once we acknowledge that we can, in fact, address our energy needs through American ingenuity, we see that specific solutions are all within our grasp. What follows is a point-by-point plan for lowering energy costs and creating cleaner, more abundant energy, a plan that does not rely on a crippling regulatory regime and a devastating energy tax. After all, a new Manhattan Project for energy can only work if it depends on the unparalleled innovation and resourcefulness of the American people.

We can do it all. We can do it now. We can do it for America. This is the American way. We have stuck to this belief for 400 years, and it has made us the most prosperous and freest country in the world.

Let's apply American ingenuity to solving an American problem by developing more American energy now.

Solutions for more oil and natural gas development

1. **Provide the leases and the necessary permitting to allow expanded offshore drilling for oil and natural gas to occur more rapidly**. Expanded offshore drilling is a necessary first step that will help lower oil and natural gas prices in the short and long term.

2. **Change federal law to allow drilling for oil and natural gas in the Alaskan National Wildlife Refuge (ANWR)**. This is a necessary first step that will allow for the development of the most easily accessible known oil reserves in the United States.

3. **Change federal law to allow for development of oil shale in Utah, Wyoming and Colorado.** Right now, Congress prohibits the Department of Interior (DOI) from using any funding to finish writing regulations for issuing leases to companies for oil shale exploration.

The ban also stops the DOI from finalizing an environmental impact statement that must be completed before any oil shale development can begin. Lifting this moratorium will allow the DOI to finalize the regulations and complete the environmental study so we can expand oil shale development.

4. **Change federal law to incentivize those states that want to permit exploration to do so with appropriate safeguards**

5. **Change federal law to give all states with offshore oil and gas the same share of federal royalties as most states get for land-based resources (48 percent)**. Today most states get zero royalties from offshore oil and gas development, while states like Wyoming earn 48 percent of federal royalties for its land-based oil and gas. If Richmond, Tallahassee, and Sacramento suddenly had the potential to find billions of dollars a year in new revenues for their state budgets, their willingness to embrace new oil and gas development with appropriate environmental safeguards might increase dramatically.

   A share of the state and federal revenues from new offshore development could be set aside to finance biodiversity investments and national park infrastructure projects. Additional revenues could be set aside to fund infrastructure projects like new roads, bridges, inland waterways, environment-enhancing water projects, public transit and a new and more efficient satellite-based air traffic control system.

6. **Create public/private partnerships in coastal states to fast track the ability of oil and natural gas companies to develop offshore oil and gas resources**. If Congress were to lift the ban on offshore oil and gas development (or at least grant coastal states the right to develop the resources with a plan to share revenue with them), states would move swiftly to set up partnerships that will maximize the best use of oil and gas revenues.

   Efforts in Virginia provide a good example. In 2004, two Virginia legislators, Delegate Chris Saxman and Senator Frank Wagner,

learned that Virginia manufacturers were warning of the rising costs of energy because of tightening energy supplies. Once they discovered that oil and gas resources exist off Virginia's shores, and that the state could experience rapid economic development from the actual business of energy exploration and development, Saxman and Wagner immediately designed legislation that would have Virginia petition the federal government for permits to drill offshore. In addition, the legislation specified that a significant portion of oil and gas royalties, state fees, and licenses collected by the state would go to improve Virginia's transportation infrastructure, clean up the Chesapeake Bay, and invest in technologies related to new energy production.

The economic potential for Virginia is significant. The oil and natural gas revenue estimated to accrue to Virginia is $13.53 billion dollars over thirty years, or $451 million annually. This is a conservative estimate that could increase with technological advances.

But these are not all the economic benefits that Virginia would reap. In just the Hampton Roads area near Norfolk, it is estimated -- based on experience with the oil and gas industry in Nova Scotia and Louisiana -- that oil and natural gas development would result in around $8 billion in capital investment and 2,600 new, high paying jobs. These new jobs would have an estimated payroll close to $650 million annually. Virginia would thus see $271 million more flow into the state treasury in the form of state and local taxes as a result of this increased economic activity.

This new tax revenue could then be used to fund transportation projects in the Hampton Roads area and throughout the state.

Imagine funding new roads, cleaning up the environment, and making investments in basic research and development science to promote new energy sources – all without raising taxes. How many coastal states besides Virginia would like to achieve that combination of benefits? Coastal states could lower energy costs for their residents as well as the energy costs of fellow citizens across the country, while relieving congestion and cleaning up the environment.

7. **Consider ways to distribute the benefits of drilling to each individual and citizen.** One major reason Alaskan residents support drilling is that the benefits of it reach their own pockets. Alaskans receive a check every year from a dividend fund established in 1976 to distribute state revenues from drilling leases (as long as there is interest on the principal). As of 2007, the state had $37.8 billion in the fund. This allows residents to reap the financial benefits of drilling even beyond lower gas prices.

   Other states should consider adopting similar programs to benefit their own residents.

   Just imagine a flood of checks and tax cuts across the nation as states with offshore, onshore, and oil shale drilling share their new wealth with their residents. This would be a remarkable way to boost economic growth.

8. **Allow companies engaged in oil and gas exploration and development to write off their investments in one year by expensing all of it against their tax liabilities**. This will lead to an explosion of new exploration and development.

9. **Restore the oil shale provisions of the Energy Policy Act of 2005.** This would ensure that anything that was affected by the Congressional moratorium continues as though the moratorium were never approved.

10. **Until drilling in ANWR is permitted, allow participating oil companies to do seismic surveys to find out how much oil is in the 10-02 area of ANWR's Coastal Plain.** Oil companies should be allowed to discover how much oil is in this area, which is the section thought to contain the most oil. This could be done in one winter season with minimal impact on the environment, and it would be funded by the oil companies, which would make the information public. If the American people discovered how much oil there really was in this area of ANWR, Congress would face renewed pressure to

lift the moratorium, while oil companies would get an even bigger incentive to begin drilling as soon as possible.

Solutions for Refineries

11. **Give companies an incentive to build refineries and increase capacity by shortening the depreciation schedule**. Right now, it's so expensive and time-consuming to build a refinery or increase capacity at existing refineries that most companies don't even try. When companies build refineries or expand old ones, they are allowed to write off the cost of the equipment over a 10-year period, meaning a company has to wait ten years to recover the cost of that equipment. This is called depreciation. We should immediately change the tax code so that a company that builds a refinery can receive the benefits of depreciation within five years. This will give companies a big incentive to start building.

12. **Allow companies to write off 100 percent of their expenses in the first year if their new refineries or additions significantly expand America's total refining capacity**. The 2005 Energy Act had a provision that let companies write off 50 percent in the first year if the refineries increased capacity, but it took the IRS three years before it came up with the rules to enact this law. For three years companies were scared to build refineries because they didn't know if they were ever going to get the benefit of this provision. We should make this provision retroactive so that companies that began building during the last three years can receive the benefits and not be punished by the IRS's incompetence. Then, we should further enlarge the incentive to build refineries and expand existing capacity by increasing the amount companies can write off in their first year to cover the entire cost of the equipment.

13. **Enact real litigation reform for companies building refineries or expanding capacity**. A loser-pays rule in litigation would help cut down on frivolous lawsuits dramatically. In the case of Arizona Clean Fuels, this kind of reform could have prevented a lawsuit that cost it some $500,000 in legal expenses, forcing it to change locations to escape the debilitating financial and time delays. The case was later

dismissed by a district court judge who called the lawsuit "frivolous" and lacking in merit. Lawsuits are a huge problem for refinery projects, and we can't expect more to be built as long as lawsuits can hold up projects for years at a time and frustrate efforts to finance new refineries.

14. **Make the permitting process for building a refinery or expanding capacity easier and faster**. The current permitting process involves submitting multiple permits to multiple agencies and takes years to complete. A new proposal should force regulators to act on applications for new refineries within a year, with a 120-day limit for deciding on applications to expand old ones.

15. **Keep the tax credit for enhanced oil recovery (EOR).** Enhanced oil recovery could increase domestic oil production by as much as 3 million barrels per day by 2030, while capturing and storing billions of tons of carbon emissions. President Obama's FY2010 budget would remove the tax credit for this technique, even though it is a proven oil recovery method that has been safely utilized for 30 years, most notably in the Permian Basin of West Texas.

    EOR consists of capturing CO2 at the source, compressing it, and transporting it to a declining oil field through pipelines. It is injected into wells where it acts as a solvent, reducing oil viscosity and surface tension, thus freeing the oil to be "swept" to production wells. The CO2 is trapped within the formation in dead-end pores and channels. The wells are plugged with cement and the CO2 is permanently sequestered underground.

Solutions for more, cleaner coal

16. **Immediately renegotiate the FutureGen clean coal project for Illinois to get it built as rapidly as possible.** It is utterly irrational for the Department of Energy to postpone the most advanced clean coal project in America.

17. **Launch three more competitive clean coal plants on a competitive bid, incentivized fast track basis with specific**

metrics of achievements to be rewarded. Clean coal would be such an important breakthrough for the environment, and coal is such an enormous American resource, that it is worth launching four parallel pilot projects immediately. This was precisely the Manhattan Project approach in World War II.

18. **Save time by allowing construction of experimental clean coal plants on brownfields in already industrialized areas without complex environmental regulations.** Ohio Congressman Mike Turner's proposed legislation to protect green areas by encouraging redevelopment of existing industrial areas is the right approach.

19. **Congress should approve a series of tax-free prizes to accelerate innovation in developing new technologies for using coal**. The result will be a better environment, more energy independence, and more energy at lower cost. Eliminate half the Department of Energy bureaucracy and use the savings to fund the prizes. America will get a much bigger, faster return on its investment.

20. **Develop a tax credit for refitting existing coal plants**. A lot of existing coal plants are going to be around for a long time. The most efficient way to make them more environmentally acceptable is to create a tax credit for retrofitting them with new methods and new technologies.

Solutions for more nuclear power

21. **Pass a streamlined regulatory regime and a favorable tax regime for building a new generation of safe nuclear reactors**. Nuclear power can help create a dramatically better future for the environment and for domestic energy production. Nuclear power has an additional bonus in that nuclear power plants produce the same amount of energy twenty-four hours a day and therefore can produce hydrogen for a hydrogen-powered automobile system at night when the electricity grid doesn't need the power. Thus, a significant increase in nuclear technology is also a helpful step toward a hydrogen economy.

22. **Accelerate research and development in Generation IV nuclear power plants**. We must do all we can to make sure this project is completed as soon as possible by offering the right prizes and incentives for development.

23. **Provide a prize for safe disposal or reuse of nuclear waste products**. If the government refuses to propose a viable alternative location for nuclear waste disposal, Congress should approve a prize to allow the creativity and innovation of the private sector to solve this dilemma. Reprocessing technology is currently a more than 20 year research and development investment, so discovering ways to accelerate that process would benefit both the nuclear industry and the environment.

Solutions for More Alternative Power

24. **Make the solar power and wind power tax credits permanent to create a large-scale industry dedicated to domestically produced renewable electricity**. We have enormous opportunities in solar, wind, and other renewable electricity sources that can be developed with a stable tax policy.

25. **Develop long distance transmission lines to move wind power from the Great Plains wind belt to Chicago and other urban centers**. The potential exists for an enormous amount of electricity generation from wind, but it is locked up geographically because the neighboring states have no incentive to be helpful. The Dakotas can generate the power and Chicago can use the power. West Texas can generate electricity East Texas needs. The federal government may have to help make the connections possible.

Solutions in transportation

26. **Allow auto companies to use refundable tax credits for the cost of flex-fuels cars, hybrids, plug-in hybrids, and the development of hydrogen cars, including necessary retooling for manufacturing.** U.S. auto companies get billions in tax credits. However, they aren't making any profits, and thus they can't turn the

tax credits into useful money. The federal government could solve this problem by making the tax credits refundable if they're spent on helping to solve the energy problem. This would be a win-win strategy of much greater importance than the ongoing fight over CAFÉ rules, which set fuel efficiency standards for new cars without any incentives to achieve them.

27. **Create an Open Fuel Standard for 95 percent of the new cars sold in the United States**. An Open Fuel Standard would ensure that most new cars sold in America are flex-fuel vehicles (FFVs) that can use a variety of fuel types. It costs less than $100 extra to build a car as an FFV as compared to gasoline-only, and this will provide Americans fuel choice and price competition at the pump. Furthermore, the federal government needs to provide tax credits to help auto companies cope with the transition costs to flex fuel, and Congress needs to streamline the regulations and certification requirements for the transition.

28. **Approve tax incentives for new fuel distribution stations**. There should be a substantial tax break for investing in both ethanol and hydrogen supply stations as well as hydrogen pipelines so the fuel can be delivered at a reasonable cost when flex-fuel cars come on the market. If combined with expanding the amount of allowable ethanol to go to 15% of liquid fuel there would be a substantial contribution to carbon reduction and cleaner air and more American jobs with energy money kept here in America.

29. **Approve tax incentives for composite manufacturing**. There ought to be a tax credit for car companies to retool in favor of composite materials manufacturing, which will radically lower the weight of cars and improve gas mileage. UPS has ordered experimental composite delivery vans that reduce weight by 2,000 pounds and increase mileage by 30 percent. Some have estimated that composite materials combined with a hybrid E-85 engine could produce a vehicle that could run for 500 to 1,000 miles on one gallon of petroleum.

30. **Approve tax incentives for turning in old, polluting cars**. This would help the poor, the environment, and the ailing American auto industry.

31. **Approve a billion-dollar tax-free prize for the first hydrogen car that can be mass-produced for a reasonable price**. A successful America focuses on inventing a better future and knows that customers will rapidly switch to new, superior products. The same is true for creating a new energy strategy. We need very large prizes for fundamental breakthroughs. Hydrogen has to be the ultimate basis for a truly bold energy prize because it has no environmental impact and is universally available as a natural resource. Therefore, a mass-produced hydrogen car would have huge appeal to China and India if it were reasonably priced. American technologies for hydrogen vehicles might be one of the biggest economic winners of the next generation.

32. **Dramatically increase funding to develop hydrogen fuel cells.** A National Research Council report found that if the government is willing to invest an average of $11 billion per year on hydrogen technology and infrastructure between now and 2050, 100 percent of all cars and light trucks in the U.S. could be hydrogen-powered with zero emissions by 2050. This might seem like a lot of money at first, but it is nothing compared to the incredible advantages of hydrogen economy or to the $700 billion a year we are sending to foreign countries for oil. By increasing funding we could have 25 million hydrogen-powered cars on the road by 2030 and be well on our way to a revolution in our energy and environmental policy that will give Americans more energy at lower costs.

Solutions for bureaucratic roadblocks

33. **Streamline agency reviews of drilling projects.** The delay and confusion caused by bureaucracies often stems from a lack of coordination among the huge number of government agencies.

    For onshore drilling projects, there are at least eight agencies spread across four departments that are all involved in the approval process.

The problem is that every agency only focuses on doing its own job without considering the big picture. For example, the Environmental Protection Agency only cares about making sure the Clean Air Act or the Clean Water Act is being enforced. As long as it meets that responsibility, it's simply not concerned that it may be causing massive delays throughout the rest of the system because other agencies are waiting for it to finish its job before they can do theirs.

We need a fundamental restructuring of the bureaucracy at the local branch level so that all the agencies involved in approving drill leases and permits work in one office together and report to one boss who oversees and coordinates all their efforts.

This reform has already been tested with incredible success. The 2005 Energy Act created a pilot program to consolidate a few local branches of these agencies in various locations. Two years later, the results speak for themselves. In 2006, the offices that participated in the program processed 73 percent of the applications for drilling permits, compared to just 27 percent handled by the offices that retained the old bureaucratic structure.

As efficiency went up, so did environmental oversight – in 2007, the pilot offices conducted 100 percent of the inspections they had planned on completing by the end of the year. While it isn't unusual for offices to conduct all their planned inspections, what makes the pilot office numbers so impressive is that their inspections were much more in-depth and wide-ranging than the non-pilot inspections. They met their inspection goals while improving the quality of their inspections.

This reform leads to dramatically fewer delays, less cost to energy companies, better relationships between agencies, and better environmental protection. It is a commonsense solution that we should implement immediately for both onshore and offshore drilling.

34. Dramatically increase the funding and staff levels of these offices. Often suffering from severe shortages of personnel and

money, these government office must be given the resources to do their jobs.

35. **Save one year in duplicative paperwork in processing drilling applications**. When an oil company goes through the process of trying to drill offshore, the Minerals Management Service (MMS), which oversees offshore drilling regulations, has to create a 5-year plan that includes a host of different steps and environmental analyses and takes two to three years to finish.

    There are three very long steps in this process in which the MMS publishes its proposal for the methods and location of the drilling. The first step is called the "draft proposed program," which is followed by the "proposed program," and eventually leads to the publication of the "final proposed program."

    Here's what this really means: the MMS first says what it plans to do, then what it really plans to do, and finally, what it really, really plans to do.

    This inefficient process has led the Outer Continental Shelf policy committee to suggest eliminating the "draft proposed program" step. It is possible that this simple reform will save energy companies and federal agencies *one year* in paperwork and planning time. We should immediately enact this recommendation.

36. **Make agency behavior transparent and accountable**. If every agency had to publish information every week on how many applications it was processing, how long they had been in process, and other key indicators, there would be dramatic pressure not to be the most inefficient and least effective agency. Congress would also know how to evaluate which agencies required more oversight or resources.

    There are several other important bureaucratic reforms that should be enacted and even more radical steps to consider, but these examples highlight how small, commonsense solutions can lead to dramatically fewer delays and costs which will create more energy and lower

prices. Untangling the web of bureaucracy that chokes off oil development is difficult, but we can't hope to address our energy needs if we don't commit to real change to a bureaucratic system that is clearly broken.

Solutions to reduce litigation

37. **Empower government agencies to fight off frivolous lawsuits.** The likelihood that any drilling permit given to a company will be challenged in court is enough to have a real impact on our nation's energy needs. An environment where hostile interest groups frequently challenge drilling permits for ridiculous reasons is one in which there is less drilling and less energy for the American people.

    Our government is a highly complex organization that is impossible for Congress to fully manage. So when Congress passes a law setting certain goals or requiring different procedures to be used by an agency, it usually leaves it up to that agency to decide how best to implement the law. For complicated historical reasons, this is not the case with the agencies that regulate drilling.

    In 1969, Congress passed the National Environmental Policy Act (NEPA) requiring that agencies follow certain procedures when deciding the methods and locations for oil drilling. The bill is purposefully vague and doesn't define a lot of important phrases and words, which is not unusual for legislation.

    Typically, Congress writes somewhere in a new law that the agencies responsible for implementing it can interpret the law's language based on their own expertise and experience with these issues. Unfortunately, NEPA didn't do that. As a result, anti-drilling environmental extremist groups often challenge whether a government agency followed NEPA regulations by arguing that the agency's actions are inconsistent with the law's language. When the agencies tell a court that they define some phrase in a certain way based on the recommendations of their own experts, activist courts often side with the environmentalist extremists and rule that the

agencies don't have the authority to define the law's language. Instead, the courts decide that only they can define these words.

The result is a system of regulations that have been largely written by the courts—which have no experience or expertise in energy at all—in ways that hinder the activities of both energy-related agencies and energy companies.

This has led agencies to try to create "appeal-proof" environmental assessments in which they far exceed the necessary environmental protections in order to make it harder for environmental extremists to win lawsuits. Unfortunately, even these costly and time-consuming "appeal-proof" assessments frequently lose in court. In 2006, out of 108 lawsuits filed under NEPA against government agencies, courts ordered injunctions or ordered the case to be remanded in two-thirds of cases. All this means less drilling, more delays, and more ridiculous regulations and lawsuits.

The way to fix this crucial problem and stop a lot of frivolous lawsuits is to pass a law that gives the agencies in charge of implementing NEPA regulations the authority to define important words and phrases that Congress left vague. This would be no different than what Congress does for almost every other piece of legislation it passes, and it would stop the courts from being able to overrule the decisions these agencies make based on their own considerable expertise.

38. **Implement a loser-pays law for lawsuits challenging drilling permits.** Even if we make it harder for environmental extremists to win lawsuits, they'll probably keep filing one suit after another in hopes of slowing the process down and, ultimately, winning in some liberal activist courts.

To really stop these baseless lawsuits we have to design a system where there is a significant incentive not to file them. The best way to do that is to implement a loser-pays law for these lawsuits. This means that whichever side loses a lawsuit challenging a drilling permit has to pay all the legal costs for the other side. If an extreme

environmentalist group wants to stop all drilling in Alaska by filing ridiculous lawsuits challenging permits, and then loses those suits, it should have to pay the legal costs that the government and the private company spent defending the permit in court. You would see a dramatic decline in the number of frivolous lawsuits, as there would finally be a disincentive against filing suits that have little chance of success.

This reform would not cause harm to the environment. The vast majority of these lawsuits are frivolous, geared more toward shutting down drilling altogether than ensuring that regulations are followed. In most cases, the environment is being adequately protected by existing regulations, which are rigorously enforced. A loser-pays law would simply encourage activists to stop filing lawsuits unless they have strong evidence of real environmental or regulatory problems. This would actually increase accountability because the courts and the government would take the few lawsuits that were filed much more seriously.

We can protect the environment and cut down on wasteful litigation at the same time. If we want more energy and lower prices, we need real change in our legal system to stop frivolous lawsuits that cause unnecessary delays and cost billions of dollars to energy companies and to taxpayers. It must be a priority in any solution to our energy needs.

Mr. MARKEY. We thank you, Mr. Speaker, very much.

We will begin by recognizing the chairman of the full committee, Mr. Waxman.

Mr. WAXMAN. Thank you very much, Mr. Chairman, for recognizing me first so I could attend to some other business.

Mr. Gingrich, as I hear what you are saying is it can't be done, it costs too much, there is really not that great a threat anyway, and we don't want to rush out and spend government money and have government programs in the large government. But it was interesting your proposals were rebuild the American economy with greener energy. I assume that is going to cost somebody some money. Green coal and carbon sequestration. Of course we need it. It is going to cost some money. Enhanced oil recovery, expand biofuels, nuclear energy. We ought to ask the scientists how much money they want. I don't disagree with those ideas, but I don't know how you do it without spending some money, and quite frankly, I would rather give the marketplace some incentives to get some of these results than to have government funds do it, attempt to do it, because I think the free economic system that we have is the best way to get results.

But as I look at your basic core argument, it is going to cost too much, and in fact, you said it is going to be a glorified $1 to $2 trillion new energy tax will cost households over $3,000 a year. Is that right? Is that your position?

Mr. GINGRICH. Well, those are the numbers I have seen.

Mr. WAXMAN. OK. Well, those are numbers that have been cited, and the problem with these numbers if they are simply not true. Republican members have cited this before at other hearings, and they say that this is supported by an MIT study, but the author of this study, Dr. John Riley, said the estimate is a gross exaggeration, that the study is 2 years old, uses outdated data, examines a different piece of legislation.

I would like to enter into the record, Mr. Chairman, two letters that Dr. Riley sent to Minority Leader Bainer explaining that Republicans are mischaracterizing his work. Just yesterday Dr. Riley confirmed that, "The Republican approach to estimating the cost of cap-and-trade is just wrong." EPA analyzed the——

Mr. MARKEY. Without objection it will be included in the record.

[The information was unavailable at the time of printing.]

Mr. WAXMAN [continuing]. Cost of the bill that Mr. Markey and I have proposed, and this analysis says the bill will cost the average family less than 40 cents per day. When the American people hear statements that you have made, they get scared, which is exactly what I think is intended. Let us scare people. This is not a new tactic. I remember over the years we have heard it over and over again from industry. Twenty years ago when we were doing the Clean Air Act opponents of the Acid Rain Provision said it would bankrupt the utility industry. In fact, we cut emissions in half at a fraction of the cost the naysayers predicted. They said it was certain that we would lose the air conditioning in our office buildings and that we simply couldn't make cleaner automobiles. All of these predictions turned out to be completely inaccurate.

I believe that you are trying to give us a false choice. Our economic future and clean energy are inextricably intertwined. The

economy that will grow the fastest in this century will be the one that makes the greatest investment in new energy technologies.

Nearly 40 years ago this committee passed the original Clean Air Act and since that time in 40 years we have reduced dangerous air pollutants by 60 percent or more. You acted as if it would be incredible that we could reduce carbon emissions by huge numbers. Incredible that we did that under the Clean Air Act and during the same period our population has grown by 50 percent and our economy by over 200 percent.

There aren't that many of us in the room that were here when we did the Clean Air Act. I don't know if you—you certainly weren't here in 1970. You were here in 1990. We heard all of these scare tactics firsthand and what the Congress did on a bipartisan basis is we let commonsense prevail. We acted decisively to clean up air pollution, and our Nation has benefited ever since.

And I would suggest that your ideas are not bold. They are a repeat of the old scare tactics. Let us get the American people really scared. The Democrats are going to charge you more money than it is impossible to achieve. Why only the South Pole on one side is sinking and other side not. I just think that the American people ought to see through what you have to say, and I would hope you would not go to every campus to give your speeches but urge Republicans and Democrats to work together, just don't attack Gore and attack the President and attack the Democrats. Work with us, and if you don't think it is a problem, then I don't know why you are even giving us those six or seven solutions, because I think there is a problem, and you ought to face up to us and help us solve that problem.

My time has expired and yield back the time.

Mr. GINGRICH. Am I allowed to respond?

VOICE. The gentleman would be allowed to respond.

Mr. WAXMAN. Well, I didn't ask a question, and I don't mind if he responds, but the rules that I understand we have always had is members have 5 minutes to either ask a question, I asked you one upfront, and then to say whatever we want to say.

Mr. BARTON. Mr. Chairman.

Mr. WAXMAN. I would certainly think you ought to be able to respond if you want to, but that is going to be up to the committee to violate the rules and give you an extra privilege that other people have not had.

Mr. BARTON. Mr. Chairman, we have——

Mr. MARKEY. The gentleman's time has expired. I can recognize——

Mr. BARTON. Ask to speak out of order, either one.

Mr. MARKEY. The gentleman is recognized for that purpose.

Mr. BARTON. The chairman of the subcommittee explicitly gave Vice President Gore earlier today the opportunity to respond to Congressman Radanovich's statement, which wasn't a question, and Mr. Markey——

Mr. WAXMAN. Well, in that case if the gentleman would yield I will ask unanimous consent that the—Mr. Gingrich be given 3 minutes to respond.

Mr. BARTON. Well, he should just be given—we should give——

Mr. GINGRICH. I can do it in much less——

Mr. BARTON. —the Speaker of the House the same courtesy we gave the Vice President of the United States.

Mr. GINGRICH. I can do it in much less than 3 minutes.

Let me must say first of all, that the $640 billion tax increase comes out of the Obama budget and has an asterisk indicating it will be more than that. That is not my number. That is the President's director of the budget's number.

Second——

Mr. WAXMAN. You said that is how much would come in a cap-and-trade program that would be then redistributed.

Mr. GINGRICH. Yes. It is in the budget, so it could be redistributed.

Mr. WAXMAN. So you take money, and you redistribute it.

Mr. GINGRICH. But it would be redistributed.

Mr. WAXMAN. OK, and you propose some redistributing of dollars as well.

Mr. GINGRICH. On the MIT study I——

Mr. WAXMAN. Where does your money come from?

Mr. GINGRICH. I would ask permission, if I might——

Mr. WAXMAN. Where does your money come from for your ideas here? Where is the money going to come from that we are going to transform the American economy with American energy?

Mr. GINGRICH. Well, look. I think when you——

Mr. WAXMAN. Where is it going to come from for green coal and carbon sequestration? That is an expensive proposition. We have got to do it. We have got to invest in it. Where is the money going to come from to transform the way scientists are able to do their work?

Mr. GINGRICH. Well, first of all, in a Congress which passed a $787 billion stimulus without reading the bill, I think we can find the money. I am perfectly happy to work together to find the money.

Second, I have never said I am against the government incentivizing change. I am against the government punishing change.

Third, I would like to put in the record a recent article in the Weekly Standard called Fuzzy Math, which is actually John McCormack's conversation with the MIT professor, and in terms of citations, I would cite $10,800 cost per family of four by 2020, according to a laperstudy, $2,700 per family of four according to Warden econometrics, and $750 per year for the porous quintile according to the Center for Budget Policy Priorities as some of my sources.

Mr. WAXMAN. Mr. Gingrich——

Mr. GINGRICH. Finally——

Mr. WAXMAN [continuing]. I don't object to any of those going in the record, but Mr. Gingrich, I am sure glad you are not in charge of foreign policy. Do you think the only way to incentivize a country is by offering them more and more carrots? You have got to have some——

Mr. GINGRICH. I don't think——

Mr. WAXMAN [continuing]. And sometimes——

Mr. GINGRICH. Chairman.

Mr. WAXMAN [continuing]. You have to say to incentivize you we are going to give you some assistance, but there are going to be consequences.

Mr. GINGRICH. Mr. Chairman, I don't think of American citizens the way I think of foreign dictators, and I don't think this Congress should punish the American people. I think this Congress has every right to reward the American people, but I don't think Lincoln's government of the people, by the people, and for the people should be turned into a government punishing the people, and that is the major difference.

Lastly I would point out that in the EPA analysis of your bill, your bill is not complete, and the EPA analysis included 150 percent increase in nuclear power, and there is no nuclear power section of the bill. So I would be perfectly happy to talk to you in more detail when the bill is complete. I would be glad to come back and testify if the bill gets completed, but this is an incomplete bill, and the EPA analysis had certain assumptions that don't relate to the bill. But I am always delighted to be here with the chairman.

Mr. MARKEY. The gentleman's time has expired.

The chair recognizes the gentleman from Texas, Mr. Barton.

Mr. BARTON. Thank you. Thank you, Mr. Chairman.

I just want to put in the record this famous MIT study is based between 2015, and 2050, there will be an annual, which means every year, average of $366 billion in revenues. You take that number, you divide by the number of households in America, which MIT estimates to be 117 million, and lo and behold that equals $3,128 per household.

Now, you can redistribute it, you can play with the numbers, you can go up on your allowances, down on your allowances, but the fact remains if we put anything close to what we think Mr. Markey and Mr. Waxman are going to put on the table in terms of a cap-and-trade system, it is going to raise huge amounts of money, billions and billions of dollars every year, and somebody is going to pay for it, and that somebody is the American taxpayer and the American consumer. That is number one.

Number two. When Mr. Waxman asked about how you do the research and how you pay for carbon sequestration, he well knows that Mr. Boucher and myself and other members of the committee have a bill that assesses a very small fee, like per mill fee, per megawatt or—yes, megawatt of electricity produced where the industry itself pays for the fund that develops this sequestration technology for carbon capture, our conversion, and sequestration.

That bill is part of the 648-page draft. The Boucher proposal that I support and many Republicans support is in this draft bill. What is not in this draft bill is the actual allowance system, scheme and who gets free allowances and who has to pay for allowances. That is not in this bill. And that is—there may be good reasons why it is not in the bill, but it is not in the bill.

Now, my question to you, Mr. Speaker, the draft bill has a renewable electricity portfolio standard called RES, but it does not include nuclear power and does not include clean coal technology. The Republican alternative will have a clean energy standard which will include both nuclear and clean coal technology. Which of those two definitions, if any, do you support?

Mr. GINGRICH. Well, obviously I would support including clean coal technology and nuclear power, but let me point out in terms of one of the things that the chairman asked me a minute ago, if you simply pass regulatory and litigation reform for nuclear power, I suspect you get a dramatic increase in nuclear power investment at no cost to the Federal Government. It would be beneficial for the committee to hold a hearing and invite in the nuclear power industry and say, if we wanted to have a robust nuclear power industry with no federal investment, what changes would we need to get to a clean, simple, guaranteed approach that allowed companies to go out and actually build a nuclear power plant. And I think you would be startled at how many nuclear power plants you could build if they weren't faced with massive litigation, continuous regulation, and an increasingly difficult-to-deal-with Nuclear Regulatory Commission, which in effect is virtually guaranteed that it is too expensive to build the very plant here that is routinely built in either France or Japan.

Mr. BARTON. My last question, Mr. Speaker, I think we have pointed out repeatedly the problems with the cap-and-trade system. The fact that it doesn't work, it hasn't worked in Europe, it is going to be hugely expensive, it is going to cost lots of money, it is going to cost millions of American jobs. The Republican alternative does always with cap-and-trade and puts in its place an efficiency or performance standard similar to what we put in the Clean Air Act amendments of 1990. We used existing—the best available technology as the standard in a given incentive for plants. If they develop better technology, they then get an accelerated depreciation on their tax returns.

I know you haven't had a chance to look at the Republican alternative, but does that sound like something that would be better in your view than a cap-and-trade program that simply doesn't work?

Mr. GINGRICH. I think the history of America is that when you reward people, when you have prizes, when you have incentives, you can get extraordinary levels of entrepreneurial energy and an amazing amount of inventiveness. And historically whether it was prizes for airlines for aviation breakthroughs in the '20s and '30s or it was the grants of land in order to build the railroads, the Transcontinental Railroad in the 19th century, we have been very successful as a country in incentivizing the future. We are not very effective when we either bureaucratize it or punish the present.

Mr. BARTON. Thank you, Mr. Speaker. Thank you, Mr. Chairman.

Mr. MARKEY. The gentleman's time has expired.

The chair recognizes the gentleman from Washington State, Mr. Inslee.

Mr. INSLEE. Thank you.

I must say this has been surprising testimony because I think many people will ask what happened to the old Newt Gingrich. We expected an optimist, someone who believes in the creative power of the American economy, but we have had a sudden attack of pessimism that we can't solve this problem. And I want to ask you some questions about that. Perhaps we can put up a chart here on this screen about some questions you were asked on February 15, 1970, if we can get the first slide up.

You were basically asked—you are going to help us out there, I hope. You were basically asked if you supported a cap on carbon in 1970, which basically is what this bill is. This is—excuse me. 2007. And you said, and I am just going to read several of your quotes. You said, "I think that if you have a mandatory, have mandatory caps, combined with a trading system, much like we did with sulfur, and if you have a tax incentive program for investing in the solutions, that there is a package that is very, very good, and frankly, it is something I would strongly support."

This bill is exactly that package. It is a mandatory cap. It protects Americans from unrestrained pollution. It is exactly what we did for sulfur dioxide, and if you will put up the next slide, please, we will just take some—just so you will know I am just picking these at random, in the same interview said, "The caps with the trading system on sulfur has worked brilliantly. It has brought free market attitudes, entrepreneurship, and technology and made it very profitable to have less sulfur." So people said, wow. It is worth my time and effort.

Next slide, please. You went on to say, and I will read this. "I think," I will just read the last paragraph. "I think that we are right at a tipping point where you could begin to imagine the development of an entirely-new generation of systems where you had a combination of a carbon cap with a trading system. You had prizes for the invention of major breakthroughs, and you had incentives for investing in the new breakthroughs and accelerating their use and their development. And you could imagine a world 15 years from now that is dramatically greener than the world we are currently in."

Now, the bill that we are working on does basically what you said you wanted to see happen in 2007. It is a mandatory cap. We are no longer allowed polluting industries to put pollution in unlimited amounts into the atmosphere, and we are going to require polluting industries to pay some amount for the right to put pollution into this atmosphere.

We will use a trading system to have the most efficient as the market will determine allocation of those scare resource. We will have investment in these technologies of the ones that you alluded to. We have incentives in this bill, tax and otherwise, just as you alluded to in 2007.

So I am trying to figure out why this massive change in your position, and I ask myself, well, is it because we found out that this program would be more expensive than we thought. Well, I know that is not the situation. I am holding a letter of April 14 from Dr. John Riley of MIT, who is the author of this report being quoted by Republicans trying to scare Americans thinking this is going to destroy the economy.

And what he said is, "Dear Representative Boehner, I write to correct an estimate I sent on April 13 to counter what we feel is a misrepresentation of our work by the National Republican Congressional Committee." Continuing, "A collect estimate of that cost as opposed to auction revenue for the average household just in 2015, is about $80 per family or $65 if more appropriately stated in present value terms discounted in an annual 4 percent rate."

That is 18 cents per day. The Republican party unfortunately is trying to tell people that the continued climate that we have here is too expensive at 18 cents a day. I don't believe that is too expensive. I also believe it could end up being cheaper, given the enormous technological creativity of our economy.

So I will just ask you this. Just a very, very simple question, Mr. Gingrich. Do you believe a dramatic reduction by use of a cap-and-trade system that would cost Americans 18 cents a day is too much to pay to save the planet?

Mr. GINGRICH. Well, as I said earlier in two plus two equals four and if you think that the $646 billion Obama tax increase in this budget can be translated into 18 cents a day, I think you probably think two plus two equals 700. The fact is the cap-and-trade system I supposed in 1970, affected 263 units and at its peak affected 2,000. Now, if you want to write a bill that covers the 2,000 most polluting places and say, fine, those 2,000 are part of cap-and-trade, I would be glad to look at it.

Mr. INSLEE. Could I ask you——

Mr. GINGRICH. If you want to include as I said in—if I might, if you include as I said in that quote very strong incentives, I would be glad to look at it. If you include prizes, I would be glad to look at it. If you would liberate the nuclear power industry from trial lawyers and regulatory controls, I would be glad to look at it. This bill does none of those things.

This bill actually has the Department of—the Secretary of Energy regulating Jacuzzis. Now, the idea that we are going to have a cap-and-trade system that regulates Jacuzzis strikes me as close to being nuts.

Mr. INSLEE. Could I just—I just really would like you—I would like to know what you think about this. By the way, the only Jacuzzis this will regulate will have to produce 2,500 megawatts of energy, oK, to be covered, so you don't have to worry about Jacuzzis.

But just let me ask you this question. In your opinion do you believe 18 cents a day for the American family is too much to save the planet? You can give us your thoughts about that. What do you think?

Mr. GINGRICH. I think if you could convince anybody that that is the real price, I——

Mr. INSLEE. Well——

Mr. GINGRICH [continuing]. As I said awhile ago, then explain the $646 billion that is in the Obama budget. I mean, if you and the President have an argument, you don't have an argument with me. I am citing the President. Let me just ask you——

Mr. INSLEE. I just think——

Mr. GINGRICH [continuing]. Let me ask, because maybe I misunderstood. So maybe you can help me, Congressman Inslee. On page 233, line five, portable electric spas. Now, I don't know what a portable electric spa is. I was told it was a Jacuzzi, but that is in this bill. Page 233. Now, that is why I said, when I got to that point, I quit reading the bill.

Mr. INSLEE. We will give you a hot spa that is energy efficient. I hope that doesn't offend you. My point is is that the economists who are testifying in this committee, including one called by the

Republicans yesterday, said there would be a minimal cost of this. One yesterday, Dr. Jay Apt, former U.S. astronaut, told us that it won't cost us any more than compliance with the Clean Air Act. He said that was well worth the cost.

Thank you very much.

Mr. MARKEY. The gentleman's time has expired.

The chair recognizes the gentleman from Michigan.

Mr. UPTON. Thank you, Mr. Chairman.

I just want to go back to John Dingell's statement earlier this morning when he said that cap-and-trade is a tax, and it is a real big one, and the EU screwed this thing up twice to put it in his words.

Mr. Speaker, it is good to have you back, and I am one that believes that we can, in fact, reduce emissions and deal with the issue in a major way, and you and I were both in the Congress with Mr. Barton, Mr. Markey, certainly Mr. Dingell when we took this issue up back in the '90s called the BTU tax. A lot of us labeled it the big time unemployment, and we knew at the time that the Senate was never going to take that bill up, but somehow we had a march in the House. The Republicans were in the minority, and that BTU tax did pass, 219 t 213, and the Senate to their word never took the bill up.

As we look at the landscape today with the Senate failing to take up the Warner, Lieberman bill last year, failing to get 60 votes, with another 12 that said that they would have voted against it had it made it to closure, when we look at the vote earlier this month in April where the Senate voted almost by a two-to-one margin, including my two senators, Evan Bayh, a number of others in the mid-west region, the rust belt, who, again, said it should not be part of reconciliation as part of the budget, thus requiring 60 votes instead of 50. They said no. And as we try to work together on a bill to me it is quite apparent that even if the House passes a cap-and-trade tax as Mr. Dingell called it, it is not going to fly in the Senate. So why don't we work together on a number of things that, in fact, can bring us together?

Things like a renewable portfolio standard to include non-carbon emissions as part of that. Thirty states have moved forward. Michigan among them. Texas among them. Presume Massachusetts among them. But as we look at the list of states with a high percentage of carbon-based fuels, we look at Massachusetts at 90, better than 90 percent, Michigan 86 percent, Texas at 95 percent, even Wyoming at 97 percent. I think it is clear that we can take a number of steps to focus on renewals, and we ought to make sure that waste to energy is part of that, we ought to make sure that wind and solar incentives are there. I am one that believes that nuclear, which, of course, has no greenhouse gases emissions, we ought to be looking at that as part of that portfolio, and I am convinced that we will have bipartisan majority on a number of those issues where we can, in fact, move that legislation ultimately getting to the President's desk.

You have made some good points about nuclear, and it is not part of this bill. I intend to work with Republicans and Democrats to add that title to the bill when we get to markup in the next week or two. I want to make sure that we don't have caps on emis-

sions before we have technology that can actually make sure that we get to those.

What is your sense in terms of the argument that I raised this morning about the WTO? Would that be a good idea to have an off ramp?

Mr. GINGRICH. Well, I think the people have to recognize the very grave danger that this bill is going to kill jobs in the United States and that the bill is not going to have any automatic affect on other countries except to export factories and export work. I do want to recognize that the distinguished Chairman and my very deal friend has come in, and it is a great honor to be with him, and we did many different things together over the years, most of them I have to say for the good I would like to think or for the country.

But I do think his testimony this morning or his comments this morning when he was talking with the vice president and with Senator Warner, this is a tax, and here is the core challenge that I find fascinating, and it is something which Mr. Butterfield I thought alluded to in his questions earlier and that Ms. Sutton alluded to. The argument is that we have to raise the cost in order to get people to transition out of fossil fuels because fossil fuels are inexpensive. OK. That is a legitimate argument, however, when you raise the cost, you are raising the cost, and then people say, but there is not really a higher cost when they raise the cost because somehow magically we are going to get to the promised land where there will be a lower cost after the higher cost.

But if you are a normal person in this economy, if you have looked at us lose millions of jobs, if you are worried about your marginal last dollar of your income, the fact that eventually someday we will reach Nirvana, may not comfort you while you go broke. And to think that the challenge for everybody who wants to punish us into change, understand, the people you are trying to punish are the American people. I am very much in favor as I think you are, Mr. Upton, to incentivize us into dramatic change. I think you could write a bill that will be truly bipartisan that would have a dramatic number of breakthroughs in getting to a cleaner environment and to less carbon in the atmosphere.

But it would do so in a positive way, and it would do so by incentivizing rather than punishing, and it would do so in a clean way that did not require a massive expansion of government bureaucracy.

Mr. UPTON. Thank you.

Mr. MARKEY. The gentleman's time has expired.

The chair recognizes the gentleman from Michigan, Chairman Emeritus of the committee.

Mr. DINGELL. Thank you. I would like to begin by welcoming my old friend, Mr. Gingrich, back. Glad to see you here, Newt.

I share your concern on the points that you have raised as you have gone over these matters. The question of competitiveness in this matter is a very important one. The question of how it is we are to address this business of global warming at the same time while we are dealing with the other questions of preserving competitiveness is a matter of great concern.

China and Indians you have indicated have indicated that they are going to be developing countries for always and that means we have some problems. There are others who are out from under the burdens of this under the Quioto Agreement and will have a potential for a large advantage over the United States. These things I find are very, very troublesome to me, and so the first question is how do we see to it that we don't be the only country in the world which carries this load? How do we, for example, address the questions of trade? How do we, for example, address the questions of dealing with the business of cap-and-trade so that it doesn't impose excessive burdens on our people while letting others get away? What do we do with regard to addressing these concerns within the framework of a global cap-and-trade package but also within the framework of things like GAT and the WTO?

Mr. GINGRICH. Well, let me say first of all, Mr. Chairman, you know full well in Michigan, in the area that you have represented to ably, what the pain has been of unemployment and of competition killing jobs. I worry a great deal the European experience was captured in one study in which a cement plant left Belgium under cap-and-trade and opened up in Morocco, actually emitting more carbon in Morocco than it was originally emitting in Belgium, taking the jobs away from Belgians and giving them to Moroccans. And I do worry that if we unilaterally adopt this that it would be a disaster. Now, those, Vice President Gore, for example, was very optimistic about the Chinese. You know, it might be useful to offer an amendment that said that the cap-and-trade section of this bill would only go into effect when it was certified that the Chinese had adopted a comparable program. I think that would be one way to guarantee that we, A, I think would probably never go into effect, but, B, that we wouldn't be kidding ourselves with what we are going to do to American jobs.

In this economy——

Mr. DINGELL. When I was at Quioto told me that they were only, that they were a developing country, they were not going to be covered by the agreement, and that they would never be covered by the agreement because they are always going to be a developing country.

Mr. BARTON. I am a witness to that. That really happened.

Mr. DINGELL. Yes. Now, the problem that is our concern here is we have to do something about the wasteful use of energy in this country, and I desperately want to support this bill, principally for that reason.

But the question is if—we have this nasty balancing. On the one hand we have got to deal with the question of how we make other countries comply and cooperate, how we at the same time achieve the efficiencies that we have got to do, how we force other countries to comply, and how we don't wind up with a huge mess and a loss of jobs on our own hands.

Mr. GINGRICH. I think you are putting your finger on the heart of the challenge of this bill. Let me just say I believe you could write a bill that liberated the nuclear power energy industry and allowed us to move towards dramatically more nuclear, which would take a great deal of carbon out of the atmosphere.

I believe you could write a bill which dramatically incentivized moving towards a green coal system of carbon sequestration and using the carbon then to have an AMSOIL recovery. I think you could write a bill which had very substantial increase in research and development for materials technology, for hydrogen, and for other breakthroughs. I think frankly you could move ethanol from 10 to 15 percent of all liquid fuels and you could move towards a much better use of natural gas, and the combined effect would both dramatically increase the American economy, reduce the amount of carbon loading in the atmosphere, create a lot of American jobs, and improve our national security.

None of the things I just mentioned requires a national federal bureaucracy to micromanage Jacuzzis and none of the things I just mentioned requires punishing anybody. And I think that has got to be part of the key. We have in a world market, when we unilaterally punish Americans, we cripple the American worker in competing with our foreign competitors.

Mr. DINGELL. All right. Now, I got one other question. You and I have been floundering around in this morass for a long time, and both of us have seen our concerns and interests and feelings change. In April of 2007, you had some comments on this, and in April of 2008, you had some other comments.

In 2007, you said my message is that evidence is sufficient that we should move towards the most effective possible steps to reduce the carbon loading of the atmosphere and do it urgently. In April of 2008, we—you said I want to be clear. I don't think that we have conclusive proof of global warming, and I don't think we have conclusive proof that humans are at the center of it.

How do we rhyme those two statements?

Mr. GINGRICH. Well, Mr. Chairman, first of all, I believe, and then I went on to say as a conservative I think conservation and caution are part of being a conservative. And I think that as a prudent person you can take steps to limit carbon loading of the atmosphere without having conclusively proved anything about that causality of whether carbon loading has an affect on the temperature of the earth, because I think frankly it is clear that as Mr. Barton earlier indicated that there has been an increase in carbon loading of the atmosphere, and there will probably be a continuing increase.

In the interim I also wrote a book called Contract with the Earth, and I believe that it—I think one of the reasons I volunteered to come here today is I believe if we can find and incentivize a positive way to more to a new generation of greener energy, and if we can find a way to do it that increases the competitiveness of the American economy, it is absolutely in our national security interests and our quality of life interest to do it.

And so I do think that there are practical steps we could take, and I would associate myself with Mr. Upton's description of the kind of bipartisan bill that I think could have very widespread support that would help Michigan create jobs, that wouldn't kill more jobs, and it would actually expand the choices of the American people. It wouldn't try to punish them into change.

Mr. DINGELL. Thank you. It is good to see you back.

Mr. GINGRICH. Good to see you, sir.

Mr. MARKEY. OK. The gentleman's time has expired.

The chair will recognize himself.

You asked, Mr. Speaker, what would the nuclear industry ask. Well, I can tell you that the asked his committee in 1992, to combine the construction and operating license. We did that. That was the 1992, Energy Act. In 2005, President Bush, the Republican House and Senate, they asked the nuclear industry what do you need. They said, well, we need to consolidate the licensing proceedings for modular nuclear reactors. That is exactly what was in the 2005, Energy Act.

But in addition to that we have authorized the Price Anderson Act for them for 25 years to protect them against insurance exposure because they are the only industry that cannot, in fact, get insurance from the private sector that we enacted a production tax credit for the nuclear industry. We enacted a tax credit that allows all nuclear power plant owners to deduct the cost of the money they put into their nuclear power plant decommissioning funds from their taxes. We authorized the DOE to assist companies in helping to get their power plant licensing requirements through the NRC. We authorized the wide-ranging DOE R&D Program and nuclear power plant technologies, and perhaps most importantly, and this is what they say is absolutely the bottom line need that they have, we authorized a $50 billion government-backed loan guarantees for the nuclear industry and other advanced technologies, which means that if the utility defaults, the American taxpayer is on the line for the money, which is the system in France and China. They are Socialist and Communist countries. We adopted that provision for them.

However, there is no question that even with all that said and done that if there is a cap-and-trade system put in place and a low carbon economy is created, that would be the best marketplace incentive for the utility industry to move back towards the nuclear industry. Because then a premium would be placed upon it.

So the marketplace is the best place for them, although they have been dependant upon government support for the last 50 years, and they have only intensified in that request over the last 3 or 4 years, which has been met by the Congress. So that is just the reality of the nuclear industry. It will do better in a cap-and-trade system.

Second, on your point about the 34 times that the Department of Energy missed their deadlines for appliance sufficiency, that is accurate. They did. I know that because I requested the GAO report on that issue. I know and have a concern about it because they missed the deadline required in my appliance sufficiency law.

Now, without question that led to an additional dozens of power plants that had to be built, fossil fuel plants, in order to generate the electricity for those appliances. However, the reality is in addition that when you were speaker, there was actually a writer that barred adoption of any new or revised appliance sufficiency standards, and a second writer actually barred any new standards for fluorescent light bulbs.

So to bring this up to the Jacuzzi amendment, the hot job amendment, that provision is inside of the appliance efficiency standards that we are going to require. Now, of all of the things

that we would want to have high energy efficiency, it would be I would think Jacuzzis. I mean, there is a discretionary purchase in the American economy, and all we are saying there is like light bulbs or refrigerators or stoves, that there should be high standards for energy efficiency in the manufacture of Jacuzzis and hot tubs. It is just part of what, it is part of what you were criticizing in the very beginning in terms of the Department of Energy, not meeting high energy efficiency standard. And by the way, the standard that we included is the industry consensus standard, and a standard they say they believe all industry participants can meet.

And I would just add this one other thing, which is that beginning in 1995, there was a rider attached to every transportation bill, which banned the Department of Transportation from improving the fuel economy standards of the vehicles which we drive. So in the same way that not having high standards for appliances, led to more fossil fuel, electrical generating plants had to be built, sending more CO_2 up into the atmosphere.

So, too, their delaying the improvement in the fuel economy standards lead to more imported oil, yes, but ultimately delayed the point in time in which the auto industry would have to meet the innovation tests that the rest of the world was applying to our auto industry.

So I just point all those things out just to let you know that in the confines of this bill the nuclear industry is a huge beneficiary. The appliance and other industries will be dealt with in a way that I think matches the kind of prize that they should be receiving for innovation, but it is just creating this "work smarter, not harder" economy that depends upon innovation rather than the importation or the burning of domestic fossil fuels unnecessarily, although where it is necessary, we obviously need it to continue.

So that is the only point I would make to you, Mr. Speaker. These are the things that I have been working on my entire career, and in a lot of ways this bill that we are now debating makes it possible for us to move to the innovation economy. It makes it possible for us to move forward to now deal with the reality that we only have 3 percent of the world's oil reserves while consuming 25 percent of it, which is an unsustainable long-term profile for our country.

Mr. GINGRICH. Just two quick comments. You have shown great fortitude today and great patience. Two comments. One, on the question of reserves, I would just cite back what I had said earlier when you realize the U.S. geological survey just increased the Bachen reserve by 2,500 percent to between 3 and 4 billion barrels from what would have been a very small reserve, and you realize that the Brazilians went and the last few years from 10 billion to 100 billion because they have barrels of reserve, because they actually permitted looking for oil. I think—and we literally have gotten 100 years supply of natural gas discovered in the last 3 years. I think that the reserve issue is not, is actually not valid but is a function of bad government policy, and I just would say I can't imagine a much better way to close the difference between being liberal and conservative in America than whether or not one could allow consumers to actually evaluate Jacuzzis or whether we needed a federal department of Jacuzzi regulation.

I think it is a perfect contrast in our two approaches, and I have great respect for you and what you are trying to do, but I do think it is a pretty dramatic difference in our view of how America should operate.

Mr. MARKEY. Well, I thank you, Mr. Speaker, but, again, I am only referring back to your own criticism of the Department of Energy, and by the way, that was the Bush Department of Energy that missed all 34 deadlines——

Mr. GINGRICH. Well, I would say that——

Mr. MARKEY [continuing]. For energy efficiency.

Mr. GINGRICH [continuing]. The mismanagement, for example, of nuclear waste, clean up processes has been an ongoing Department of Energy problem across several Administrations.

And I have limited faith in the ability of federal bureaucracies to operate with agility and alacrity.

Mr. MARKEY. And I appreciate that, Mr. Speaker, but the reality is is that the FutureGen product that you talked about and are critical of the Department of Energy decision to walk away from was a decision made by the Bush Department of Energy in 2000.

Mr. GINGRICH. I agree with you, and I am happy to be bipartisan in my criticism.

Mr. MARKEY. Just so you know we put $3 billion into the stimulus bill for climate change and sequestration. We have already $10 billion built into this bill for carbon capture and sequestration research, development, and demonstration projects. The fundamental flaw to be honest with you with the nuclear waste site, because I was here. I was actually chairman of this subcommittee back in that era, was that rather than listening to the National Academy of Sciences the—this Congress back then in that time decided that they would pick Yucca Mountain in Nevada, ignoring the National Academy of Sciences. So it was not a science-based decision. It was strictly political, and that is what we are now reaping the harvest of because whether you put something near a river, near an earthquake fall, you are going to wind up long-term with real problems if you are trying to isolate nuclear materials for 20 or 30,000 years.

So we are hoping that we can create a bridge here. We are hoping that we will be able to work together, Mr. Speaker, with Republicans on this issue to find a way that we can move forward, because in the long run we only have 3 percent of the world's global oil reserves. Even if it became 4 percent, we now consume 25 percent, and it is—in the long run incumbent upon us to find a technological solution to it, and the quicker that we get to it, the quicker that we put in place the incentives for market-based, science-based, breakthroughs. Then I think the sooner that we will be able to tell those countries around the world that we import 13 million barrels of oil from—on a daily basis that we don't need their oil anymore than we need their sand, but there is no way we are producing an extra 13 million barrels of oil a day. We only produce eight million barrels of oil a day today.

So we need a plan in place in order to be successful, and we want to really work on a bipartisan basis, which would be the Democrats and Republicans to accomplish that goal. It is an honor for us to have you with us today.

I would like to conclude by giving you an opportunity to give us your closing thoughts, your comments in terms of what you want us to remember as we go forward with the consideration of this legislation.

Mr. GINGRICH. Well, first of all, I am very honored that you let me come over and share these ideas with you, and I am very grateful for the patience and the length of time that you put in today.

I would say that there is a way to develop an incentivized and a positive approach that can accelerate dramatically our moving towards more effective energy systems. I think that to the degree we divert that into trying to build a national bureaucracy and trying to create a national managed system that it is likely to carry us down a road we don't do very well, and I agree with what Chairman Dingell said earlier this morning that watching the two efforts by the Europeans has not been very encouraging in terms of the likelihood of designing the system.

But I do appreciate the way you have approached it, and I hope that you and Mr. Upton are able to find some common ground on which to write a bipartisan bill.

Mr. MARKEY. Thank you, Mr. Speaker.

Mr. GINGRICH. Thank you.

Mr. MARKEY. And, again, it is our honor to have you here with us.

Mr. GINGRICH. Thank you.

Mr. MARKEY. We have 21 more witnesses to go today, and the chairman needs approximately a 3-minute break before we begin the next panel. So we will stand in recess for 3 or 4 minutes.

[Recess.]

Mr. MARKEY. Ladies and gentlemen, we apologize to you but we had historic guests visiting the committee today. We are moving at a rapid pace to try to construct our historic legislation that matches the quality of the witnesses which we have appearing before us. On this next panel, we have a group of nationally recognized experts in their subject area and we are going to begin with Ian Bowles. Mr. Bowles is the secretary of the Executive Office of Energy and Environmental Affairs for the Commonwealth of Massachusetts. He also served as associate director of the White House Council on Environmental Quality and senior director of the Global Environmental Affairs Directorate at the National Security Council. We welcome you, Mr. Bowles. By the way, I will introduce all of you so you won't have to reintroduce yourself, which might save you 15 or 20 seconds in your testimonies, so whenever you are ready, Mr. Bowles, please begin.

STATEMENTS OF IAN BOWLES, SECRETARY, EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS, COMMONWEALTH OF MASSACHUSETTS; DAVE McCURDY, PRESIDENT AND CEO, ALLIANCE FOR AUTOMOBILE MANUFACTURERS; ALAN REUTHER, LEGISLATIVE DIRECTOR, INTERNATIONAL UNION, UNITED AUTOMOBILE, AEROSPACE & AGRICULTURAL IMPLEMENT WORKERS OF AMERICA (UAW); DANIEL SPERLING, DIRECTOR, INSTITUTE OF TRANSPORTATION STUDIES, UNIVERSITY OF CALIFORNIA DAVIS; DAVID FRIEDMAN, RESEARCH DIRECTOR, CLEAN VEHICLES PROGRAM, UNION OF CONCERNED SCIENTISTS; DAVID GARDINER, PRESIDENT, DAVID GARDINER AND ASSOCIATES, LLC (ON BEHALF OF ENERGY FUTURE COALITION); JEFF GENZER, COUNSEL, NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS; CHARLES T. DREVNA, PRESIDENT, NATIONAL PETROCHEMICAL AND REFINERS ASSOCIATION; ANDREW DeLASKI, EXECUTIVE DIRECTOR, APPLIANCE STANDARDS AWARENESS PROJECT; AND CHARLES RICHARDSON, ON BEHALF OF THE NATIONAL ASSOCIATION OF HOMEBUILDERS

STATEMENT OF IAN BOWLES

Mr. BOWLES. Thank you, Mr. Chairman, for your terrific work on this legislation. I am sure as you stare at this panel, it feels like Heartbreak Hill in the Boston Marathon, so I commend you for your patience in these proceedings and thank you for having us here today.

Let me say at the outset, Mr. Chairman, that Governor Patrick and the work we have been doing on clean energy is very much aligned with the legislation that you and your team have produced and we appreciate the thoughtful approach to developing a federal-state partnership that advances the goals of clean energy and greenhouse gas reduction. I also want to note that many States have been leading in this area for recent years and we all welcome this important legislation.

In short, the legislation builds on, buttresses and accelerates but doesn't supplant proven State programs on energy efficiency and renewable energy. On energy efficiency, the bill creates a strong new set of federal standards but also recognizes that much of the retail work retrofitting will be done and implemented at State and local levels. On renewable energy, the legislation recognizes the regional diversity of clean power solutions and the fundamentally regional nature of electricity markets and the need to bolster, not eliminate, such markets. And on transmission, I think it carefully resists the call for some top-down central planning that would disrupt competitive energy markets such as we have in the Northeast and instead creates a market-based set of mandates that in our view is a superior way to accelerate renewable energy.

On regulation of greenhouse gases, the bill rightfully crafts unified, robust national program but it still leaves the States tools to innovate and continue to contribute to low-carbon solutions. As you consider the design of the cap-and-trade program, we in Massachusetts endorse 100 percent auction approach. No other system provides the clarity and simplicity to the private sector and it also allows the federal government acting on behalf of the public interest

to put the proceeds to work to mitigate economic and consumer impacts, accelerate renewable energy and energy efficiency and realign our public transportation infrastructure. Let me say in the case of our experiment with RGGI in the Northeast, our permit auctions have run smoothly and we are putting tens of millions of dollars to work creating jobs and reducing energy costs for our consumers. As you consider a transition to the federal program, we believe such programs are needed and should be funded, not just for the RGGI States but for all 50 States, and the federal recovery legislation begins that process with the State energy program funding. As you develop your priorities for spending auction proceeds, we really strongly encourage the committee to put a big push on energy efficiency and make it a large part of your investment.

The proposed Energy Efficiency Resource Standard also represents a complementary tool to accomplish this. In Massachusetts, we have restructured our electricity market so that efficiency now competes with power generation on price to meet the low demand. The EERS would create a similar mandate for other States.

For those who say the EERS may be too stringent, I would note that in Massachusetts we have met through measures over the last decade 8 percent of our load through energy efficiency investments. In rough terms, that would be equivalent to the 2017 mandate in your legislation. So I encourage the committee to retain, include robust measures on energy efficiency and I would encourage you also to add some more significant measures on monitoring and verification so that we can demonstrate to the public what these investments in energy efficiency are producing.

In building codes, I think the work based on the IECC and ASHRAE standards is terrific. We in Massachusetts are building our new code currently on the 2009, not 2006 code, and I would encourage the committee to look closely at the 2009 code potentially as the basis.

On transportation, the bill breaks new ground by incorporating greenhouse gas standards for vehicle emissions and transportation planning. I encourage the committee to go further even by tying federal highway funds to greenhouse gas reductions, consider incentives for vehicle mile traveled reductions and give the States some flexibility to set and enforce greenhouse gas targets.

On fuels, the proposal in the legislation is a transition to the renewable fuel standard, to transition that standard into a low-carbon fuel standard. We think that is the right policy. If anything, we would encourage you to move the timeline more quickly but also to recognize some of the regional opportunities and the special considerations such as we have in the Northeast where we don't want to have leakage out of transportation fuels into things like home heating oil.

In a related vein, we fully support the higher efficiency standards for appliances, especially the provision that allows States to set more-stringent standards where conditions warrant. As you may know, in the Commonwealth we have a State law that requires furnace efficiency standards for cold weather States. We think there are some important regional differences there.

In sum, I would say this is a terrific piece of legislation. We commend you and your staff for your hard work and I would be delighted to take the committee's questions. Thank you.

[The prepared statement of Mr. Bowles follows:]

THE AMERICAN CLIMATE AND ENERGY SECURITY ACT

Testimony of
Ian Bowles
Secretary, Executive Office of Energy and Environmental Affairs
Commonwealth of Massachusetts
before the
House Subcommittee on Energy and Environment, Committee on Energy and Commerce

Friday, April 24, 2009

I. Introduction

Thank you, Chairman Markey and members of the Committee, for the opportunity to testify on behalf of Governor Deval Patrick and the Commonwealth of Massachusetts. Governor Patrick, along with residents and businesses across the Commonwealth, very much appreciates your leadership in addressing both our energy challenges and global climate change. The Commonwealth and the nation are fortunate to be able to tap your experience and knowledge as we work together to craft an energy and climate policy for the 21st century.

We share your view that the time has come for bold action. We must commit ourselves to unleashing the full potential of our nation to solve our energy and climate challenges while growing a new clean energy economy. Your American Climate and Energy Security (ACES) Act makes this commitment. I am here to offer our support for your efforts, and to encourage Congress to move forward with the ACES legislation expeditiously.

I would also like to thank you for the thoughtful approach you have taken to developing a federal-state partnership to advance the goals of clean energy and greenhouse gas reduction. In general, ACES builds on, buttresses and accelerates – but does not supplant – proven state programs on energy efficiency and renewable energy. The ACES legislation also focuses on important new federal minimum standards for building codes and energy efficiency measures. In the case of transmission, ACES recognizes the fundamentally regional nature of electricity markets and provides support for bottom-up, market-based solutions to accelerate renewable energy – and resists calls for top-down, central planning that would replace functioning electricity markets with federal selection of transmission winners and losers regardless of price impacts. In the case of cap-and-trade, ACES establishes a new federal program, but also maintains important roles for states to continue to innovate and reduce greenhouse gas emissions through the many tools at their disposal. We see all of these as important and very positive themes in the ACES bill and look forward to continuing to work with the Committee on this important legislation.

While my staff and I would be happy to assist the Committee on any of the matters in the far-ranging ACES legislation, my testimony is focused primarily on the energy efficiency title.

II. Context in Massachusetts

A confluence of factors makes Massachusetts a natural incubator for the clean energy technology the United States as a whole needs for its future. A lack of indigenous fossil fuel resources and a location at the end of the delivery pipeline translate into high energy prices, which make alternatives to traditional energy sources more price competitive. These factors, combined with strong technology, entrepreneurial and venture capital sectors and a skilled workforce have given rise to university R&D and a growing cluster of firms focused on clean energy. Our energy productivity is one of the highest in the nation, with Massachusetts generating $200 of gross state product for every million BTU consumed, compared with $116 per million BTU consumed for the U.S. as a whole. Massachusetts shows that energy efficiency and economic growth can – and do – go hand-in-hand.

Since taking office in January 2007, Governor Patrick has made clean energy a central part of his economic, energy and environmental strategies. The Green Communities Act (GCA), signed by Gov. Patrick in July 2008, was the first major energy legislation in the state since electricity deregulation in 1997. The GCA refocuses our energy policy on energy efficiency, renewable energy and clean energy technology. The Regional Greenhouse Gas Initiative (RGGI) is the nation's first functioning carbon cap-and-trade system, and we are proud both of its results to date and the opportunity for its initial lessons to be shared with Congress as you consider a national cap-and-trade program. Massachusetts is also one of a handful of states that has already passed a carbon cap of its own – the Global Warming Solutions Act (GWSA), passed by the legislature and signed by Gov. Patrick last summer, which requires the Commonwealth to cut greenhouse gas (GHG) emissions 80% below 1990 levels by 2050. The GWSA also gives us authority to set, by the end of 2010, a 2020 cap at between 10% and 25% below 1990 levels following an administrative proceeding.

Massachusetts has invested in energy efficiency for over three decades and we have seen strong results. For instance, we collect and invest ¼ of a penny from every kWh distributed by our regulated utilities in energy efficiency programs. This totals about $125 million per year for our electric efficiency programs, or about $20 per capita. These programs result in saving energy for about 3.6 cents per kWh saved. As a result of our efficiency work over the last 13 years, these EE investments have resulted in an 8% reduction in our energy consumption.

We are currently in the process of increasing our investment in energy efficiency and transitioning to a market-based system that treats efficiency as an energy resource that competes against power generation on cost to meet load demand. Instead of investing a prescribed sum and getting all the efficiency we could for that amount of money, as we have done in the past, going forward we will be required to invest in all efficiency that is less expensive than supply sources. With efficiency costing 3.6 cents per kWh and supply costing 8 cents per kWh, we expect to see a doubling or tripling of our efficiency investments

over the next several years, if not more. This investment in energy efficiency is also being supported and accelerated by revenues from our participation in the Regional Greenhouse Gas Initiative and will be further advanced by federal economic recovery funding.

This reorientation of our energy markets – requiring our electric and gas utilities to treat energy efficiency as a resource that competes with supply from power plants and gas pipelines on the basis of price – has led our utilities to propose 30, 50, even 100 percent increases in their annual energy efficiency investment plans. This will mean more energy auditors working to identify energy saving opportunities in thousands of homes and businesses across the state; more contractors blowing insulation into our old housing stock; and more plumbers pulling boilers from the 1950s out of basements and installing super-efficient modern heating systems that will cut energy use by a third. In short, all this will mean vast savings for consumers and businesses from reduced energy use and putting people to work, at the same time that it reduces greenhouse gas emissions.

Let me give you some examples of what is happening in Massachusetts. A homeowner named Alex Cheimets is in the final stages of a major renovation. This started – as these things often do – with a small water leak, and ended with a significant retrofit project that is expected to reduce his energy use by half or more, through thorough air sealing of the building envelope and adding four to six inches of foam insulation to the walls and roof of his house, as well as installing an air-to-air heat exchanger and monitoring equipment. His is a typical Massachusetts home – an eighty-year-old two-family house which leaked badly – but will now be a model of what is possible in energy efficiency.

Another example includes near zero energy homes available on Coppersmith Way in Townsend, MA. They are being built by Transformations, Inc., a local builder that specializes in super energy-efficient home construction. During the last two years, Transformations has built seven new homes that use less than half the energy of conventional homes, and have solar panels that generate a significant portion of the electricity they do use. And this is only one example of a growing zero net energy building industry.

Companies as diverse as EBSCO Publishing in Ipswich and Boston Sand and Gravel, visible from the MBTA Orange Line and I-93 in Boston, have installed significant solar photovoltaic arrays to generate clean electricity on site, taking advantage of state and federal incentives.

All kinds of organizations are taking action to become energy leaders. As you well know, Mr. Chairman, Massachusetts is proud of its professional sports teams. In addition to winning six championships in the last seven years, our local sports franchises are dominating the playing field in clean energy as well. The Red Sox use solar thermal energy to heat the water used at Fenway Park. The New England Patriots power the lights at Gillette Stadium with renewable energy, and stadium managers, through paying close attention to site energy use, have cut electricity and natural gas use – and their carbon footprint – by 25% over the last four years. And the TD Banknorth Garden, home to the World Champion Boston Celtics and the Boston Bruins, is implementing a colored LED display strategy for exterior lighting, which will cut consumption about 60% compared with the previous equipment.

Under Governor Patrick's leadership, the Commonwealth has taken a number of other steps to boost energy efficiency:

- Governor Patrick created the first Cabinet-level agency in the country that combines all energy and environmental policy and regulation. Under the Executive Office of Energy and Environmental Affairs, the six environmental and energy regulatory agencies (including the public utility commission, fish & game, environmental protection, parks/land/conservation, agriculture, coastal zone management and energy resources) are able to coordinate their efforts to reduce energy costs and usage, curb greenhouse gas emissions, and tap the economic potential of the rapidly growing clean energy technology sector in Massachusetts.

- Our Department of Public Utilities last summer issued an order "decoupling" utility revenue from sales volume – a process designed to eliminate the economic incentive for utilities to maximize power consumption and equivocate about conservation. This reform will make the distribution utilities full partners in promoting energy efficiency for their customers, fulfilling the efficiency promise of the Green Communities Act.

- In March, Governor Patrick received recommendations from a seventy-plus member Zero Net Energy Building Task Force that convened at his request just over a year ago. Task Force recommendations will enable the state to begin construction of the first state-owned zero net energy building by 2010; point the way toward broad marketability of zero net energy residential and commercial buildings by 2020; and establish standards for statewide adoption of zero net energy buildings for new construction by 2030. I will submit a copy of the task force report for the record for the Committee.

- In 2007, Massachusetts became the first state in the nation to incorporate greenhouse gas emissions into the state environmental review process, a policy that is leading to greater private investment in green buildings. Through the environmental review process, major new real estate projects are now required to analyze alternatives to reduce greenhouse gas emissions and maximize energy savings through better design and construction.

- The new Massachusetts Clean Energy Center, established by the Green Jobs Act, also signed by Gov. Patrick last summer, is developing programs to promote green jobs for low income residents of Massachusetts and has also launched an energy efficiency skills initiative with $5 million to train Massachusetts workers to blow in insulation, install super-efficient equipment, and implement other measures that will enable us to hit our energy and climate goals.

- The Governor has also issued Executive Order 484, entitled "Leading by Example," which requires all state agencies to reduce energy use at state-owned buildings 20 percent by 2012 and 35 percent by 2020. The Executive Order also requires all new construction and major renovation projects to meet the Massachusetts LEED Plus standard, which is based on LEED but sets a higher bar for energy efficiency.

III. Specific Comments on ACES

a. Auction vs. Allocate

Based on our experience in the Regional Greenhouse Gas Initiative (RGGI) and the European experience to date, we believe that Congress should require the auction of all allowances, and designate substantial revenues under the federal program for investments in energy efficiency, clean energy, and transportation efficiency programs. A strong and clear market signal is essential to driving the private investment that will be needed to make the transition to a clean energy economy, and auctioning provides the purest market signal to emitters of greenhouse gases.

Our experience to date under RGGI has shown that the well monitored and free exchange between buyers and sellers of allowances has created a robust market and provided all participants with price clarity. As Congress considers how to apportion the proceeds, we recommend favorable consideration of expanding energy efficiency and other emissions-reduction programs. Energy efficiency has the dual benefit of locking in material saving for consumers and associated reductions in GHG emissions. In Massachusetts, we are investing a minimum of 80% of our RGGI auction proceeds in expanded energy efficiency programs. We have already derived more than $43 million in proceeds from the first three RGGI auctions. To date, we have allocated $22 million for utility-administered energy efficiency programs, $4 million for heating system replacement for low-income households, $10 million for the Green Communities program of funding and technical assistance to municipalities, $2.7 million for additional municipal energy efficiency retrofits and $5 million for energy efficiency training programs.

If the RGGI program is folded into a federal cap and trade program, we believe it is important that the new federal system provide financing for state energy efficiency programs that would otherwise lose funding under this transition. However, the larger point is that state energy efficiency programs are well established channels to deliver energy efficiency results through our regulated utilities. We believe that use of this delivery channel should be expanded significantly in all states regardless of the disposition of the RGGI program. We recommend that Congress make a significant and sustained investment in energy efficiency under ACES and allocate at least 25% of auction revenues to energy efficiency investments.

As you continue to develop the details of the permit auction mechanism under ACES, we also recommend consideration of a price floor as a complementary strategy to the various "safety valve" mechanisms that have been proposed to protect against price volatility. A price floor would maintain a consistent and reliable carbon price signal, assuring consumers and private investors that efforts to reduce emissions would be rewarded with significant avoided allowance costs. The RGGI auctions use a minimum "reserve price" to avoid collusion in the market, but the same mechanism could readily be adapted for the purpose of establishing a reliable price signal. To

maximize the emissions-reducing impact of a price floor, we also recommend that a science-based process be established to determine whether unsold allowances should be permanently retired.

b. Energy Efficiency Resource Standard

The proposed federal Energy Efficiency Resource Standard (EERS) represents an important tool to put energy efficiency resources into the core of energy markets and resource planning. In essence, it requires load serving entities to use energy efficiency investments to reduce total energy consumption – and holds them accountable for compliance with such reductions on an annual basis. Generally speaking, the EERS will do the most to help states that have yet to develop efficiency programs. If not designed carefully, however, it has the potential to slow down states that have already made significant progress on energy efficiency. We believe that ACES handles this set of issues well.

In Massachusetts, for example, we have currently achieved a cumulative 8% reduction in electricity use based on measures taken over the past 10 years. While the compliance periods and baselines would have to be adjusted to the ACES framework, this would be roughly equivalent to the 2017 compliance requirements. This suggests that the ACES requirements are realistic and achievable for all states – and the Committee may wish to provide additional incentives to states to exceed compliance requirements.

A federal EERS will also need robust requirements for measurement and verification of energy savings. Massachusetts has built robust measurement and verification (M&V) requirements into our programs. These are crucial for ensuring, and demonstrating to the public, that energy efficiency investments provide the energy savings that are promised. These also allow for adaptive learning and technology transfer as new technologies and applications are tested and adopted. We encourage consideration of a national efficiency M&V and reporting requirement.

We support the ACES provisions that allow for delegation of authority for administration to states as the primary regulator of electric and gas distribution utilities. In addition, the definition of cost effective measures found in Section 611 (b) 8, is sound, but could be made stronger if the cost measurement metrics were structured to include the value of avoided GHG emissions. Such a framework would assist federal and state regulators in developing a full treatment of the GHG benefits of energy efficiency measures as those measures are stacked up against power generation on a cost-benefit scale.

We also support provisions ensuring that energy savings will be delivered to all customers, regardless of geographic location, and treating energy efficiency and renewable energy separately. Energy efficiency opportunities are available in every state, service territory, home and business across the country, and we should be capturing all of them that are cost effective, for the good of consumers and the

environment. Each state's distinct characteristics – climate, economy, age of building stock, etc. – need to be considered in creating effective efficiency programs. In contrast, a national regime of tradable energy efficiency certificates would blur these differences and create a distorted market, with unintended consequences such as artificially high prices for energy efficiency measures where they should be cheap and undervaluing further measures in states where established energy efficiency programs have already made inroads.

c. Buildings

Buildings account for approximately 39% of total energy consumption in the United States, and more than half of all energy use in states such as my own. The ACES bill sets sensible and readily achievable targets for building code energy efficiency improvements that should contribute significantly toward the emissions reduction targets of the bill. Section 202 (P158) sets targets relative to IECC 2006 and ASHRAE 2004 codes for residential and commercial construction respectively. These building codes authorities are the right entities to reference, but the Committee may wish to use the most recent iterations of their codes as the point of departure. In Massachusetts and other states we are already using ASHRAE 2007 and are in the process of adopting IECC 2009. We would recommend these updated codes as the basis for new Federal efforts while maintaining the 30% and 50% improvement targets.

As the Committee considers additional incentives or inducements for states to move quickly to adopt advanced building codes, we believe the legislation could be strengthened with a better defined mix of funding, technical assistance, reporting and penalties for states as they move forward to adopt such codes.

We fully support the bill's requirements that states not only adopt building codes that meet the federal targets, but that they also achieve high levels of compliance with the targets, and provide training for building code inspectors in the energy code. However, the maximum level of federal funding provided to each state that can be used for training, $500,000, may be insufficient.

Massachusetts is also currently proposing a "stretch" energy code that goes beyond the base state code, and could be adopted at their option by cities and towns. We believe this stretch code provides a good potential model for even more advanced energy codes at the federal level. A nationwide team of code experts and consultants has assisted Massachusetts, and several other states, in their efforts to develop model 'stretch' codes.

Our proposed "stretch" energy code is 20% better than ASHRAE 90.1-2007 for commercial buildings and roughly 20-25% better than IECC 2009 (or 30-35% better than IECC 2006) for residential buildings. In addition to these percentage improvements we are making two equally important shifts to performance-based

codes – tied to real-world testing of building envelopes, and to a requirement for third party energy code certification, to ensure that standards are met in the field.

Beyond the stretch code that we expect to implement this year, our Zero Net Energy Building Task Force has recommended instituting more comprehensive performance-based building energy metrics, in the form of energy use per square foot per heating and cooling degree day, by building type. This builds on existing work by the Department of Energy, and we strongly encourage federal code development in the coming years to build on this performance-based approach.

Finally, in addition to taking the best of the IECC and ASHRAE codes into consideration, we recommend adopting elements of the National Buildings Institute 'Core Performance' prescriptive code for commercial buildings, as we have done in our stretch code development.

It is worth noting here that we all will have to continue to work toward a climate and energy policy that adequately accounts for the emissions from unregulated heating fuels like heating oil and propane. To complement the overhaul of electricity and natural gas in the draft bill, we support federal measures to provide incentives for renewable heating technologies such as clean burning biomass (condensing wood pellet and wood chip boilers), and state of the art solar thermal technology. Unfortunately, we currently import these technologies from Europe and would welcome federal initiatives to grow the market and industrial base for these emerging renewable heating technologies in both residential and commercial buildings. One option is to include renewable heating technologies in the Federal renewable portfolio standard on a kilowatt-hour-equivalent basis, an approach that has been successfully adopted by 10 US states to date.

d. Transportation and Clean Fuels

Greenhouse gas emissions from transportation represent at least 30% of the greenhouse gas emissions in many states, and this percentage is increasing every year. In order to meet a goal of 83% reduction in greenhouse emissions overall, ways to reduce emissions from the transportation sector will need to be found.

There are three principal strategies for reducing transportation related emissions: cleaner vehicles, cleaner fuels and reducing vehicle miles traveled. ACES addresses each of these strategies.

Cleaner Vehicles/Vehicle Standards

ACES breaks new ground by requiring USEPA to promulgate greenhouse gas standards for various classifications of mobile sources. We encourage clarification on the following items:

1. Section 221 specifying that its goal, and primary metric, is the limitation of greenhouse gas emissions;

2. States retaining their authority under Section 177 to adopt and enforce the California standards;
3. Specific language requiring that federal GHG standards be at least as stringent as the California standards; and
4. Including greenhouse gas standards for medium-duty vehicles.

Transportation Efficiency and Vehicle Miles Traveled (VMT)

Improving the efficiency of the transportation system and reducing vehicle miles traveled (VMT) are the most challenging parts of reducing transportation emissions. Success in this arena will involve the concerted effort of environmental, transportation and economic development agencies at the regional, state, and federal level. ACES leads toward this success by requiring that state transportation greenhouse gas goals be developed in concurrence with air quality and transportation agencies and in consultation with Metropolitan Planning Organizations (MPOs) and the public. We encourage additional provisions that would further increase the likelihood of reaching these goals by, for example, tying federal highway funds to GHG reductions, including a VMT reduction incentive and target in ACES, and allowing state flexibility in establishing enforceable GHG goals for transportation at the state level.

Fuel Standards

ACES also breaks new ground by containing a national low carbon fuel standard. Transitioning to a LCFS for the future by building on the current federal Renewable Fuel Standard makes sense. Given the work that California and the northeast states have done on developing a LCFS, we encourage an approach that seeks greater reductions from the fuel sector more quickly. We also encourage the development of a program that recognizes opportunities to promote regional lower carbon fuel choices. These choices include a methodology for considering regional electricity grid emissions and consideration of fuel choices such as home heating oil in the Northeast to prevent leakage of higher carbon fuels out of transportation and into home use.

e. Product Efficiency Standards

President Obama has noted that appliance and equipment standards can save significant amounts of energy and money for consumers, and under his direction the federal government is now poised to act quickly and aggressively to adopt product efficiency standards for all products currently in the queue and many others where energy savings are available. States should also have a clear path to adopting standards that are more stringent, where conditions warrant. In Massachusetts, our legislature has mandated the adoption of a furnace efficiency standard applicable to cold states, where differences in furnace efficiency really matter; we will need a waiver from the existing national-average efficiency standard to fulfill that mandate.

The current ACES draft is strong in this regard, thanks to language on the state waiver process at 213(g), which clarifies the process for states seeking waivers of

preemption; the multi-metric language at 213(a) that allows DOE to have more than one efficiency requirement for a given product (such as water and electric efficiency); and the adjustments for building energy codes at 213(j), which should make it easier for states to meet stretch code targets. Section 215, however, appears to limit the Energy Star program by requiring products to have payback periods of three to five years. We urge you to allow longer paybacks, in order to capture opportunities for long-term efficiency and cost-savings.

IV. Conclusion

Once again, I would also like to thank you for the leadership you are showing on the clean energy opportunity and the climate change challenge before us. In your ACES legislation, you have taken a thoughtful approach to developing a federal-state partnership that advances the goals of clean energy and greenhouse gas reduction. The Commonwealth will be submitting additional written testimony on transmission, the proposed renewable electricity standard and state roles in cap-and-trade. Thank you for the opportunity to comment on this important legislation.

Mr. MARKEY. Thank you, Mr. Secretary, very much.

Our next witness, Dave McCurdy, is a former extremely distinguished Member of the United States Congress, former chairman of the Intelligence Committee, and he is now using all of those political skills and intelligence as the president and CEO of the Alliance for Automobile Manufacturers and he was previously the president and CEO of the Electronic Industries Alliance. We welcome you back, Dave. Whenever you are ready, please begin.

STATEMENT OF DAVE McCURDY

Mr. MCCURDY. Thank you, Mr. Chairman, for the opportunity and Ranking Member Upton and Chairman Dingell. It is always a pleasure to be back. I will tell you, I have chaired a lot of hearings in my career as well but I am not sure any would match the marathon of the last 4 days, so I commend you for your interest and endurance, and I would respectfully suggest that if there is only one thing you recall from my testimony today, just remember this, that automakers are committed to reducing greenhouse gas emissions from the vehicles we sell and from our assembly plants, and today I am going to focus on how we can work together to accomplish that.

To begin with, the Alliance supports federal legislation for an economy-wide greenhouse gas emissions reduction program. We agree with the chairman, Administrator Jackson and others that a comprehensive legislative approach is superior to regulating greenhouse gas under the existing Clean Air Act. When we look ahead and envision what a low-carbon future for automobiles will look like, here is what we see. It is going to require substantial investment in advanced vehicle technologies. Secondly, our country needs complementary policies for fuels, and third, we need a single national program for improving fuel economy and reducing greenhouse gas emissions.

Let me start with investment in technologies. Providing clean energy necessary for continued economic growth and prosperity will require rapid development and commercial-scale deployment of advanced technology across many sectors including motor vehicles. We strongly urge the committee to use revenues generated from the proposed cap-and-trade system to help fund research, development and implementation of new technologies and upgrading and retooling of manufacturing facilities to provide the next generation of green vehicles. According to the endangerment finding released by EPA last week, light-duty vehicles, cars, trucks and SUVs that we drive, account for around 17 percent of manmade greenhouse gas emissions in the United States. In order to realize the significant reductions we know we will have to achieve in our sector, we need sizable, sustained investments to take advanced low-carbon vehicle technologies from our laboratories to our customers' garages. Frontloading investments in these technologies is particularly critical for automakers, given the long lead times to develop new technologies, the extended periods needed to ramp up production of new technologies and the long-lived nature of our products. Given the importance of this sector, we urge at least 5 percent of annual allowance value, either in the form of allowances or revenue, be dedicated specifically to development and deployment of

advanced technologies for light-duty vehicles. We are open to further discussions with the committee on how to allocate such resources among manufacturers, suppliers and consumers.

With regard to fuels, the draft bill's approach of capping emissions primarily upstream at the fuel source allows for the broadest possible coverage and also will result in price signals at the rate of about 8.5 cents, 8–1/2 cents per gallon of gasoline for every $10 ton of carbon. Clean vehicles need clean fuels so the Alliance supports a low-carbon fuel standard such as the one included in section 121 of the draft. Lowering the carbon content of the fuels we put into our fuel tanks will help lower greenhouse gas emissions from the fuel source to our tailpipes for years to come, and the benefits of cleaner fuels can be realized by all the 250 million autos on the road today.

Finally, a key concern for automakers is that we not be subject to duplicative and incompatible State and federal regulatory approaches either from mobile sources or stationary sources. It is well known that the Alliance strongly supports a single national program for motor vehicle greenhouse gas emissions and fuel economy to bridge State and federal programs. We support the authors' efforts to clarify the roles of existing regulatory framework and the States with regard to our manufacturing facilities. We will continue to work constructively with Congress, the Administration and all other stakeholders to ensure a national vehicle program administered by the federal government that not only enhances energy security and addresses climate change but also gives automakers a clear roadmap to compliance.

Before I close, I wanted to raise one other issue that is important to members of this committee. Last month President Obama pointed to a fleet modernization or so-called cash for clunkers programs that had been successful in Europe and announced he would work with Congress to fund the program from existing dollars in the Recovery Act. The Alliance welcomes presidential as well as Congressional support for fleet modernization program. We will continue working towards creating a program available to all manufacturers and consumers. A well-crafted fleet modernization program will deliver two important benefits. In the near term, it will stimulate auto sales during the current economic credit crisis and in the long term it will help replace older, less fuel-efficient vehicles with cleaner, safer, more fuel-efficient ones.

In closing, Mr. Chairman, the transition to a new way of using energy and new energy sources requires that we collaborate with government and other industries like never before. The next generation of vehicles will require a new generation of fuels and supporting infrastructure. You have our commitment to continue reinventing the automobile. We will continue to provide Americans with a wide range of vehicles that are highly fuel efficient and we will be at the leading edge of the world's low-carbon economy, an economy in which green auto jobs are a fundamental part of the engine driving our communities. Thank you.

[The prepared statement of Mr. McCurdy follows:]

STATEMENT

OF

THE ALLIANCE OF AUTOMOBILE MANUFACTURERS

BEFORE THE:

HOUSE COMMITTEE ON ENERGY AND COMMERCE

APRIL 24, 2009

PRESENTED BY:

The Honorable Dave McCurdy
President & CEO

Mr. Chairman, Ranking Member Upton, members of the Subcommittee, thank you for the opportunity to share the auto industry's views on the draft American Clean Energy and Security (ACES) Act of 2009.

The Alliance of Automobile Manufacturers (Alliance) is a trade association made up of eleven car and light truck manufacturers including BMW Group, Chrysler LLC, Ford Motor Company, General Motors, Jaguar/Land Rover, Mazda, Mercedes-Benz USA, Mitsubishi Motors, Porsche, Toyota, and Volkswagen. Together, Alliance members account for nearly 80 percent of annual motor vehicle sales in the U.S. The U.S. economy depends on a healthy auto industry, because autos represent the country's largest manufacturing base. Almost 4% of U.S. gross domestic product is auto-related. One out of every 10 U.S. jobs, or about 13 million, is auto-related, and auto workers receive $335 billion annually in compensation.

I am particularly pleased to appear before you at one of the most important transitional periods in the history of the auto industry. Automakers are committed to doing our part to reduce greenhouse gas emissions from the vehicles we sell and from our assembly plants. We understand that our economic viability continues to depend on innovation, and we plan to be ahead of the curve.

Alliance Climate Principles and the ACES Draft

The Alliance supports Federal legislation for an economy-wide greenhouse gas (GHG) emissions reduction program. Recognizing that addressing climate change will require actions across the economy, the Alliance supports a program that will require GHG emissions reductions from all sectors at the lowest cost with the least economic disruption. The long-term viability of any program will depend on a technologically and economically sustainable transition to cleaner sources of energy and utilize market-based measures to the greatest extent possible. Such a program should incentivize rapid development and deployment of advanced technologies while delineating appropriate roles for federal, state and local governments.

While we are still analyzing the draft ACES Act, we believe that it lays out a basic framework for addressing climate change that aligns with the Alliance's core climate principles. The draft encompasses a comprehensive approach to reduce economy-wide GHG emissions, including the broader transportation sector, utilities, energy providers, manufacturing and even consumers. Additionally, we agree with the Chairmen, Administrator Jackson and others that a comprehensive legislative approach is superior to piecemeal regulation under the existing Clean Air Act.

Importantly, the draft caps emissions upstream at the fuel source, which allows for the broadest possible coverage and also will result in clear price signals that encourage conservation and incentivize businesses and consumers alike to invest in clean energy technologies. Making carbon dioxide the common denominator for future competition between completely different fuel options and powertrain technologies stimulates innovation as it provides transparency to the customer, who in turn can choose the appropriate technology for his or her individual mobility needs.

The proposed transition from some free allowances to a full auction addresses the political issues associated with the transition to a capped world while putting us on a clear path to a system where incremental carbon costs are passed through. Transparency of these costs is particularly important in the transportation sector, where we expect energy providers to pass through the market price of carbon.

Although the scheduled reductions in the cap are very challenging in the early years, the draft's provision for offsets and a strategic allowance reserve provide a mechanism to contain costs. We do have concerns, however, over whether these mechanisms will be sufficient to ensure economic and political viability of the program over the long term. To use an analogy from our industry, you don't shift a car directly from drive into reverse to change direction. Rather, you slow down, stop, and then put the car in reverse. We would urge a similar approach to reversing GHG emissions.

It is also critical for the long-term viability of any GHG reduction program to avoid excessive energy price volatility. Rapid increases and decreases in energy prices make introducing new low carbon technologies and fuels exponentially more difficult and risky, particularly in our industry where long lead times are required. We would encourage Congress to ensure that a final bill include robust provisions to address price volatility, including self-implementing triggers to avoid inflation due to higher than expected energy prices.

Providing clean energy necessary for continued economic growth and prosperity will require rapid development and commercial scale deployment of advanced technology across many sectors, including motor vehicles. We strongly urge the Committee to use revenues generated from the proposed cap and trade system to help fund research, development and implementation of new technologies and upgrading/re-tooling of manufacturing facilities to provide the next generation of green vehicles.

Finally, a key concern for auto manufacturers is that we not be subject to contradictory or incompatible state and federal regulatory approaches, either for mobile sources or stationary sources. It is well known that the Alliance strongly supports a single, national program for motor vehicle greenhouse gas emissions and fuel economy to bridge state and federal programs. We support the authors' efforts to clarify the roles of the existing regulatory framework and the states with regard to our manufacturing facilities. We will continue to work constructively with Congress, the Administration, and all other stakeholders to ensure a national vehicle program administered by the Federal government that not only enhances energy security and addresses climate change, but also gives automakers a clear road map to compliance.

Reducing GHG Emissions from Vehicles

Reducing greenhouse gas emissions from motor vehicles requires a three-pronged approach: vehicle technologies, fuels and drivers.

According to the endangerment finding released by EPA last week, light duty vehicles – the cars, trucks and SUVs that we drive – account for around 17 percent of manmade GHG emissions in the US. The Energy Independence and Security Act requires auto makers to achieve at least a 30 percent reduction in GHG emissions from new vehicles by 2020, and we are committed to further sustained reductions.

In order to achieve the significant reductions we know we will have to achieve, it is imperative that revenues generated from a cap and trade program fund aggressive efforts to incentivize low carbon vehicle technologies. In the vehicle sector, this means sizable, sustained incentives to deploy advanced low carbon vehicle technologies. Front loading investments in these technologies is particularly critical for automakers given the long lead times to develop new technologies, the extended periods needed to ramp up production of new technologies, and the long-lived nature of the product. Given the importance of this sector, we urge at least 5% of annual allowance value (either in the form of allowances or revenue) be dedicated specifically to development and deployment of advanced technologies for light duty vehicles. We are open to further discussions with the Committee on how to allocate such resources among manufacturers, suppliers and purchasers of these advanced technology vehicles.

Clean vehicles need clean fuels, so the Alliance supports a low carbon fuel standard, such as the one in included in Section 121 of the draft. Lowering the carbon content of the fuels we put into our fuel tanks will help lower greenhouse gas emissions from the fuel source to our tailpipes for years to come. And the benefits of cleaner fuels can be realized by all of the 250 million autos on the road today.

The same systems principle applies to electric drive vehicles and our electric grid infrastructure. We can no longer think of transportation and electrical generation as distinct sectors of our economy. Measures included in the discussion draft to promote clean, renewable electricity generation will also lead to lower carbon emissions per mile as electric vehicles enter the fleet. The "Clean Energy" title includes a number of important measures that the Alliance supports to accelerate this transition, including financial assistance to electric vehicle

manufacturers, standards for integrating vehicles with a new Smart Grid, and programs to promote a vehicle charging infrastructure.

Finally and too often overlooked in the equation, there is the driver's role. The choices we all make – from what type of vehicle we buy to how we maintain our cars to the types of fuel we purchase and our daily driving habits – can have a significant impact on the planet. Predictable price signals that reflect the market price of carbon encourage conservation and incentivize businesses and consumers alike to invest in clean energy technologies.

As automakers, we know the importance of getting cleaner, more fuel-efficient technologies on the road quickly, but the most advanced technologies come at a cost. Customers are keenly aware of the importance of the environment, but they are also keenly aware of their personal finances. Last year, when gasoline was $4 a gallon, consumers lined up to purchase more fuel efficient vehicles, and we could barely keep hybrids on the lots. Today, with gas prices closer to $2 a gallon, the sales of fuel efficient vehicles have declined. The draft bill will create a price signal for carbon and includes a placeholder for "consumer assistance" in Section 431. Many Americans would like to buy one of the exciting clean technologies on sale now or coming soon. Technologies ranging from flex-fuel vehicles, hybrid and plug-in hybrid vehicles, clean diesel, hydrogen/hydrogen-internal combustion engines and fuel cell vehicles are available now or will be in the next couple of years. It's critical that the ACES Act includes assistance for consumers to help get more green vehicles on the road.

Last month, President Obama pointed to fleet modernization – or "cash for clunkers" – programs that have been successful in Europe, and he announced he would work with Congress to fund a program from existing dollars in the Recovery Act. The Alliance welcomes Presidential, as well as Congressional, support for a fleet modernization program. We will continue working towards creating a program available to all manufacturers and consumers. A well crafted fleet modernization program holds the promise of providing two beneficial effects: in the near term, helping to stimulate auto sales during the current economic/credit crisis and in the long term, helping to replace older, less fuel-efficient vehicles with cleaner, safer, more fuel-efficient ones.

Reducing GHG Emissions from Auto Manufacturing Plants

In addition to reducing vehicle emissions, automakers have been working to reduce GHG emissions at our manufacturing plants. Our members participate, both collectively and individually, in numerous voluntary greenhouse gas reporting and reduction initiatives and have been industry leaders in reducing their emissions footprint. Having taken this initiative we would support the broadest possible approach to early action credits for demonstrated reductions.

The goal of the legislation should be to focus on the most significant sources of greenhouse gases. Currently, the bill would make sources with 25,000 metric tons per year or more of CO2-equivalent emissions subject to the cap and trade program. This may be casting the net too wide, with little to show for a huge administrative burden. According to EPA, a threshold of 100,000 metric tons per year would bring in 6,598 sources, while a threshold of 25,000 metric tons per year would bring in 13,205 stationary sources. Yet the difference in the percent of national greenhouse emissions covered by these two thresholds would be only 3 percent. We suggest that Congress consider a 100,000 metric ton per year threshold, but establish a means for companies that are not automatically in the cap and trade regime to "opt in."

A National Approach to Reducing GHG Emissions is Critical

A key concern for auto manufacturers is that we not be subject to duplicative or incompatible state and federal regulatory schemes, either for mobile sources or stationary sources. For mobile sources, the Alliance strongly supports an Obama National Program for greenhouse gas emissions and fuel economy to bridge state and federal programs to address the environment and today's economic realities. To do otherwise adds unnecessary cost and is a waste of resources that could be better utilized for additional carbon reductions.

For stationary sources, one key principle is that a facility subject to a market-based, federal emission reduction program such as cap and trade should not also be subject to a separate regulatory standard for the same emissions. A second key principle is that a facility that complies with the federal requirement to hold allowances for its GHG emissions should not then be subject to various state or regional cap and trade programs. Such duplicative and overlapping requirements would place an undue burden on an extremely fragile sector of our economy.

Likewise, facilities that are not capped, but are significant enough sources to be subjected to a federal regulatory standard for GHG should not also have to meet additive state and local GHG emissions control standards, with all the complexities that such a result would entail for industry. In some respects, the draft bill attempts to address these issues; we look forward to working with Committee staff to suggest how such results can be assured in the legislation.

Conclusion

In summary, the transition to a new way of using energy and new energy sources requires that we collaborate with government and other industries like never before. The next generation of vehicles will require a new generation of fuels and supporting infrastructure.

As in any industry that's been around for more than a century, 100-plus years of decision making has meant that some worked out better than others. But we are a new industry in countless ways. Today's industry is transforming because we must. We're on the threshold of a new era. We have a new Administration... a new way of doing business... a new generation of customers keenly aware of the importance of our issues. This all presents a bigger opportunity for change than we've ever seen before.

You have our commitment to continue reinventing the automobile. We will continue to provide you with a wide range of vehicles that are highly fuel-efficient. We will be on the leading edge of the world's low-carbon economy; an economy in which "green" auto jobs are a fundamental part of the engine driving our communities.

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Mr. MARKEY. Thank you, Dave, very much.

Our next witness, Mr. Alan Reuther, is the legislative director for the International Union of the United Auto Workers. He is a member of one of the most aristocratic automobile families in the history of our country and we are honored to have you with us today, sir. Whenever you are ready, please begin.

STATEMENT OF ALAN REUTHER

Mr. REUTHER. Thank you, Mr. Chairman. I am pleased to be here on behalf of the UAW, which represents over 1 million active and retired members, many of whom work for or receive retirement benefits from the auto manufacturers and parts supplies. We appreciate the opportunity to testify before this subcommittee.

The UAW supports the provisions of Title II establishing an economy-wide cap-and-trade program to reduce greenhouse gas emissions. We welcome the inclusion of mechanisms to contain costs. However, we believe the provisions in Title IV that seek to preserve the competitiveness of domestic industries need to be strengthened in a number of ways. For example, these provisions should be expanded to include products such as auto parts that contain large amounts of energy-intensive materials. Most importantly, the UAW believes a substantial amount of the revenues from the auction of carbon allowances should be used to help auto manufacturers and parts companies with the major upfront costs associated with meeting tougher vehicle efficiency standards. This includes at least another $25 billion to fund the existing section 136, advanced technology vehicles manufacturing incentive program, as well as funds for the new program that may be established under section 124 of Title I.

In addition, revenues should be used to pay for other costs associated with meting tougher vehicle efficiency standards beyond those linked to advanced technology vehicles. Because of their current difficult financial situations, the Detroit-based automakers and many parts suppliers do not have the resources to make the necessary investments.

The UAW also supports the clean fuels and vehicles provisions in Title I of the discussion draft. The low carbon fuel standard can make a major contribution to reducing our Nation's consumption of oil and greenhouse gas emissions. The provision supporting large-scale demonstrations of electric vehicles can create demand for the production of these vehicles and the provisions in section 124 granting financial support to automakers to retool plants to build plug-in electric drive vehicles in this country can accelerate the introduction of these vehicles but also ensure that they will be produced in the United States by American workers.

The UAW applauds the transportation planning requirements in Title II which recognize that initiatives to reduce vehicle miles traveled must be an important part of any effort to reduce oil consumption and greenhouse gas emissions from the transportation sector. Although the light-duty vehicle efficiency provisions in Title II take the commendable step of calling for the harmonization of standards that may be set by NHTSA, EPA and the State of California, they do not purport to establish any minimum benchmark for such standards beyond 2015. Instead, they merely provide a

green light for subsequent regulatory action by the State of California. The UAW believes this approach has several deficiencies. It fails to provide any certainty that there will be guaranteed minimum improvements in vehicle efficiency over an extended period of time and it fails to provide automakers with certainty as to what will be required of them. In lieu of this approach, the UAW submits that it would be preferable to mandate minimum national harmonized vehicle efficiency standards that must be met by the automakers for specified dates extending through 2030. These could be set at specific MPG targets or as percentage improvements from a certain baseline. The UAW recognizes that this alternative approach would have to embody a negotiated agreement between NHTSA, EPA and the State of California as well as other stakeholders. This could reflect the desire of California for more-stringent reductions in vehicle emissions and oil consumption. However, we believe it also should reject some of the deficiencies in California law AB 1493 including the exemption of foreign automakers, the one-size-fits-all flat MPG approach and the lack of any anti-backsliding rule. Under the alternative approach that we are suggesting, the legislation could specify that it is not altering existing law regarding the authority of California and other States after the end date of any negotiated agreement on a harmonized national vehicle efficiency standard.

In conclusion, the UAW appreciates the opportunity to testify before this subcommittee. We look forward to working with you, Mr. Chairman, and the other members of the committee and the entire Congress to craft improved provisions relating to vehicle efficiency standards and providing the resources needed by automakers and parts supplies to meet new efficiency standards. Thank you.

[The prepared statement of Mr. Reuther follows:]

TESTIMONY OF

ALAN REUTHER
LEGISLATIVE DIRECTOR

INTERNATIONAL UNION, UNITED AUTOMOBILE AEROSPACE & AGRICULTURAL IMPLEMENT WORKERS OF AMERICA (UAW)

on the subject of

LEGISLATIVE HEARING REGARDING THE AMERICAN CLEAN ENERGY & SECURITY ACT

before the

SUBCOMMITTEE ON ENERGY & ENVIRONMENT

COMMITTEE ON ENERGY AND COMMERCE

UNITED STATES HOUSE OF REPRESENTATIVES

April 24, 2009

Introduction

Mr. Chairman, my name is Alan Reuther. I am the Legislative Director for the International Union, United Automobile, Aerospace & Agricultural Implement Workers of America (UAW). The UAW represents over one million active and retired workers, many of whom work or receive retirement benefits from auto manufacturers and parts companies. The UAW appreciates the opportunity to testify before this Subcommittee on the discussion draft that Chairmen Waxman and Markey have released entitled the "American Clean Energy & Security Act of 2009," as well as on various fleet modernization proposals.

In a March 27, 2009 letter to President Obama, Chairmen Waxman, Markey, Dingell and Boucher stated that our nation faces three imperatives that are closely related: (1) reducing our dependence on foreign oil which imperils our national security; (2) protecting the planet from climate change by reducing greenhouse gas emissions; and (3) stimulating our economy and creating jobs in order to lift our nation out of the current recession. This letter emphasized that prompt action on comprehensive energy and climate legislation will provide a pathway for meeting these three national imperatives.

The UAW wholeheartedly agrees with this assessment by the distinguished Chairmen. We are prepared to work with this Subcommittee and the entire Congress to achieve this objective.

The UAW believes the Waxman-Markey discussion draft contains many positive features that should form the basis for comprehensive energy and climate legislation. At the same time, in our judgment several areas require further elaboration and refinement. This testimony will first discuss Titles III and IV of the discussion draft, which would establish an economy-wide cap-and-trade program to reduce greenhouse gas emissions, along with various transition

programs. It will then discuss various provisions in Titles I and II relating to clean energy and energy efficiency. Finally, this testimony will comment on various vehicle fleet modernization proposals.

Titles III and IV - Global Warming and Transition Programs

The UAW strongly supports the provisions of Title III establishing an economy-wide cap-and-trade program to reduce greenhouse gas emissions that are causing global warming. We believe this is the best way to guarantee that necessary emissions reductions will occur, while allowing regulated entities to make these changes in the most economically efficient manner. From our perspective, this approach is vastly preferable to allowing EPA to attempt to regulate all greenhouse gas emissions through its existing authority under the Clean Air Act.

The UAW is also pleased that Title III would require all sectors of the economy to come to the table to reduce our nation's greenhouse gas emissions, including electricity sources, fuel producers and importers, mobile sources, and industrial stationary sources. We welcome the provisions that would regulate greenhouse gas emissions from the transportation sector on an "up-stream" basis, by regulating fuel producers and importers. In our judgment, this approach minimizes regulation, promotes economic efficiency, and ensures that all sectors participate in reducing greenhouse gas emissions.

The UAW welcomes the inclusion in Title III of mechanisms to contain costs and prevent price spikes that could have a negative impact on some sectors of the economy and on employment. This includes the provisions allowing international and domestic offsets, as well as the provisions allowing banking and borrowing of allowances and establishing a strategic reserve of allowances. However, we urge the Subcommittee to secure economic analyses of these provisions to determine whether, taken together, they would be effective in containing cost

increases. Additionally, the UAW believes that any legislation must include provisions to prevent manipulation and speculation in the market for emissions allowances.

The UAW applauds the inclusion in Title IV of provisions that seek to preserve the competitiveness of domestic industries, and to guard against unfair competition from countries that have not adopted comparable programs to reduce greenhouse gas emissions. We believe the rebate program established under Section 403 would be helpful in achieving this objective. However, we believe this rebate should be based on 100 percent of the greenhouse gas emissions per unit of output for all covered entities. We also believe it is important that this program be expanded to include products, such as auto parts, that contain large amounts of energy-intensive components or materials (e.g., steel). Otherwise, companies would be able to gain a substantial competitive advantage by producing auto parts or similar products in nations that do not have comparable cap-and-trade programs. This could trigger an even greater exodus of auto parts production and jobs to China, India and other developing nations.

The UAW also applauds the inclusion of the provisions in Sections 413-416 that would allow an international reserve allowance program to be established if negotiations do not result in other nations adopting comparable programs to combat climate change. In our judgment, however, these provisions must be strengthened to ensure that this "stick" will be effective in preventing the competitiveness of our businesses from being undermined by unfair foreign competition. In particular, these provisions should be modified to reduce the discretion of the executive branch in implementing the international reserve allowance program, as well as the time lag before the program must be established. Furthermore, as with the rebate program, the UAW believes the international reserve allowance program should be expanded to include auto parts and other products that contain large amounts of energy-intensive materials or components.

The UAW also supports the provisions in Section 422 of Title IV that would establish workforce training programs. This will help to provide American workers will the skills needed for clean energy jobs of the future. We also note that the discussion draft includes a placeholder in Section 424 for worker transition provisions. The UAW urges the Subcommittee to include robust transition provisions that will provide laid off workers with income support and health care coverage. We believe this assistance is needed to cushion the impact of the cap-and-trade program on particular industries and their workers, and to help laid off workers as they transition to new jobs.

In addition, the UAW strongly urges the Subcommittee to add provisions that will provide transition assistance to states and local communities. In particular, we believe a portion of the revenues from the auction of carbon allowances should be allocated to states whose economies rely heavily on manufacturing. This would help to ensure that the cap-and-trade program will not impose undue burdens on these states and communities. These provisions should allow states and communities to fashion initiatives that will create new jobs, as well as programs that will provide assistance to workers and retirees who have been negatively impacted by transitions in various industries.

Most importantly, the UAW believes that any cap-and-trade program should include provisions that will use a substantial amount of the revenues from the auction of carbon allowances to help auto manufacturers and parts companies with the major up-front costs associated with meeting existing fuel economy regulations and any tougher fuel economy/greenhouse gas emissions standards that may be imposed under Title II of the legislation. This would be fully consistent with the more general principle that a portion of the revenues raised from the auctioning of carbon allowances should be reinvested to spur research and development of advanced, low carbon technologies, and to promote the deployment of these technologies throughout our nation. In our judgment, this is

critically important for economic growth and to ensure that we will be creating the jobs of the future in this country.

Of particular importance, the UAW believes a portion of these revenues should be used to provide at least another $25 billion to fund the Advanced Technology Vehicles Manufacturing Incentive Program (ATVMIP) established under section 136 of the Energy Independence and Security Act of 2007 (EISA), as well as funds for the new program that may be established under Section 124 of Title I of the discussion draft to encourage the retooling of manufacturing facilities in this country to produce plug-in electric drive vehicles. Automakers and parts manufacturers already have submitted applications for grants that will use more than the original $25 billion that was appropriated for the Section 136 program. President Obama has called for providing another $25 billion in funding for this program. The UAW submits that guaranteed, full funding for the Section 136 program and any new Section 124 program will be critically important in accelerating the introduction of the full range of advanced vehicles (hybrids, plug-ins, and advanced diesels), and ensuring that these advanced vehicles and their key components will be made in this country, creating jobs for American workers and generating tax revenues for the federal and state governments.

In addition, the UAW believes revenues from the auction of carbon allowances should be used to pay for other costs associated with meeting tougher fuel economy/emissions standards, beyond those linked to advanced technology vehicles. To meet tougher fuel economy/emissions standards, the auto manufacturers and parts companies will have to develop and deploy a range of new fuel saving technologies, not simply those related to advanced technology vehicles. Because of their current precarious financial situation, the Detroit-based auto companies simply do not have the resources to make the up-front investments that will be required in all of these areas. And because of the over capacity and negative pricing environment in the auto industry, the automakers and parts suppliers do not have the ability to simply pass these costs on to

consumers. Thus, government assistance will be necessary to ensure that all of the auto manufacturers and parts companies can move forward with the full range of technological innovation and retooling that will be necessary to meet tougher fuel economy/emissions standards.

Titles I and II - Clean Energy and Energy Efficiency

The UAW applauds the provisions in Title I that are designed to promote clean energy sources. Specifically, we support the thrust of the renewable energy provisions requiring retail electricity suppliers to meet a percentage of their load with electricity generated from renewable sources. We also support the provisions promoting development of carbon capture and sequestration technologies and the provisions facilitating deployment of a smart electricity grid. In our view, these measures are critically important to realizing the full promise of vehicle electrification.

The UAW also strongly supports the clean fuels and vehicles provisions in Title I. We believe the low carbon fuels standard can make a major contribution to reducing our nation's consumption of oil and greenhouse gas emissions. However, the provisions allowing credits to be awarded to auto manufacturers and importers of electric vehicles should be modified to ensure that these credits are channeled into the existing Section 136 Advanced Technology Vehicles Manufacturing Incentive Program. This will ensure that these credits are used to support advanced auto production and jobs in the United States, instead of subsidizing auto industries in other countries.

The UAW applauds the provisions supporting large-scale demonstrations of electric vehicles. This can provide an important boost to the deployment of these vehicles and help to create demand for the production of these vehicles by auto manufacturers. Most importantly, the UAW strongly supports the thrust of the provisions in Section 124 granting financial support to automakers to retool

plants to build plug-in electric drive vehicles in this country. This can help to ensure that these vehicles will be produced in the United States and will create jobs for American workers. However, the UAW is concerned that these Section 124 provisions overlap with, but may not be as effective as the existing Section 136 Advanced Technology Vehicles Manufacturing Incentive Program. For example, the Section 136 ATVMIP includes auto suppliers who retool facilities in this country to produce key components for plug-in vehicles (such as the battery packs). The UAW looks forward to working with the Subcommittee to reconcile the provisions of the proposed Section 124 program and the existing Section 136 program in the most effective manner.

The UAW applauds the energy efficiency provisions in Title II relating to buildings, lighting and appliances, utilities and industrial plants. These programs can make a major contribution to reducing greenhouse gas emissions.

The UAW also commends the discussion draft for including the transportation planning requirements in Title II. This section recognizes that initiatives to reduce vehicle miles traveled must be an important component of any effort to reduce oil consumption and greenhouse gas emissions from the transportation sector. These are difficult measures that will require decades of sustained investment. But this is essential to prevent the growth in vehicle miles traveled from negating the benefits from vehicle efficiency improvements.

Title II also calls for tougher efficiency standards for light duty vehicles. Although considerable progress was already made in this area in the Energy Independence and Security Act of 2007, the UAW recognizes that further progress can and should be made. In particular, to enhance our nation's energy security by reducing consumption of foreign oil, the UAW believes that any economy-wide cap-and-trade program should be complemented by tougher vehicle efficiency standards.

However, the UAW is concerned by several aspects of the light duty vehicle efficiency provisions in Title II. Although these provisions take the commendable step of calling for the harmonization of standards that may be set by NHTSA, EPA and the State of California, they do not purport to establish any minimum benchmark for such standards beyond 2015. Beyond that date, the provisions merely provide a green light for subsequent regulatory action by the State of California.

The UAW believes this approach has several glaring deficiencies:

- It fails to provide any certainty that there will be guaranteed minimum reductions in oil consumption and greenhouse gas emissions over an extended period of time;

- It fails to provide automakers with certainty as to what will be required of them over an extended period of time, thereby making it more difficult for the companies to make necessary decisions on technologies and investments.

In lieu of this approach, the UAW submits that it would be preferable to substitute provisions that mandate minimum vehicle efficiency targets that must be met by the automakers for specified dates extending through 2030. These could be set as specific mpg targets, or as percentage improvements from a certain baseline. If these targets were combined with the existing requirement that vehicle efficiency standards must be set at the "maximum feasible" level, this would ensure that our nation receives the benefits of the minimum guaranteed reductions in oil consumption and greenhouse gas emissions, while still allowing for even greater reductions should NHTSA and EPA determine that this is feasible. At the same time, this approach would provide a greater degree of certainty to automakers, thereby making it easier for them to make key decisions on technologies and investments. Like the provisions in the discussion draft, this

approach could be based on the existing statutory authority of NHTSA and EPA, with the two agencies being directed to harmonize their regulations.

For this alternative approach to be feasible, the UAW recognizes that it would have to embody a negotiated agreement between NHTSA, EPA and the State of California, as well as other stakeholders. This agreement would have to reflect the desire of California and other states for more stringent reductions in vehicle emissions and oil consumption. At the same time, the UAW strongly believes it should reject some of the deficiencies in California law AB 1493 such as:

- the exemption of many foreign automakers whose vehicles make up about 15 percent of sales nationwide;

- the one-size fits all flat mpg approach (instead of the reformed, attribute based standards that all stakeholders supported in the Energy Independence and Security Act of 2007); and

- the lack of any anti-backsliding rule (such as the provision in EISA which protects domestic small car production and also guarantees that auto manufacturers must continue to make improvements in the fuel economy of their domestic car fleets).

The UAW believes legislation could specify that it is not altering existing law regarding the authority of California and other states post 2030 – i.e., after the end date of whatever tougher national standards are negotiated between the State of California and EPA/NHTSA and other stakeholders.

Finally, Title II of the discussion draft grants authority for EPA to establish efficiency standards for heavy duty vehicles, marine vessels, and aircraft. It also contains a provision giving the Administrator authority to issue regulations allowing trading and banking of credits between these sectors and the light duty

vehicle sector. Although the UAW believes this could provide helpful flexibility to companies in all of these sectors, we believe this section should specify that this credit trading and banking cannot be used to satisfy the anti-backsliding rule that EISA established for the domestic passenger car fleet. EISA already specifies that the credit trading and transferring allowed under that law cannot be used to satisfy the anti-backsliding rule for the domestic passenger car fleet. Extending this same principle to any new credit trading and banking provisions for these other sectors would help to ensure that the fuel economy and domestic production/jobs benefits of the anti-backsliding rule are not subverted.

Fleet Modernization Proposals

The UAW supports the concept of a fleet modernization (cash-for-clunkers) program, which would provide incentives for consumers to scrap older, less fuel efficient vehicles and purchase new, more fuel efficient vehicles. Most importantly, this type of program could provide an immediate boost to new vehicle sales, thereby helping to counteract the negative impacts of the current financial and economic crises which have driven auto sales to their lowest level in over 25 years. This would help struggling auto manufacturers, as well as their workers and retirees. At the same time, a fleet modernization program could help to reduce oil consumption and greenhouse gas emissions by replacing older, less efficient vehicles with new, more fuel efficient vehicles. This will provide significant benefits to consumers and the general public, both in terms of energy security and climate change.

In structuring any fleet modernization program, the UAW believes this Subcommittee and Congress should adopt several important principles.

- Any program should support auto production and jobs in the United States. From our perspective, it makes no sense to use taxpayers' money to subsidize overseas auto production.

- Any program should ensure that all of the major automakers can participate in an equitable manner. The program should not disproportionately benefit a single company.

- To maximize the stimulus effect for the auto industry, any program should provide incentives for the purchase of the widest possible segment of new vehicles.

- To maximize energy security/climate change benefits, any program should cover the purchase of any new vehicle that is at least a certain mpg more fuel efficient than the old vehicle being scrapped, rather than being limited to narrow categories of vehicles. This reflects the mathematic truth that the **greatest** fuel savings/reductions in greenhouse gases will be produced by consumers trading in older, very inefficient pickups, SUVs, and minivans and replacing these vehicles with newer, more efficient models of these vehicles.

- Any program should be simple, so it is understandable by consumers and easy to implement for vehicle dealers.

The UAW believes the legislation introduced by Representatives Sutton and Candice Miller (H.R. 1550) best meets the principles set forth above. In contrast, we strongly oppose the legislation introduced by Representatives Inslee and Israel (H.R. 520) because it is structured in a manner that heavily favors vehicles built overseas by foreign automakers. Furthermore, the very narrow focus of this legislation severely undermines its stimulus and energy/environmental benefits.

The UAW hopes that an acceptable compromise can be worked out among all stakeholders so that Congress may move forward quickly with a balanced fleet modernization proposal. We believe that a number of positive proposals have

recently been advanced that may facilitate the achievement of this objective. This includes proposals that would:

- set a cap on the amount of money available to each manufacturer for a fleet modernization program, based on their market share;

- provide a base incentive for the purchase of all new vehicles that are more fuel efficient than the vehicle being scraped, while also providing additional incentives for the purchase of new vehicles that exceed some fuel economy benchmarks; and

- provide additional incentives for the purchase of vehicles assembled in the United States.

In our judgment, a program combining these elements could satisfy the principles set forth above. It could provide a major stimulus to the auto industry, while at the same time providing substantial energy and environmental benefits.

Conclusion

In conclusion, the UAW appreciates the opportunity to testify before this Subcommittee on the discussion draft that Chairmen Waxman and Markey have released entitled the "American Clean Energy and Security Act of 2009," as well as on the subject of fleet modernization proposals. We believe the Waxman-Markey draft legislation represents a thoughtful and balanced approach for enhancing our nation's energy security, combating global warming, and promoting economic growth. We applaud Chairmen Waxman and Markey for the many positive provisions that would establish an economy-wide cap-and-trade program and provide transition measures, as well as the provisions dealing with clean energy and energy efficiency. We believe this legislation could be improved by including provisions that would use a portion of the revenues from

the auction of carbon allowances to assist the auto industry in meeting tougher fuel economy/greenhouse gas emissions standards. We also believe the light duty vehicle efficiency standard could be improved by providing greater certainty over a longer period of time on the fuel savings/emissions reductions that must be achieved and on the technological and financial challenges that the auto industry will be required to meet. We look forward to working with the Subcommittee and the entire Congress to craft provisions in these areas, and to facilitate prompt enactment of this critically important legislation. Thank you.

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Mr. MARKEY. Thank you, Mr. Reuther, very much.

Our next witness is Dr. Dan Sperling. Dr. Sperling is the founding director of the Institute of Transportation Studies at the University of California Davis. He was appointed to the automotive engineering seat on the California Air Resources Board by Governor Schwarzenegger and served as co-director of the California Low Carbon Fuel Standards Study. We welcome you, Dr. Sperling.

STATEMENT OF DANIEL SPERLING

Mr. SPERLING. Thank you. It is a pleasure to be here, and it is a special pleasure because I bring important news on the low-carbon fuel standard from California. Last night the California Air Resources Board made history. We voted to adopt a low-carbon fuel standard. It will take effect in January 2011. It requires a 10 percent reduction in greenhouse gas emissions per unit of energy for gasoline and diesel fuel by 2020, and I note that 11 other States have signed MOUs to also adopt the low-carbon fuel standard and that the European Union is also moving toward adopting policies that closely resemble a low-carbon fuel standard.

So I would like to point out that there are a number of reasons why the United States should follow California's lead and adopt a low-carbon fuel standard. One, it applies to all potential transportation fuels, unlike the current renewable fuel standard that Congress passed in 2007, which only applies to biofuels. Another feature is the emissions are measured on a lifecycle basis, and this is the scientifically correct way to regulate greenhouse gases to include all the emissions in the energy chain from the oil well, the coal mine or the cornfield all the way to the vehicle. Neither cap and trade nor the renewable fuel standards program are based on lifecycle measurements. Another key feature is it uses a performance standard, not volumetric mandates, as is the case with the renewable fuel standard and thus it allows industry and it allows customers to pick the winners. The winners are not picked and the losers are not picked by government in this case. It harnesses market forces to stimulate innovation. The low-carbon fuel standard allows the energy providers to buy and sell credits among each other, creating a market for these low-carbon fuel standard credits and reducing the overall cost of developing low-carbon fuels. And so what it is doing is, it is creating a durable, permanent framework for orchestrating the transition to low-carbon alternative fuels.

The history of alternative fuels is one of ad hoc short-lived policy actions. We have seen policymakers and the media jump from one solution to another, from syn fuels to methanol to battery electrics to hydrogen to corn ethanol and now the fuel du jour, the technology du jour is plug-in hybrids. We need a more permanent policy framework that sends consistent signals to industry and consumers and that doesn't pick winners. And very importantly, it also achieves both energy security and climate goals, and I would note that producers of oil sands complain that they will be put out of business with a low-carbon fuel standard, and this is just not true. The low-carbon fuel standard does not preclude any fuel. Rather, it provides an incentive to produce fuels more efficiently and with less carbon, and indeed, senior oil executives have indicated to me that with sufficient incentive they could make gasoline from oil

sands with less greenhouse gas emissions than gasoline from conventional oil. And lastly, a low-carbon fuel standard reduces oil price volatility and it caps petroleum price increases.

So the proposed national LCFS is modeled on the California low-carbon fuel standard but it has two differences. First is that the proposed national standard in this bill does not include biofuels until 2023. It assumes that the renewable fuel standard enacted in the EISA of 2007 will handle the biofuels until then. The result is that until 2023 the national low-carbon fuel standard only targets petroleum and non-biofuel options, mostly electricity, natural gas and hydrogen. Failure to integrate the renewable fuel standard into the low-carbon fuel standard until 2023 is problematic. Keeping the biofuels separate from other alternative fuels reduces the flexibility of the market to respond to the targets and it also reduces incentives to produce the very lowest carbon fuels. So unlike the renewable fuel standard, the low-carbon fuel standard provides incentives for continuous improvements.

The other difference, the second important difference between the two is that the national standard has more modest targets. The California low-carbon fuel standard has a target of 10 percent reduction in greenhouse gases per unit of energy by 2020 with further reductions to follow. The national one sets a target of zero percent improvement until 2022 and then in 2023 when the RFS and the biofuels are folded in, it jumps to 5 percent but it is still considerably less, and then it goes to 10 percent in 2030. I would argue for higher targets.

OK, so the recommendations, just very quickly, the RFS should be integrated into the national LCFS as soon as possible. Targets should be more aggressive and the federal program should not preempt the State programs but the priority is, adopt this low-carbon fuel standard. It is a good idea, even in a limited fashion. Thank you.

[The prepared statement of Mr. Sperling follows:]

ITS UCDAVIS
INSTITUTE OF TRANSPORTATION STUDIES

Testimony of Daniel Sperling
Professor and Director
Institute of Transportation Studies
University of California, Davis

Before the
Subcommittee on Energy and Environment, House Committee on Energy and Commerce
Hearing on "The American Clean Energy and Security Act of 2009"
Panel on "Energy Efficiency, Transportation, Buildings, Appliances, and Utilities"

April 25, 2009

Low Carbon Fuel Standards

Chairman Markey and distinguished members of the committee, thank you for inviting me to testify before you today. My name is Dan Sperling. I am professor of engineering and environmental science and policy and Director of the Institute of Transportation Studies at the University of California, Davis. I also serve on the California Air Resources Board, which I was appointed to by Governor Arnold Schwarzenegger in February 2007.

I have spent most of my professional life studying alternative transportation fuels. I have authored or edited 11 books and over 200 technical papers, most of them on transportation energy (see http://www.its.ucdavis.edu/people/faculty/sperling). My most recent book is *Two Billion Cars* (Oxford University Press, 2009), co-authored with Deborah Gordon. I was founding chair of the Alternative Fuels Committee of the Transportation Research Board of the National Academies, have served on 11 National Academies committees in recent years, have testified numerous times to U.S. House and Senate committees on transport energy issues, was lead author of the transportation chapter for the Intergovernmental Panel on Climate Change (IPCC), and currently chair the Davos World Economic Forum committee on transportation.

Perhaps most relevant to this testimony, two years ago Governor Schwarzenegger asked the late Professor Alex Farrell of UC Berkeley and me to develop the initial design of a low carbon fuel standard (LCFS). We headed a team of 20 professors and graduate students from UC Berkeley and UC Davis that spent six intensive months meeting with oil companies, electricity companies, environmental groups, biofuel producers, and various experts on WTO rules, environmental impacts, fuel costs, and lifecycle analysis. I accepted Governor Schwarzenegger's request to develop the initial design of an LCFS because I believed at the time that the LCFS promised to be the most important alternative fuel policy ever adopted. I believe it now more than ever.

This week, the California Air Resources Board is voting to adopt the Low Carbon Fuel Standard, largely the way we proposed it two years ago. It requires a 10% reduction in greenhouse gas emissions per unit of energy (gCO_2-eq/MJ) for gasoline and diesel fuel. Eleven other states have signed MOUs to also adopt the LCFS, and the European Union is moving toward adoption of policies that closely resemble a low carbon fuel standard.

Key features of a low carbon fuel standard (LCFS)

- **All transportation fuel alternatives included.** It is best to create a policy that gives producers maximum flexibility to select from a suite of low carbon alternatives. California was obligated to target only gasoline and diesel fuel, because it has limited jurisdiction over national (and international) modes of travel. The US government can regulate national activities, and has the standing to work with other governments to regulate international air and maritime activities.
- **Emissions measured on a lifecycle basis.** The scientifically correct way is to include all emissions from the source to the end use. If one does not follow this method, regulations and policy become arbitrary, redundant, and/or defective. The science of lifecycle analysis is well established and the data are, for the most part, well understood. Improvements will be needed, especially regarding land use effects of fuels. Much research is now underway to create a stronger scientific foundation. The challenge is to put in place a regulatory process that handles scientific uncertainty in a responsible fashion and updates the land use impacts as the science improves. California is doing just that.
- **Market forces are harnessed to stimulate innovation.** Almost all vehicles operate on gasoline and diesel and almost all transport energy is made from oil. Considerable investment and innovation is needed to create commercial alternatives. The LCFS allows energy providers to buy and sell credits amongst each other, creating a market for LCFS credits and reducing the overall cost of developing low carbon fuels. The LCFS will encourage oil companies to become energy companies. The ultimate goal is to use creative capitalism to break our dependence on the dirty fuels of the past in order to accelerate the transition to a low-carbon future. An important complementary policy, to facilitate technological progress, is enhanced federal investment in R&D—particularly at colleges and universities—to find new cost-effective, low-carbon energy alternatives.
- **Creates durable framework** for orchestrating the near and long term transition to low-carbon alternative fuels. The history of alternative fuels is one of *ad hoc* and short-lived policy actions. A *fuel du jour* phenomenon has been created with the media and policymakers jumping from one solution to another, from synfuels in the 1970s, to methanol in the '80s, battery electric vehicles in the '90s, hydrogen in the early years of this decade, corn ethanol a few years ago, and now plug-in hybrids. We need a more permanent policy framework that sends consistent signals to industry and consumers.
- **Government does not pick winners (or losers).** It is not mandating any particular fuel. It is deferring to industry and consumers to determine the best way to meet oil and GHG reduction targets. Because all fuel and vehicle options are included, the most cost-effective solutions are chosen. The mechanism that makes this policy work is the use of performance standards based on lifecycle measurements. Politics does not intervene. The market determines the best way of meeting the targets.
- **Achieves both energy security and climate goals.** Producers of oil sands complain that they will be put out of business. This is not true. The LCFS does not preclude any fuel. Rather it provides an incentive for producers of high carbon fuels to produce the fuel more efficiently and with less carbon. Thus oil sands producers are already learning to improve their efficiencies, to use less fossil energy as process energy, and to explore ways to sequester carbon emissions. Gasoline could be made from oil sands with as much as 10% less GHG emissions than gasoline made from conventional oil. Importantly, most of the truly low carbon fuels will be home grown—cellulosic biofuel made from waste or on marginal lands, and electricity and hydrogen made in the U.S.
- **Reduces oil price volatility and caps petroleum price increases.** The LCFS, combined with tightening fuel economy (and GHG) standards for vehicles, will be highly effective at reducing demand for oil.

Proposed National LCFS

The proposed national LCFS is modeled on the California LCFS, with the same general attractions—but with two important differences.

First, it does not include biofuels until 2023. It assumes the Renewable Fuel Standard (RFS) enacted in the EISA of 2007 will handle biofuels until then. The result is that the national LCFS only targets petroleum and non-biofuel options (mostly electricity, natural gas, and hydrogen). Failure to integrate the RFS into the LCFS until 2023 is problematic. Keeping biofuels separate from other alternative transportation fuels reduces the flexibility of the market to respond to the LCFS targets. More importantly, the RFS fails to incentivize the production of very low-carbon fuels. That is because the RFS allows some fuels to be only 20% better than gasoline, others 50% better, and some 60% better. There is no incentive to produce very low-carbon fuels, such as fuels made from crop residues, forestry thinnings, and urban waste—that emit over 80% fewer emissions. And yet, the very low carbon biofuels are exactly the ones desired as the mainstay of a large future biofuels industry. The LCFS is superior. It does not create artificial categories, and thus provides incentives for continuous improvement.

A second major difference is lower targets. The California LCFS sets a target of 10% reduction in greenhouse gases (per unit of energy) by 2020, with further reductions to follow. The national LCFS sets a target of 0% by 2022, anticipating that increasing use of oil sands and very heavy oil will be offset by increasing use of electricity, natural gas and hydrogen. The target increases to 5% in 2023, when biofuels shift over from the RFS program, and then 10% in 2030. The national standards could be a bit higher, but are probably sufficient to incentivize new investments and new behaviors by energy companies.

Recommendations

1) The Renewable Fuel Standard should be integrated into the national LCFS as soon as possible. We will get very low-carbon fuels sooner with the LCFS. The LCFS provides more certainty and more incentive to biofuel providers.

2) Targets should be aggressive, but there is no scientific way to determine the correct target. It depends in part upon the urgency of oil import and greenhouse gas reduction goals, and in part upon highly uncertain forecasts of future oil prices and technological progress in improving biofuels, electric-powered vehicles, and hydrogen fuel cell vehicles. If one believes the goals are urgent, that oil prices will hover above $80 per barrel or so, and that technological progress will be swift, then the targets are too low—and should be a few percentage points higher. I lean toward higher targets, but the top priority should be to implement the LCFS.

The top priority is to implement the LCFS. Inclusion of the LCFS in a national energy and climate bill, even in its limited form, should be central to any strategy to reduce oil use and GHG emissions. The LCFS provides a durable policy framework that will guide the transition to low-carbon alternative fuels. It responds to both energy security and climate goals. It does not pick winners, is based in science, and harnesses market forces. It is a model of good policy.

Mr. MARKEY. Thank you, Dr. Sperling, very much.

Our next witness, David Friedman, is the research director of the clean vehicles program at the Union of Concerned Scientists. Mr. Friedman has served on three major committees for the National Academy of Sciences covering fuel economy, fuel-efficient tires and fuel cell vehicles. We welcome you, sir.

STATEMENT OF DAVID FRIEDMAN

Mr. FRIEDMAN. Thank you, Mr. Chairman, and thank you, members of the committee for the opportunity to testify before you today. I would also like to thank you specifically for your leadership on fuel economy. That was the important first step on transportation.

But now as we look to where we need to go from here, the discussion draft before us represents the essential next step, and as my testimony will show, the transportation system can go much farther than the progress delivered under the 2007 energy bill. What America needs is a comprehensive approach that addresses transportation as a system of vehicles, fuels and infrastructure and a strong cap that covers all parts of the economy including transportation.

We released a 2-year peer-reviewed study on Wednesday before the full committee. Our Climate 2030 Blueprint demonstrates the need for a well-designed cap-and-trade system and a comprehensive set of policies for the energy and transportation sectors. With this approach, we can accumulate $1.6 trillion in savings through 2030. Let me say that again: we can save money while tackling climate change. Now, if we remove some of the complementary policies, we will still save $600 billion but it will go down. These complementary policies are essential to saving money while addressing climate change.

Now, the results of our study highlight that the draft bill will also require significant action by the Administration to make these policies work. For example, the Environmental Protection Agency will need to set strong global warming emission standards for all vehicles and off-road equipment. There are opportunities to save money and cut carbon emissions from every vehicle, every ship, every plane. The EPA must also protect and defend State authority to help bring about cleaner cars and fuels in recognition both of the unique circumstances in those States and the history of leadership on these issues from California and many others. Thanks in large part to California and the States that have supported its efforts, cars and trucks today are 90 percent cleaner when it comes to smog than those sold 40 years ago. So I believe that EPA can head a partnership with States and with NHTSA that provides the clarity and certainty that automakers need.

Now, automakers that don't invest in this future and in these clean and efficient technologies will be left by the side of the road but as a result of this, in these hard economic times, it does make sense for the federal government to help the auto industry. However, taxpayers deserve a return on their investment, a requirement that automakers at least meet nationwide the same global warming emission standards adopted by California and 14 other States. That said, we cannot, we must not put all the responsibility

on the auto industry. Oil companies and fuel providers must step up and that is why EPA will also need to make a transition from a renewable fuel standard that covers only 10 percent of today's transportation fuels to a low-carbon fuel standard that covers all fuels and counts all direct and indirect emissions.

State and local governments and everyone who drives must also step up. The Department of Transportation will have to build on their plans to develop a smarter transportation, working with local governments to help get people where they need to go with fewer miles and less pollution. This will require investments in transit and support for pay-per-mile programs that will keep our roads and bridges repaired. EPA also has a significant role to play here in setting up standards to evaluate local transportation plans but there must also be consequences associated with making and meeting effective plans.

Finally, we need our scientists and engineers to step up and to deliver on the promise of fuel cell, plug-in and battery electric vehicles and the lowest carbon fuels. If Congress and the Administration step up to the plate, the UCS Climate 2030 Blueprint shows that the United States can cut carbon emissions from cars and light trucks to 40 percent below 2005 levels by 2030. We can hold carbon emissions from freight trucks steady despite an 80 percent growth in the economy through 2030. At the same time, we can deliver net annual savings of $120 billion to consumers and businesses in 2030 alone. Consumers specifically will save about $580 per household per year. We are not talking about how much it will cost, we are talking about how much money they will save as a result of cutting global warming emissions.

Now, by 2030, we will also have additional benefits. We can reduce transportation's addiction to oil by more than 3 million barrels per day, more than we currently import from the entire Persian Gulf region, and this is all on top of the benefits that you helped deliver through the 2007 energy bill. When you look at today's economy and the prospect of rising gas prices and rising carbon emissions, once we beat this recession we simply cannot afford to ignore this opportunity to invest in a cleaner transportation future and the jobs that investment will create.

[The prepared statement of Mr. Friedman follows:]

STATEMENT OF:
THE UNION OF CONCERNED SCIENTISTS

BEFORE THE:
HOUSE COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT

BY
DAVID FRIEDMAN, RESEARCH DIRECTOR AND SENIOR ENGINEER

April 24, 2009

Mr. Chairman and Members of the Committee, I appreciate the opportunity to testify before you today. I am a research director and senior engineer with the Union of Concerned Scientists (UCS). UCS is a leading science-based nonprofit that has been working for a healthy environment and a safer world for 40 years.

I would first like to thank Chairman Markey for his leadership on the issue of fuel economy. As my testimony will show, there are many opportunities to take the transportation system much farther than the progress delivered under the 2007 Energy Independence and Security Act (EISA), but with your help we are now building on significant progress after two decades of stagnation.

As we look at where we must go from here, the draft bill that Mr. Waxman and Mr. Markey have presented for discussion today represents an essential next step. It opens the door to a much more comprehensive approach to the transportation sector, an approach that looks at transportation as a system, not just separate cars, fuels and infrastructure. Such an approach requires that we put policies in place that will address each of these areas in order to create a stable climate and transportation future.

The approach laid out in the draft bill will also require significant action by the administration. The Environmental Protection Agency will need to build on its solid foundation and take the lead on global warming standards for cars, light trucks, and freight trucks, as well as airplanes, rail, ships and off-road equipment. The EPA will also need to make a transition from a renewable fuel standard that covers only 10% of transportation fuels to a low carbon fuel standard that covers all transportation fuels and counts all direct and indirect emissions associated with those fuels. The Department of Transportation will have to build on their plans to help develop a smarter transportation system, working with state and local government to help get people where they need to go with fewer miles and less pollution. The Department of Energy will also play a key role in helping to get essential technologies out of the lab and onto our roads and rails. The administration will also have to protect and defend state authority to help bring about cleaner cars and fuels in recognition of both the unique circumstances in those states and the history of leadership on these issues from California and many others.

If Congress and the administration build on EISA and deliver on each of the three legs of the transportation system (vehicles, fuels, and efficient infrastructure), the results of the Union of Concerned Scientists Climate 2030 Blueprint analysis show that the United States can cut carbon emissions from cars and light trucks to 40% below 2005 levels while holding carbon emissions from freight trucks steady despite more than an 80 percent growth in the economy. By 2030, we can reduce our addiction to oil by more than 3 million barrels per day, and deliver annual savings of $120 billion to consumers and businesses ($580 per household per year and nearly $40 billion for businesses in 2030)—and this is all on top of the benefits that will be generated by EISA.

When you look at today's economy and the prospect of rising gas prices and rising carbon emissions once we beat this recession, we simply cannot afford to ignore this opportunity to invest in a cleaner transportation future and the jobs that investment will create.

Today, I would like to share with you amore in-depth discussion of the transportation components of our Climate 2030 Blueprint analysis. The full committee saw the big picture results of that analysis when Kevin Knobloch, our president, testified before you on Tuesday. I will first lay out the policy recommendations that form the basis of the Blueprint. I will then go into some of the detailed findings for the transportation sector. Finally, because it has come up as a potential component of this bill, I will include a discussion of key principles for how to make a "cash for clunkers" program work to help the auto industry and the environment.

Six steps for policymakers to deliver transportation system that reduces carbon emissions, saves money and cuts America's oil addiction

The transportation sector offers significant opportunities to cut emissions while reducing the cost of meeting our climate targets. These reductions come from switching to low-carbon fuels and by reducing our oil dependence, helping to lower annual transportation costs to consumers and businesses by about $120 billion by 2030. In order to achieve these cost-savings, policymakers should put tools in place to reduce emissions from each of the three legs of the transportation sector: vehicles, fuels, and travel demand.

1. Require investment in vehicle technology through tougher standards: We can save money and oil while cutting heat-trapping gases from vehicles by requiring integration of both conventional and advanced technologies that boost fuel economy and reduce emissions from refrigerants across our national vehicle fleet. Additionally, requiring production of cleaner, more efficient vehicles will create jobs, help put the auto industry on the road to recovery and ensure that public dollars are invested wisely.

Because many of these technologies fall under both the Clean Air Act and fuel economy laws, there is an opportunity for a partnership between the Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) to coordinated in setting standards for light-duty cars and trucks. As part of this process, EPA should set car and light truck tailpipe carbon standards of no more than 200 grams per mile (carbon dioxide equivalent emissions) by 2020. NHTSA should set fuel economy standards through 2020 that support EPA's efforts. Within this process, there should be a transition to EPA as the lead standard

setting agency in consultation with NHTSA, with a target of and no more than 140 grams per mile (with fuel economy delivering at least 55 mpg) by 2030.

For medium and heavy duty vehicles, EPA may be able to move more quickly than NHTSA, since there are fewer restrictions on the application of EPA's statutory authority. EPA's experience with the heavy-duty vehicle industry through the SmartWay program should also prove valuable in the standard-setting process. Medium duty standards should be set to achieve per-mile carbon emissions of no more than 780 grams per mile (carbon dioxide equivalent emissions) by 2020 and 500 grams per mile by 2030. Heavy duty standards should reach no more than 1075 grams per mile by 2020 and 840 grams per mile by 2030.

Additionally, standards should be set for all vehicles, not just highway vehicles. Airplanes, ships, off-road vehicles, and rail all contribute, and should be improved.

2 **Require investment in cleaner fuels through a low-carbon fuel standard:** EPA also has an important role when it comes to fuels. A low carbon fuel standard, which requires fuels to cut lifecycle carbon emissions per unit of energy delivered, is the next evolution from the current renewable fuel standard (RFS).

The RFS only applies to about 10 percent of the transportation fuel pool, while the LCFS would encourage improvements in fuel carbon content across the board, letting the industry determine the most cost-effective route and avoiding picking particular fuel types for special treatment. The EPA already has authority under the Clean Air Act to establish a low carbon fuel standard. The targets should be a 3.5 percent reduction in lifecycle carbon emissions for transportation fuels in 2020, a 7 percent reduction in 2023, and a 10 percent reduction in 2030. The initial benefit of the LCFS will be in preventing the increase of carbon emissions from the adoption and deployment of high-carbon fuels such as tar sands, liquid coal, oil shale, and biofuels that create emissions through significant land use change. For a LCFS to be effective in our global economy, the impacts of both indirect land use and other offshore emissions must be accounted for in the full lifecycle of the fuel.

3. Maintain state authority to set vehicle and fuel standards: The ability of states to act as a laboratory for innovative policies has produced success in California's efforts to clean up smog and toxic pollution and in encouraging the sales of a hybrid and electric vehicles. The next opportunity lies in California's efforts to reduce carbon emissions from cars, trucks, and fuels.

The authority for many states to act together with California to put in place innovative policies that address global warming must be protected. This authority allows states to address new challenges as they emerge. It also keeps progress moving when the federal government does not act quickly or aggressively enough, including today, as the federal government considers establishing the necessary national standards.

4. Encourage smarter travel and include transportation in the cap: Vehicles and fuels are just parts of the transportation puzzle. In order to help capture the remainder, transportation must be included in an overall cap-and-trade system. Policies must also be in place at the federal, state and local levels to encourage alternatives to cars and trucks without sacrificing daily mobility.

Including transportation in a cap will send a price signal across the transportation system to reduce carbon emissions by picking the right mode of transportation, and reducing the amount of transportation required. Both pieces are crucial to meeting transportation's portion of the climate challenge.

In addition to including transportation in the cap, all federal funding for transportation projects should be tied to reducing carbon emissions from transportation. This will encourage innovative planning, improved mass transit, and intelligent transportation systems that make travel easier at the same time as reducing the need for it by making our cities and towns more walkable and accessible.

Steps should also be taken at the federal level to encourage adoption of pay-as-you-drive insurance, to shift any future gas taxes over to per-mile fees in order to maintain or expand revenues for highway repairs and transit expansion, and to reward innovative local planning to encourage smarter growth and transportation options.

5. **Encourage and invest in advanced transportation technology:** Federal support will also be needed for development, demonstration and deployment of ultra-low carbon vehicles, fuels, and infrastructure. The federal effort should focus on technologies that will have trouble entering the market on their own, but have significant climate benefits, such as vehicles that run on renewably generated electricity or hydrogen.

In order to achieve the maximum cost savings and carbon reductions from transportation, advanced technology will need to be developed and deployed. The federal government's role is particularly critical when industry investment in R&D has been declining, and is especially in doubt in the troubled automotive sector. All aspects of advanced technology need further effort, from batteries to fuel cells to low carbon biofuels, and infrastructure for all. By investing in a wide range of advanced technologies consistently over the next 20 years, rather than shifting focus with every new election or current trend, we can ensure that we will have the technology tools we need to meet our transportation goals.

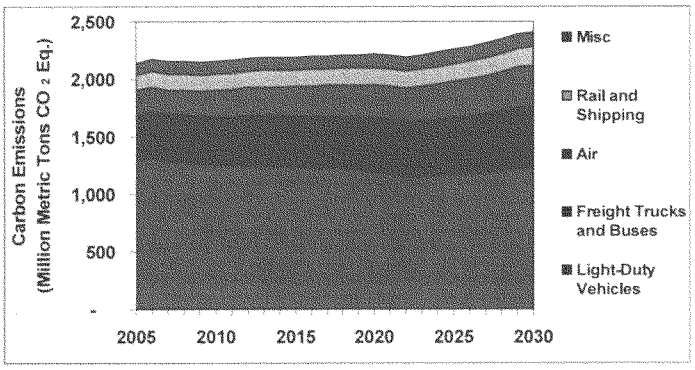
6. **Ensure transportation policies are consistent and durable:** Both companies and the climate need certainty that efforts to address heat trapping emissions from the transportation sector are going to continue for the long haul.

The automobile industry has to make significant investments and we need the resulting significant reductions in carbon emissions, so it is important that the policies that encourage these investments and deliver the reductions are strong enough and set in place for the long term and are not weakened with the political changing of the guard. This is especially essential for vehicle technologies, because they take about 15 years before they can have full impact as the fleet of cars and trucks turn over.

Detailed Results from the Climate 2030 Blueprint: Transportation

Reference Case: Carbon Emissions Climb Despite EISA
Our reference case shows that carbon emissions from the transportation sector will grow by 12 percent between 2005 and 2030. During the first two decades, carbon emissions are almost flat, growing only 2 percent between 2005 and 2022. This is due in large part to the passage of the 2007 Energy Independence and Security Act (EISA), which requires carbon reductions in biofuels through 2022 and increased fuel economy for light duty cars and trucks through 2020. Once these policies stall out, transportation carbon emissions begin to grow at near historic rates.

Reference case changes in carbon emissions from transportation.



Fuel economy for light duty vehicles had remained essentially stagnant between 1985 and 2005, as the auto industry successfully fought back attempts to require improvements in fuel economy. EISA pushes car and truck fuel economy from about 25 miles per gallon (mpg) in 2005 to more than 35 mpg in 2030. This, however, falls short of the doubling in new vehicle fuel economy that could be delivered through existing technology. EISA also did not require specific efficiency targets for any other part of the transportation sector.[1]

EISA will help to increase the share of low-carbon biofuels from just 0.1 percent of transportation fuel in 2005 to 9 percent by 2030. This significant increase highlights the importance of carbon emissions standards placed on the majority of the biofuels required under the renewable fuel standard in EISA. These standards will bring cellulose-based biofuels to sales volumes where they could become cost competitive with conventional petroleum.

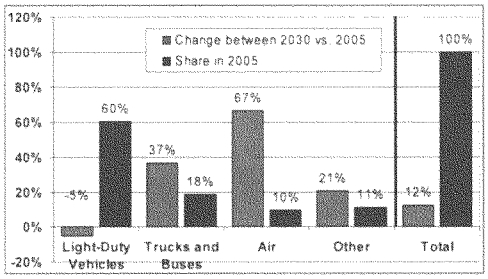
Without EISA, we estimate that 2030 carbon emissions from the transportation sector would have been projected to increase by about 30 percent instead of just 12 percent.[2] But a

[1] EISA does require fuel economy standards for medium and heavy duty trucks, but no specific minimum is set. EISA does not address fuel economy standards for planes, trains, off-road vehicles, or ships.
[2] We estimate that EISA provides 350-450 MMTCO2 in projected carbon emission reductions in 2030. Meeting the minimum EISA requirement of 35 mpg by 2020 cuts 250-300 MMTCO2 in 2030. The low-carbon fuel progress

transportation sector that simply runs in place on carbon emissions for 25 years is not enough. To actually cut carbon emissions compared to 2005, we need to go beyond the first step of EISA.

But, even building on EISA, the Blueprint policies will have to overcome the fact that reference case emissions for light duty cars and trucks drops only slightly in 2030, while freight trucks and buses are projected to grow by nearly 40% and emissions from airplanes is expected to grow by more than two thirds.

Projected growth of transportation carbon emissions by 2030 and share of carbon emissions in 2005.

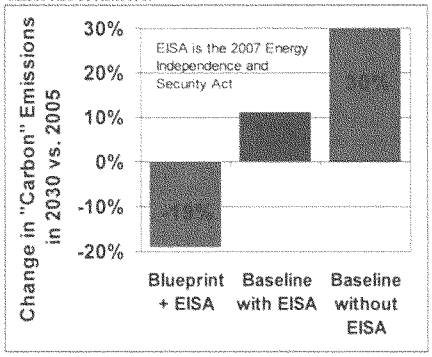


Blueprint: Driving Significant Reductions in Carbon and Saving Money

The transportation sector policies in the Blueprint represent the next necessary step after EISA. Together, they are a set of achievable but aggressive policies that address the three legs of the transportation stool: vehicles, fuels and miles traveled for cars, light, medium and heavy trucks. When all of our Blueprint policies are added on top of the progress made under EISA, the transportation sector can deliver a 19 percent reduction in tailpipe carbon emissions in 2030 compared to 2005.

This 19 percent reduction compared to 2005 is achieved by cutting transportation carbon emissions by more than 660 million metric tons in 2030. If the transportation reductions from EISA were also included, transportation's contribution to total reductions in 2030 would increase to more than 1 billion metric tons.

2030 Transportation Carbon emissions changes under different scenarios.



Blueprint: Energy Security Benefits

The Blueprint delivers more than just reductions in carbon emissions; it also delivers improved energy security by reducing our demand for oil, thus making our economy less vulnerable to oil

under EISA is projected to save 100-150 MMTCO2 in 2030.

price shocks. While EISA kept transportation oil use from growing under the Reference Case, the Blueprint policies cut transportation's demand for oil and other petroleum products in 2030 by 23 percent compared to 2005. Transportation provides more than half (53 percent) of the oil savings achieved through the Climate Blueprint. That represents oil savings of more than 3 million barrels per day in 2030 on top of the more than 3 million barrels of oil saved from EISA alone.

Blueprint: Saving Consumers Money

By cutting fuel use through efficiency and reduced travel and by shifting to cost-competitive, low-carbon fuels, the Blueprint transportation policies actually save consumers and businesses money while delivering reductions in carbon emissions. Through 2030, consumers and businesses will see their net expenditures on transportation (fuel and vehicle costs) drop by about $120 billion compared to the reference case. In other words, the savings from the Blueprint transportation policies not only cover the $53 billion cost of the more efficient vehicles, better fuels, and new transportation alternatives, but they reward consumers who help cut carbon emissions by saving them money.

Transportation Consumer and Business Savings for Blueprint vs. Reference Case (billion 2006$ in the years shown)

		2020		2030
Fuel Cost Savings	$	41	$	172
Vehicle and Alternative Transportation Costs	$	16	$	53
Net Savings	$	25	$	119

Some of these costs and savings are borne by businesses, while others are directly related to personal transportation (improved fuel economy, lower pain at the pump, new per-mile congestion fees). Looking exclusively at personal transportation, the average American household would see savings of $580 per year by 2030 on their annual transportation costs compared to a baseline case where the average new vehicle will already be getting 35 mpg—and these values exclude the potential for every vehicle owner to save as much as $150 per year on insurance costs due to reduced driving (Bordoff and Noel 2008). In earlier years, consumers and businesses are asked to invest in new technologies (e.g. better engines and transmissions and GPS monitoring systems to enable pay-as-you-drive insurance), but they more than pay for themselves.[3] And, if the impact of allowance price revenue recycling is included, their total household savings would be even larger.

Blueprint: Greater Savings for Society

From a societal perspective, savings from transportation policies are even higher than consumer and business savings because carbon allowances can be recycled back into the economy. Consumers purchasing transportation fuels pay an average of $0.27 per gallon to cover allowance fees for carbon emissions and those fees should be returned in ways that lower the cost of cleaner cars and fuels and better transportation options.

[3] These values assume consumers pay the full incremental price of technologies in the first year. Typical consumers will lease or get a loan on their vehicle, which would lower the costs in the early years.

Blueprint: Keeping Down Gasoline Prices

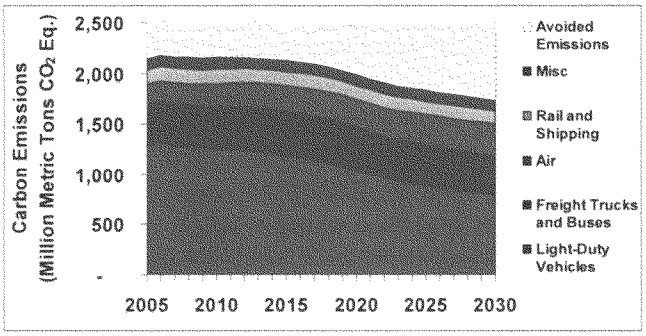
Despite carbon prices that reach as high as seventy dollars per ton, gasoline prices are, on average, only about $0.10 above the reference case through 2020 and only about $0.16 higher between 2020 and 2030. These results stand in sharp contrast to claims that cap-and-trade programs will significantly drive up fuel prices and instead point to gasoline prices that are similar or even smaller than increases that have happened within a matter of months, or even weeks in the last few years. These results indicate that including transportation in cap and trade will not significantly drive up prices for transportation fuels compared to the reference case because the Blueprint policies help drive down the price of oil compared to our reference case.[4]

The one ironic impact of keeping gasoline prices low is that it mutes the ability of a cap-and-trade policy to encourage consumers and businesses to purchase higher fuel economy vehicles or to shift to travel modes other than cars and instead could be seen as opening the door to more driving and increased urban sprawl. However, the Blueprint includes additional policies that directly address these issues, from vehicle greenhouse gas standards to per-mile driving fees, in a way that delivers even more cost effective carbon emission reductions.

Blueprint: Highway Vehicles do the Heavy Lifting

The major policies in the Blueprint focus on highway vehicles light duty cars and trucks and freight trucks and buses). As a result highway vehicles deliver the majority of the pollution reductions in transportation compared to the reference case.

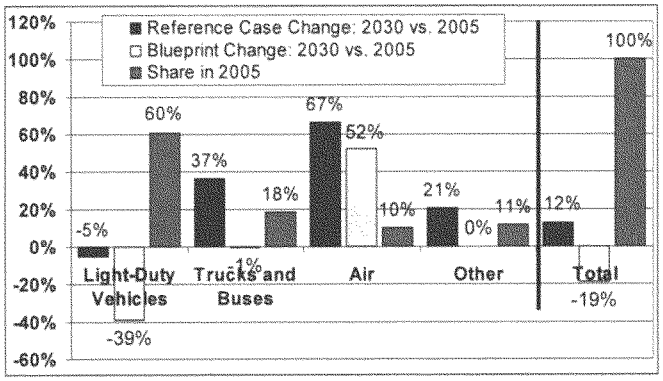
Blueprint case changes in carbon emissions from transportation.



Significant improvements in efficiency, cleaner fuels, and alternatives to current travel patterns under the Blueprint case allow light-duty cars and trucks to cut their 2030 carbon emissions by nearly 40 percent compared to 2005. This represents a significant improvement over the reference case reduction of only 5 percent. Trucks and buses had an even bigger task at hand. Under the reference case their emissions went up nearly 40 percent, but they are held flat under the blueprint.

[4] As with all oil savings in this analysis, NEMS does not account for oil market instability that could cause price spikes. It also does not account for potential actions by OPEC members to reduce supply in attempts to drive up prices in response to countries that lower demand.

2030 Changes in Transportation Carbon Emissions vs. 2005.



Blueprint: Carbon emissions from Air Travel Continues to Rise

Airlines were the worst performer under the blueprint, continuing to climb by more than 50 percent in 2030. The main policy that impacts the airline industry in our Blueprint is the cap-and-trade system that puts a price on carbon emissions. Ironically, the overall success of our blueprint policies keeps this impact small—jet fuel prices are only about 5-10 percent higher as a result of the cap and don't really impact the use of air travel compared to the near doubling in jet fuel prices between 2005 and 2030 that was already incorporated into our baseline.

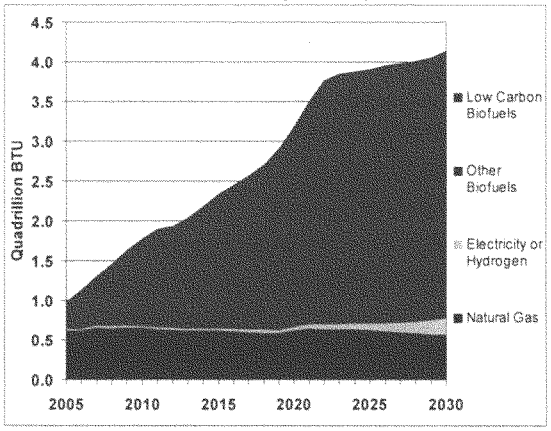
This study only included the limited set of options available to reduce pollution from air travel through increased efficiency. There are also important logistics changes that could be made, such as improved routing to shorten distances, improved scheduling to reduce congestion, and an update to the hub-and-spoke network that rely on indirect stopovers and increase fuel use. High speed electric rail can replace air travel between major commuting hubs, particularly along the coastal regions, but large scale investments in high-speed rail would have to be significantly accelerated to have an impact by 2030. California will likely be the first state to build a high speed electric rail system.

Blueprint: Low-carbon Fuels are on the Rise

Low-carbon biofuels and renewable electricity/hydrogen will be an important part of a transportation future, increasing to about 3.5 quads, or about 14 percent of all transportation fuel (20 percent of all highway fuel) by 2030. Much of this progress happens because of the low-carbon biofuel portion of the Renewable Fuel Standard included in our baseline. The low-carbon fuel standard in our Blueprint takes that a step farther by accelerating the phase out of corn-based biofuels, which do not deliver reductions in carbon emissions and may even lead to significant increases over the timeframe of this study. The low-carbon fuel standard also drives a 1% increase in the efficiency of the refining sector and provides a backstop to ensure that high-carbon fuels like liquid coal, which could double carbon emissions per gallon, do not make

inroads that undermine climate progress.[5]

Alternative Fuel Mix Under the Blueprint Policy Case.



While electricity use in the transportation sector remains relatively small under the Blueprint, its growth is quite rapid between 2020 and 2030 as the combination of two policies, the low-carbon fuel standard and the requirement that 20 percent of new light-duty vehicles be plug-ins (or other electric drive vehicles) by 2030,[6] drive a ten-fold increase in the use of electricity for transportation due to the nearly 20 million plug-ins or other electric vehicles that would be on the road in 2030.

This progress, however, is only the beginning of the potential for electric drive vehicles. The electricity sector side of the Blueprint does not tap into the full potential of renewable electricity resources, so there is significant capacity available to generate clean electricity or hydrogen as electric drive vehicles grow to dominate the car and light truck markets beyond 2030.

Progress in transportation critical for long term

While the transportation sector delivers significant reductions in carbon emissions compared to 2005 and saves the U.S. hundreds of billions of dollars in the process, the progress is still not as dramatic as the improvements seen in the electricity sector. That significant progress in the electricity sector will buy some time for progress in the transportation sector to be realized over a longer timeframe.

That progress must begin today. The majority of the benefits delivered under the Blueprint are from solutions that have been available for a decade or more. Had we begun to phase in solutions like more efficient vehicles, increased transit, reduced travel through per mile pricing policies and had we gotten serious about investing in low-carbon fuels and electric drive two decades ago, many of the benefits of the 2030 Blueprint would be available today. The year 2030 should be viewed as a critical mile-marker on the path to 80 to 90 percent reductions in 2050. If transportation policies do not attain the pollution reductions we outline here for 2030, there is no chance of reaching the 2050 target.

[5] Our reference case scenario did not include the use of liquid coal in the transportation sector, but significant efforts are underway to expand its use in the absence of climate controls.

[6] The portfolio of potential advanced vehicles includes plug-in hybrids, battery-electric vehicles, and fuel cell vehicles. For ease of modeling, rather than applying a performance-based technology requirement, plug-ins were used as the sole technology, but other technologies of equal performance could substitute.

"Cash for Clunkers"

We support efforts to help the domestic manufacturers emerge from the current crisis as leaders of the industry, and we firmly believe we can best achieve this goal through policies that also reduce global warming pollution and our dependence on oil.

While a "cash for clunkers" program can stimulate sales and deliver some energy and environmental benefits, it will only do so if carefully structured. Otherwise, it risks being another expensive subsidy for automakers with no clear benefit to the taxpayers who would have to fund it. Focusing on the most fuel efficient segment of the market, can significantly reduce the cost of the bill and increase the fuel saving benefits. The following is a list of guidelines to help ensure a successful program:

1. The vehicles being purchased must deliver better than average energy and environmental performance.
    a. Government funding for vehicles of average performance levels will not help to cut oil use or carbon emissions. **In order to be eligible, a vehicle should be in at least the top 25 percent of its class on carbon emissions or fuel economy**. This has the added benefit of reducing gasoline bills for the vehicle purchaser.
    b. At the same time, the accelerated retirement program should be designed to reduce smog and toxic emissions by requiring that **any vehicle purchased must be as clean, or cleaner, than the Tier 2 Bin 5 tailpipe emission standard (or an equivalent California standard).**

2. Junked vehicles must have lower than average fuel economy and must be older than the typical vehicle.
    a. In the United States fuel economy standards have not significantly increased over the past twenty years so a new vehicle is not necessarily more efficient. In order to be eligible**, a vehicle being junked should get at least 25% worse fuel economy than today's average vehicle (about 18 mpg on CAFE tests).**
    b. Making a new vehicle takes energy and creates pollution, so junking a relatively new vehicle and replacing it with a brand new one could cancel out much of the energy and environmental benefits of the program. **A vehicle being junked must be at least 8 years old**, roughly the median age of vehicles on the road today

3. **The "clunker" must be recycled, with all hazardous material properly removed.** Increased sales of new vehicles will only be realized if the vehicle, engine and other major parts cannot be resold. Resale, even of major parts, will extend vehicle life, blunting the desired increase in sales. The environmental benefits of the program would also be lost.

4. **People who junk their vehicles should be given the option of using the "cash for clunkers" incentive for purchase of transit fares and bicycling equipment.** Even greater oil savings and environmental benefits can be achieved by encouraging drivers to get of their cars, and take more trips under their own power, or on public transportation.

5. **If limited federal funds are available, place a priority on replacement of clunkers with new vehicles over used vehicles.** The sales and environmental impacts of allowing used vehicles to qualify as the purchased vehicle are complicated and uncertain, so priority should be given to the purchase of new vehicles (either directly or through transferable vouchers) unless analysis indicates otherwise.

Although "Cash for Clunkers" has had some apparent success in other countries and at the state level, differences in the markets may make realizing climate and oil savings benefits in the US more challenging. An important part of the apparent energy and environmental success of European programs is that a new vehicle sold in the EU today is significantly more efficient and has lower carbon emissions than one sold ten years ago due to voluntarily enforced vehicle greenhouse gas standards.

Setting strong greenhouse gas standards for vehicles will save far more oil and money and will reduce more greenhouse gas emissions than even the most expansive and aggressive scrappage program. Further, a simple consumer incentives program focused at highly fuel efficient vehicles might offer at least similar levels of benefits with fewer administrative burdens, and less potential for corruption. As Congress and the President move forward with legislation to encourage the purchase of fuel efficient automobiles, we encourage them to look at multiple avenues for improving the performance of the fleet while stimulating sales.

Mr. MARKEY. Thank you, Mr. Friedman, very much.

Our next witness is Mr. David Gardiner. He is the founder and president of David Gardiner and Associates, an energy and climate consulting firm. He previously served as the executive director of the White House Climate Change Task Force during the Clinton administration. We welcome you, sir.

STATEMENT OF DAVID GARDINER

Mr. GARDINER. Thank you, Mr. Chairman.

This morning Congressman Butterfield asked a question about what he could say to his low-income consumers in his district about this broad legislation and we believe that a key part of the answer to that question is, we are going to deliver a lot more energy efficiency to you and particularly as contained in your discussion draft, we should adopt an energy efficiency resource standard. An energy efficiency resource standard, as in your bill, Mr. Chairman, would require utility companies to deliver increasing amounts of energy efficiency to their customers, specifically that we would deliver 15 percent more energy efficiency by 2020 in the electricity area and 10 percent for natural gas. With this requirement, which we have in place in 19 States already today, what utility companies do is to turn around and offer rebates to their customers for investing in energy efficiency appliances and making energy efficient homes. Colorado, for example, has just adopted a standard and the utility there, Excel, has recently launched two programs to offer rebates to homebuilders because it is cheaper for Colorado to pay for a more efficient home than it is to build a power plant to serve that. Now, under your draft discussion bill, Mr. Chairman, this provision for an energy efficiency resource standard saves consumers $170 billion by 2020. It is exactly the kind of thing that Congressman Butterfield is looking for for his low-income consumers. It also creates 220,000 new net jobs because there is a lot of jobs out there making homes more energy efficient and building more energy-efficient appliances. It also will avoid the equivalent of $48 million automobiles worth of greenhouse gas emissions.

Now, there are some who have suggested that what we should do is to merge the energy efficient resource standard with a renewable electricity standard. That is an unwise path because that will lead to less energy efficiency and it will increase consumer costs. Our own analysis indicates that could be as much as a $70 billion increase for consumers. On the converse side, the energy efficiency resource standard and the renewable electricity standard actually lower the costs of meeting a cap on carbon dioxide and they do so by approximately 15 percent. They do it because they eliminate the barriers that are out there for cost-effective investments in energy efficiency. The chief barrier to that is that in most States in the country, electric utility companies lose money if there are significant investments, that they make significant investments in energy efficiency. So an energy efficiency resource standard turns that around and makes energy efficiency a profitable venture for electric utility companies and starts to deliver the kinds of savings that consumers are going to want to need and can be an important component of making sure that the achievement of our greenhouse gas reductions is done at the lowest possible cost. So we urge the com-

mittee to not only retain the discussion draft provision on the energy efficiency resource standard but to make sure that we move forward as rapidly as possible to get this in place because energy efficiency is a resource that we can start taking advantage of today. We can start saving consumers money today and we can start creating those jobs in energy efficiency today so it is urgent that the Congress move forward with adopting the energy efficiency resource standard.

[The prepared statement of Mr. Gardiner follows:]

Testimony of David Gardiner
Senior Advisor, Energy Future Coalition

House Committee on Energy and Commerce
April 24, 2009

Mr. Chairman, thank you for inviting me to testify and for the forward-thinking leadership of this committee. My name is David Gardiner, and I am a Senior Advisor to the Energy Future Coalition, a non-partisan public policy group, that works to bring together business, labor, consumer and environmental groups around clean energy policy objectives.

Quickly bringing energy efficiency resources to scale nationwide is a primary focus of the Coalition. Energy efficiency is the cheapest and cleanest strategy to meet our energy demand. It is an energy resource that can be deployed today and make a difference right away. It has the potential to supply a significant portion of our energy needs. A recent study by the McKinsey Global Institute found that we could cap our energy demand and greenhouse gas emissions at 2005 levels simply by investing in cost-effective energy efficiency. A national investment in energy efficiency will cut consumer and business utility bills, put people to work in high quality jobs that cannot be outsourced and help establish the United States as a global leader in energy technology innovation. Strong energy efficiency policies will also help utilities and businesses reduce the cost of meeting greenhouse gas emission caps.

An Energy Efficiency Resource Standard, or EERS, is a great way to spur investment in energy efficiency. An EERS requires utilities to deliver more energy efficiency by setting a target for energy use reductions by a certain date. It is a powerful but flexible policy tool to ensure that needed investments in energy efficiency are made while allowing states to choose a strategy that works best for their specific circumstances. The discussion draft advanced by Representatives Waxman and Markey clearly recognizes the efficiency opportunity and their proposal to establish an EERS to reduce electricity usage by at least 15% and natural gas usage by at least 10% by 2020 is a strong start. By 2020, this national target would:

- Create **220,000 net new jobs**;
- Save consumers **$170 billion in energy bills**, net of program costs;
- Reduce peak energy needs by the equivalent of **390 power plants**; and,
- Avoid the equivalent of **48 million automobiles** worth of greenhouse gas emissions.

Setting and meeting a strong target for energy efficiency would be an economic boon for states. For example, a national EERS would:

- Create over 5,000 jobs and save consumers $2.8 billion in Ohio
- Create over 4,000 jobs and save consumers $2.3 billion in Michigan
- Create nearly 9,000 jobs and save consumers $6.3 billion in Georgia.
- Create over 22,000 jobs and save consumers $14.6 billion in Texas

This is a proven strategy. Nineteen states have already adopted an EERS, and utilities in those states are demonstrating that they can change consumer investment behavior with rebates for efficient investments at a cost of 3-4 cents per kWh – one-third to one-half the cost of power

from new plants. An EERS allows states flexibility to determine the business model that works best to achieve the energy savings. Typically, utilities offer rebates and financial incentives for energy efficiency home improvements, use of energy-efficient lighting and appliances, combined heating/cooling systems and other measures for homes, offices, industrial facilities and institutions.

EERS make significant progress in overcoming the classic obstacles to energy efficiency. The top barrier are the utility regulations that, in most states, only allow utilities to make money by investing in costly new power plants and make it so that utilities lose money by investing in energy efficiency. Other barriers include a lack of program awareness, the "tenant/landlord" problem of split incentives, marginally higher upfront costs of efficient products masking the greater long term benefits. An Energy Efficiency Resource Standard will lead utilities to overcome these barriers and to profitably offer rebates and information to their consumers and to other decision makers (e.g., homebuilders and landlords) to change investment decisions.

The EERS proposed in the Waxman-Markey discussion draft is a flexible strategy that gives appropriate credit to progressive utilities that have pursued a lot of efficiency. Such early actors will already have a lot of efficiency to count towards the EERS. Under the legislation, utilities get credit for savings from codes and standards (including federal standards) and from programs and combined heat and power installations where they "played a significant role in achieving the savings." In other words, if the utility, the state, and a retailer all play a significant role, the utility gets credit, without having to figure out the size of their role relative to the role of others. According to ACEEE, the average utility will have met 33% of the electricity standard and 16% of the gas standard through codes and standards. The average utility will have even more existing efficiency for the EERS. Further, analysis by economic consultancy Synapse indicates that long-standing efficiency programs have consistently reduced their cost to deliver energy efficiency over time. This was true even as standards increased.

Because of the benefits of an EERS, we have attracted a lot of support, particularly from the business community. Businesses know that efficiency is the cheapest strategy. The Energy Future Coalition has partnered with leading efficiency and environmental groups and 75 leading businesses, industry associations, and faith organizations to form the Campaign for an Energy-Efficient America to advocate for a national energy efficiency resource standard (EERS) to help the nation maximize energy efficiency.

As good as a stand-alone EERS would be for our economy, environment, and consumers, it is even better when paired with complimentary policies as has been done in the "Discussion Draft" from Representatives Waxman and Markey. We support combining a separate EERS with a renewable energy standard and a greenhouse gas standard.

An EERS and RES are good policies alone but when implemented in tandem with a greenhouse gas cap, they help achieve the lowest cost path to meeting our climate goals. An analysis by The American Council for an Energy Efficient Economy shows that electricity prices under cap-and-trade legislation will be **15 percent less** if an EERS and RES are also in place. The report says: "Energy efficiency reduces the cost of cap-and-trade because less new energy facilities are needed and also because a smaller portion of existing facilities need to be upgraded to help meet

emissions ceilings. A cap-and-trade program that maximizes the role of end-use energy efficiency in buildings, industry, and transportation systems, will, therefore, achieve carbon reductions at a lower cost than a program that simply focuses on generators through a carbon cap and carbon price."

How does the "Three Pillars" approach work? An EERS and an RES are both good standalone policies that can drive national investment in and create markets for renewables and efficiency. In tandem, their benefits are magnified because they help reduce the cost to consumers of cutting emissions. The 13 states that have adopted a "Three Pillar" approach are showing first-hand that they can reduce market barriers and stimulate new clean energy markets. While these state efforts are an excellent start, national EERS and RES policies are needed to fully overcome the nation-wide barriers to efficiency and renewables and to bring the benefits of efficiency and renewables to the entire country, including states without such policies now, as well as nearby states who will share in region-wide benefits that such policies bring.

Some have suggested that we merge the EERS and RES into a single standard. That is an unwise path. It would be worse for consumers than two separate standards. The House Bill 969, passed by the House in August 2007, set the renewable standard at 15% and allowed efficiency to meet 25% of the total. It would reduce consumer savings by **$70 billion less than the current EERS proposal alone.**[1] From a utility perspective, energy efficiency and renewable energy are very different animals. Having separate standards simplifies their planning process by giving them clear and distinct targets for each.

Some have suggested that a cap on greenhouse gas emissions can do all the work of reducing emissions. This is an expensive approach that is not good for consumers. While a cap sends important price signals, price signals are not optimally effective at driving energy efficiency and renewables, which are the options for reducing emissions that are fastest and lowest-cost for consumers. The way the regulatory business model works now, the utilities have more incentive to take the costliest measures to reduce the pollution from their power plants and other assets first and to invest in cheap efficiency last. Assuming that a totally free market approach – that is, waiting for a price on carbon to drive strategy – ignores that the electric industry is not a free market now. Indeed, it is the outdated utility rules in most states that prevents the right market choice, efficiency, from being the first choice.

The Waxman-Markey discussion draft will send the right policy signal. There are a few minor improvements that could be made to enhance the legislation. Under the current draft, the governor of any state may choose to meet one-fifth of the RES requirement with efficiency, if that state is in compliance with the EERS requirements. This section should be clarified so that only efficiency that is not used to meet the EERS is used to meet the RES.

Mr. Chairman, you and your colleagues are well on your way to writing legislation that will create an energy policy that provides real economic and environmental benefits.

Thank you for inviting me to participate in this hearing.

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[1] http://www.renewableenergyworld.com/rea/news/article/2007/08/last-chance-rps-vote-looming-in-house-49528

Mr. MARKEY. Thank you, Mr. Gardiner, and your testimony was consistent with your energy philosophy. You yielded back 1 minute to us. We appreciate that, really a great gift to us today.

Our next witness, Mr. Jeff Genzer, is counsel for National Association of State Energy Officials. Mr. Genzer, we welcome you, and whenever you are ready, please begin.

STATEMENT OF JEFF GENZER

Mr. GENZER. Thank you, Mr. Chairman.

The energy efficiency programs within the bill are solid and we generally support them. I won't focus on the appliance provisions since Mr. DeLaski will be discussing that.

Number one, NASEO supports specific 30 percent increases in both residential and commercial building energy codes and standards. These should be federal and mandatory and need to happen quickly. The residential code should be adopted and effective on January 1, 2010, which represents a 30 percent increase over the 2006 international energy conservation code. It has become clear to State energy officials that the residential consensus code process has become dominated by interests that refuse to recognize the role that new homes play in energy use and climate change and that seek to maintain the status quo despite the very acceptable costs, in fact cost reductions for consumers of moving to much more efficient buildings.

On the commercial side, ASHRAE should be given an opportunity to achieve a 30 percent commercial building standard increase over ASHRAE 90.0 2004. However, it needs to be effective on January 1, 2011. We cannot achieve our energy and climate goals without this. We have waited far too long already. We simply cannot accept the ridiculous argument that it is never a good time to raise energy-efficient building codes, never good in flush times, never good in bad times. Homeowners live in these homes and consumer energy for centuries. Every day we wait is another day of dollars out the pockets of homeowners and taxpayers. The costs of achieving the same gains in energy efficiency is an order of magnitude higher when we retrofit than during the initial construction. Funding will be required for States and local governments to conduct compliance, training and enforcement. The only possible source is at the federal level but we would maintain that the national interest in reducing the 10 percent share of global greenhouse gas emissions that comes through out buildings warrants that federal investment.

Two, we support the Retrofit for Energy and Environmental Performance program that was sponsored by Representative Welch. It will lead to significant increases in energy efficiency for homeowners, commercial buildings and public buildings. This will lead to local jobs, putting building contractors back to work and it will produce real energy savings for real people and return dollars to communities.

Third, we supply the rebate program to get homeowners out of the older pre-1976 manufactured housing. We support the program sponsored by Representative Baron Hill.

Number four, we support a building energy performance labeling program. We don't understand why anyone engaged in helping

Americans make wide decisions when owning, operating, buying or selling a building would reject an effort to allow consistent, comprehensive and understandable information about that building's energy consumption to be readily and indeed publicly available.

Fifth, most state energy offices support an energy efficiency resource standard but want to ensure the State-administered programs will be allowed to continue.

Six, the State Energy and Environmental Development Fund, the SEED Fund included in the bill, is another positive program and would provide a good overlay for energy and environmental program initiatives. We look forward to working with the subcommittee and the committee in examining these programs. A number of items that have been discussed and will be discussed at these hearings are certainly worth including.

Commissioner Grunich discussed yesterday a proposal on State planning. Bill Becker will be on the next panel from NACAA. He will be discussing our desire to avoid State preemption and permit States to run programs on the environmental side that are more robust than the federal program. Third, Representative Van Hollen made a good proposal for a federal energy loan bank. While it is a good idea at the local level, we are concerned that it will be very difficult for the Department of Energy despite Secretary Chu's monumental efforts to get their loan program going at DOE to run it from the federal level.

I want to, in my 19 seconds left, mention to Congresswoman Baldwin that my daughter is a junior at Wisconsin and I have a rising freshman. Thank you.

[The prepared statement of Mr. Genzer follows:]

TESTIMONY OF JEFF GENZER
GENERAL COUNSEL
NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS

BEFORE THE
ENERGY AND ENVIRONMENT SUBCOMMITTEE

HOUSE COMMITTEE ON ENERGY AND COMMERCE

REGARDING THE

"AMERICAN CLEAN ENERGY AND SECURITY ACT OF 2009"

ENERGY EFFICIENCY PROVISIONS

APRIL 24, 2009

Mr. Chairman and members of the Subcommittee, my name is Jeff Genzer and I am counsel to the National Association of State Energy Officials (NASEO). NASEO represents the energy offices from the states, territories and Washington, D.C. NASEO members operate energy efficiency and renewable energy programs and advise their Governors and work with their state executive branch agencies on energy matters. I have been NASEO counsel since the organization was formed in 1986.

Today I want to focus my attention on the energy efficiency provisions contained in Title II of the American Clean Energy and Security Act of 2009, and especially the buildings energy efficiency provisions. The buildings energy efficiency provisions of this bill are a strong step in the right direction. In the buildings sector, which accounts for such a large percentage of our total energy use in the United States (approximately 40%), there is an enormous amount of savings yet to be tapped. Our effort must focus not only on new buildings which can be made much more energy efficient, but also on our existing building stock. New buildings are a small percentage of all buildings, but by the year 2030 buildings constructed between now and then could account for up to 40% of the existing building stock. This legislation must provide incentives to states, local governments, building owners, developers and others to improve building energy efficiency. Green building is a growing way to drive energy efficiency. A major new study finds that a 34% improvement in energy efficiency could be achieved with only 2% cost premiums. These market segments must see a significant economic benefit in order to reduce energy use and carbon footprints and to satisfy legislative goals. There are significant benefits and relatively small costs to making our buildings energy efficient. The resources allocated to advancing appropriately ambitious reductions in building sector energy use must be proportional to the large energy consumption (and roughly equivalent carbon footprint) of the building sector. This is a national security issue and an energy and environmental policy issue. Reasonable reductions in CO2 production cannot be achieved without substantial contributions from making our buildings more energy efficient.

In addition, on behalf of all the states, I want to personally thank Chairman Markey and full Committee Chairman Waxman, and their respective staffs, for their aggressive work from November until the passage of the American Recovery and Reinvestment Act of 2009, to include key energy efficiency measures in the package. The key provisions from the state perspective regarding energy efficiency included $3.1 billion for the State Energy Program, $5 billion for the Weatherization Assistance Program, $3.2 billion for the Energy Efficiency and Conservation Block Grant and $300 million for the Energy Star appliance rebates program. We are moving quickly to get plans into place to spend this money quickly and effectively.

Let me summarize our position on the measures contained in this bill:

1) **Section 201 – Building Energy Codes**: NASEO supports specific increases for energy efficiency in building codes, but the provision in the draft bill is in need of certain

improvements. There should be specific adoption of a federal building energy efficiency code for residential energy efficiency, which is the so-called "30% Solution" (also known as EC-14), which provides a 30% improvement in residential energy efficiency over the 2006 International Energy Conservation Code ("IECC"). Today's energy needs are so pressing that this should be enacted by federal law and should be effective on January 1, 2010. There is no reason for any more delay. With respect to new commercial building energy efficiency standards, the American Society of Heating, Refrigeration, and Air Conditioning Engineers ("ASHRAE") should be given an opportunity to issue a 30% upgraded standard no later than June 1, 2010.ASHRAE's Board of Directors set a goal of improving the energy efficiency of their standard by 30% for the 2010 edition and they are making progress towards these goals. If they fail, the Secretary of Energy should issue this 30% upgrade no later than September 1, 2010, to be effective on January 1, 2011 (30% higher than ASHRAE Standard 90.1-2004). States should be required to conduct training, enforcement and compliance (along with local governments), and 90% compliance should be achieved within 8 years. This compliance target should be required only if adequate federal funds are authorized and actually appropriated for each year of the 8-year period. Appropriated funds should generally be split 50/50 between the state and local governments. By "adequate funds", I mean an appropriation of as much as $1 billion dollars per year to allow state and local agencies to staff-up and train their staff to carry out these critical energy inspections of new buildings. If states fail to enforce the code and standard, then the federal government can step in and conduct federal compliance, training and enforcement (similar to the approach of the Safe Drinking Water Act or the Clean Air Act). A 50% energy efficiency upgrade for both the residential code and the commercial standard should be effective on January 1, 2015 and should be issued no later than January 1, 2011 for the residential code and October 1, 2011 for the commercial building standard. Again, this should be a specific mandatory federal residential energy efficiency building code. ASHRAE should be given the opportunity to put the commercial building energy efficiency standard in place by the dates noted herein, and if they fail, it should be imposed as a matter of federal law. States should be permitted to enact codes and standards equivalent to or higher than the federal code and standard. California's Title 24 should be specifically grandfathered, since it is equivalent to or greater than the 30% upgrades proposed here. Strong building energy efficiency codes are part of a broader effort which should emphasize good design, good equipment and good operational measures.

The changes suggested in this Section are significant but are absolutely critical to the future of our nation. We can no longer sit idly by and allow energy waste in buildings to occur. There is no better time than now to begin constructing new buildings that are designed to be truly energy efficient, despite the current economic crisis. We cannot continue to avoid the hard decisions.

2) **Section 202 – Retrofit for Energy and Environmental Performance Program (REEP):** This provision, primarily sponsored by Representative Welch (H.R. 1778), should be enacted. The building energy efficiency retrofit program has been recognized as effective by a number of energy efficiency, building and real estate organizations and, if funded, would be a welcome addition to promote energy efficiency in residential,

commercial and public buildings. However, an authorization without appropriations is a hollow action. In the event Congress passes a climate change bill, specific funding should be provided for these energy efficiency measures. When developing allocation methodologies for energy efficiency funding, strong consideration should be given to the 40% energy load of the building sector. The funding would be provided through the State Energy Program (SEP), which is the most flexible and appropriate vehicle available for energy efficiency funding and is an excellent example of a federal-state partnership in the energy area. Congress recognized this with the recent enactment of the stimulus funds, which directed $3.1 billion through SEP. The Administrator of EPA and the Secretary of Energy would establish basic guidelines then the states would directly operate these energy efficiency programs or work with intermediaries to implement these activities. On the residential side, this language will expand on the progress made through such entities as RESNET and the Home Energy Rating System, Building Performance Institute certification, the work of energy efficient building contractors (Energy First) and Home Performance with Energy Star. With respect to commercial buildings, the program could provide no-cost/low cost audits and then increasing amounts of funding depending on the level of demonstrated energy use reduction (ranging from $0.15/sq.ft to $2.50/sq.ft). The state energy offices are always encouraging stronger measured energy performance. As legislation moves forward we want to encourage comprehensive energy efficiency measures. We want to avoid "cream-skimming." In both the residential and commercial arenas there should be enough flexibility to permit financial incentives, loan guarantees and credit enhancements.

3) **Section 203 – Energy Efficient Manufactured Homes**: This proposal, introduced originally by Congressman Baron Hill of Indiana, would create a rebate program for energy efficient manufactured homes for low-income Americans. Up to 50% of the housing in rural America is manufactured homes. They generally are terrible energy wasters. This proposal would specifically fund rebates up to $7,500 for replacement by homeowners of pre-1976 manufactured housing with Energy Star manufactured housing. There are over 2 million of these homes still in use in the United States. The lower-income families that live in these homes are being saddled with higher energy bills because of the extremely low energy efficiency of these units. The present manufactured housing energy efficiency standards issued by HUD are inadequate, but these standards did not even exist before 1976. This is an important measure to help lower-income Americans; especially families living in rural America. The state energy offices would operate these programs in conjunction with state housing finance agencies. Energy efficient design is even more critical for all low-income housing. There are good models that have been initiated in Maine and New Hampshire.

4) **Section 204 – Building Energy Performance Labeling Program**: This proposed building energy performance labeling program is very positive and can help increase the efficiency of both residential and commercial buildings over the long term by leveraging real estate market forces in response to better information available to both buyers and sellers. In order to be effective, improvements will be required in the Commercial Buildings Energy Consumption Survey (CBECS) and the Residential Energy Consumption Survey (RECS), in terms of quality, frequency and methodology. This will

require additional resources for the Energy Information Administration, consistent with Section 805 of the Energy Independence and Security Act of 2007. Section 204(c) (3) (c) (page 199, lines 9-15 of the draft bill) should be modified to require consultation with state energy offices in the development of the data assessments. This provision requires the development of a model building energy performance label, which could be utilized as appropriate, including, but not limited to, when an audit is conducted, a retrofit, final inspection, sale, recordation of a lien or change in ownership. Funds would be provided to states to implement these provisions. Section 204(j) (page 209, lines 8-15 of the draft bill) should be modified to require consultation involving public outreach with the state energy offices.

5) **Sections 211-215 – Lighting and Appliance Energy Efficiency Programs**: These changes for the lighting and appliance energy efficiency programs are positive and should be adopted. State energy offices spend a great deal of time promoting the use of Energy Star products to the public at large. Andrew Delaski, Executive Director of the Appliance Standards Awareness Project, will be addressing these provisions in greater detail. We want to associate ourselves with Andrew's remarks. His testimony regarding multiple metrics (Section 213(a)), state building codes (Section 213(j)), DOE data collection (Section 213(e)), removal of the "Catch-22" from the state waiver petition process (Section 213(g)) and state authority to seek injunctive relief for enforcement (Section 213(i)), are all especially crucial. Andrew is a real asset in this area and the states rely upon his expertise. Steve Nadel, Executive Director of the American Council for an Energy Efficient Economy, has worked very hard to try to develop consensus provisions with the industry and Committee staff, and Steve's efforts should be applauded. Section 213(j) (pages 252-255 of the draft bill) must be reviewed to ensure that these provisions are consistent with our proposed modifications to Section 201 of the bill regarding federal energy efficient building codes and standards. This provision is a necessary complement to the building codes provision in order to allow states to move forward on a more robust code that achieves real savings from lighting and equipment. It must be modified to permit state action. Section 214 ("Best in Class Appliances Deployment Program") would provide bonuses to retailers for selling high energy efficiency appliances. This program makes sense and it should be seen as a complement to the Energy Star appliance rebates program funded with $300 million in the stimulus package. Section 214(c) would provide bounties for replacement of low-efficiency products and is similar to a program that the New York State Energy Research and Development Authority established a number of years ago in New York City for high efficiency air conditioning. In Section 215 we recommend that the payback period not be restricted to 3-5 years (page 267, line 24). It makes sense to allow flexibility for a longer payback period.

6) **Section 231 – Energy Efficiency Resource Standard**: While all state energy offices do not support an Energy Efficiency Resource standard, the majority of state energy offices support this program. It would permit adoption of less expensive energy efficiency measures and would attempt to bring the entire country further along in promoting energy efficiency. Section 231(h) (page 309-310 of the draft bill) provides for the opportunity for state implementation, which should be preserved. In general, states

should be permitted to have an equivalent program, or a stronger program. States that have state-run or third-party administered programs rather than utility programs, should be accommodated.

In addition to the provisions in Title II of the draft bill, NASEO would like to take the opportunity to comment on Section 131 of Title I of the draft bill:

7) **Section 131 – State Energy and Environment Development Funds (SEED)**: The SEED fund would permit states to allocate resources from a variety of sources for clean energy programs, energy efficiency and climate change initiatives. Subsection (e)(2)(B) specifically preserves the statutory allocation of funds for such uses as the Low-Income Weatherization Assistance Program and the Low-Income Home Energy Assistance Program, so that the low-income population is not negatively impacted. We would suggest that the 5% administrative cost limitation be raised to 10% in Subsection (e) (2) (C) (iv) (page 86, line 24). State energy offices not only work to deploy commercially available clean energy and energy efficiency technology, but also to accelerate the introduction of emerging technologies. This is a key part of the states economic development efforts. Flexibility should be provided through the SEED fund to permit use of these fund for technology advancement.

CONCLUSION

On behalf of NASEO, we are pleased to support these important energy efficiency provisions of the draft legislation. We again caution that unless the implementation of the "carrots and sticks" we endorse here are fully funded the results will fall short. We look forward to continuing to work with the Committee, Subcommittee and the extremely able staff as you formulate final legislation.

We are prepared to answer any questions you might have.

Mr. MARKEY. We thank you, Mr. Genzer.

Our next witness is Mr. Charles Drevna. He is the president of the National Petroleum and Refiners Association. He has more than 35 years of experience in that field. We welcome you, sir.

STATEMENT OF CHARLES T. DREVNA

Mr. DREVNA. Thank you, Mr. Chairman and Ranking Member Upton and Congresswoman Baldwin. Thank you for having me here today.

Addressing climate change requires realistic long-term strategies that recognize the vital role that all forms of energy will play in maintaining our country's security, economic strength and quality of life. NPRA supports the advancement and deployment of new technologies that will bring reliable, affordable and clean supplies of domestic energy to consumers. We do, however, have some serious concerns with the ability of the discussion draft, the American Clean Energy and Security Act of 2009, to achieve these goals, particularly in relationship to the transportation sector regarding the discussion draft, but rather than attempt to simply condense the written statement in the time allotted, I will briefly reiterate some specific areas of concern.

These include the adoption of a low-carbon fuel standard. At best, the LCFS is redundant and overly costly. More likely, it is contradictory and punitive. We do not need the LCFS if fuels are regulated under the cap through a scientifically achievable timeframe. The compliance timeframes in the discussion draft are, in our opinion, again, on the transportation sector, overly aggressive.

Another area of concern is the refining industry, we believe and we hope to demonstrate, that the refining industry is indeed energy intensive and subject to international competition as opposed to what the findings of the discussion draft. And finally, we have some questions concerning the allocation of emission allowances. There seems to be a dearth of knowledge on how those will be handled in the discussion draft. Now, I anticipate that the committee will have questions regarding these items among others and I look forward to discussing them with you.

In the remaining time I have, I want to focus somewhat on links. A rather rudimentary description of the petroleum refining process but one that must be achieved in order to facilitate technological and commercial success is a rearrangement of the links between and among hydrocarbon molecules. It has been a very long time since refineries were described as structures that boil oil or simply are a bubble in the oil pipeline. Today's refineries are complex, sophisticated, state-of-the-art facilities that operate most efficiently while providing consumers with the reliable products that drive the Nation's economy from clean burning gasoline, diesel and home heating oil to the petrochemical feedstocks that are building blocks for a multitude of products, asphalt to aspirin, cosmetics to computers, heart valves to helmets, pharmaceuticals to patio furniture. The domestic refining industry is the linchpin for these products. Transforming various hydrocarbon molecules, again, rearranging the molecular links of the oil in a technologically advanced, environmentally sound and economically viable fashion is vital to the

success of the domestic refining industry and the overall economy it drives.

There are more consequential links as well, the link between energy and economic strength for the entire Nation and the link between energy and American security. The question before this committee today and ultimately for the entire Nation is, will the current draft of the American Clean Energy and Security Act of 2009 or similar legislation forge stronger, more viable links than these vital chains or will doing so lead to adverse economic impacts not on just the domestic refining industry but on the Nation's economy. The answers to these questions must be fully investigated, understood and documented before enactment of any legislation. Most likely, we have but one chance to get it right. The Nation simply can't afford anything short of a complete understanding.

Lastly, the provisions of the draft legislation neglect to ensure one other link, the link between international participation and the ultimate success of the initiative. For example, and we have heard this over and over today, China continues to state that it will not participate in any program that restricts its emissions. International participation is a critical issue as we need to implement any program. One ton of CO_2 emitted in Columbus, Ohio, is indistinguishable from one ton emitted in Beijing, Mumbai or Moscow.

The possible consequences should determine the pace or else the pace could determine the consequences. Mr. McCurdy stated that you good people have sat here for 4 days in a marathon and I commend you for that. Again, I really commend you for that. But don't try to sprint to the finish line. Keep the marathon going. It is a marathon, not a sprint. We have to know everything before we can go forward, and to that extent, I would ask that we have some more hearings on the transportation sector of this bill. Thank you very much.

[The prepared statement of Mr. Drevna follows:]

Written Statement of

Charles T. Drevna
President
National Petrochemical & Refiners Association

on

"The American Clean Energy Security Act of 2009"

before the

Energy and Commerce Committee
U.S. House of Representatives

April 24, 2009

I. Introduction

Good morning, Chairman Waxman, Ranking Member Barton, and Members of the Committee. My name is Charlie Drevna. I am President of the National Petrochemical and Refiners Association (NPRA). NPRA is a national trade association with more than 450 members, including those who own or operate virtually all U.S. refining capacity, as well as most of the nation's petrochemical manufacturers who supply "building block" chemicals necessary to produce products ranging from pharmaceuticals to fertilizer to Kevlar. I appreciate the opportunity to testify at today's hearing regarding the impacts of climate legislation on the transportation sector.

II. Summary of NPRA's Views on the Discussion Draft

Climate change is a complex public policy challenge that must be addressed with realistic, long-term strategies recognizing the vital role that all forms of energy – traditional, alternative and renewable – will play in maintaining our country's freedom, economic strength and quality of life. NPRA supports the advancement and deployment of new technologies that bring reliable, affordable, and clean supplies of domestic energy to consumers. However, we have serious concerns with the ability of the "American Clean Energy and Security Act of 2009" discussion draft to achieve these goals, particularly in relation to the transportation sector.

NPRA members produce the gasoline, diesel and jet fuels that power virtually all of our nation's transportation needs. In addition to providing the energy necessary for the driving public, these fuels are essential for shipping companies to deliver products and packages to homes and store shelves daily. They also fuel the thousands of planes that move people around the country each day and are the primary energy source for the United States military. Petroleum-based fuels are and will continue to be a critical component of our nation's energy needs and economic growth for decades to come. As currently written, the Committee's draft climate legislation could have several adverse impacts on refiners' ability to produce the fuels necessary to drive an economic recovery and enhance the transition to an even more diverse energy future. If key issues are not addressed, this

legislation could drive up not only consumer costs at the pump and on home heating oil bills, but possibly costs for products ranging from food to medicine.

The discussion draft contains three main areas of concern for the refining industry: 1) multiple layers of regulation on the refining sector, with the proposed "Low Carbon Fuels Standard" or LCFS of primary concern; 2) international competitiveness and American energy security, and 3) achievability, jobs and economic cost. Effective and efficient federal climate change legislation need not contain duplicative provisions aimed at the nation's refining and petrochemical industries. NPRA urges Members of this Committee to address these issues as this draft proceeds through the legislative process.

If Congress and President Obama decide that federal climate change legislation must be adopted, then such legislation must: (1) set a realistic carbon reduction target without political pre-conceptions or punitive provisions and allow the innovative nature of American businesses to achieve those goals through the most efficient means; (2) protect impacted American industries and the existing jobs of the employees in these industries from international competition from companies in countries that do not constrain CO2 emissions; (3) prevent mandating contradictory or redundant policies; (4) establish a single federal carbon constraint program that supersedes all other federal, state and local statutes and programs; and, (5) not advantage or disadvantage one form of energy over another with respect to carbon constraints.

III. Specific Comments on the Discussion Draft

A. The Continued Role of Crude Oil in Our Nation's Energy Portfolio

NPRA's central concern with this discussion draft is that it underestimates the vital role products derived from crude oil play in the U.S. economy and energy marketplace. By far, crude oil is the dominant source of energy for transportation fuels in the United States and across the world.

Crude oil is responsible for 96 percent of the energy used in the U.S. transportation sector.[1] The products made by NPRA members will and must continue to be an important energy resource as we transition toward using new alternative and renewable energy sources. Policies imposing overlapping and overly costly regulations on the producers of petroleum-based fuels, particularly under the current economic circumstances, will impact the ability of these producers to operate – *driving more production of finished products overseas and increasing costs for consumers.* Such economic impacts will affect not only the oil industry, but the entire economy. In addition, policies that not only overlap, but look to aggressively achieve reductions before sufficient technologies are available could serve to threaten current economic conditions and inhibit future investment in advanced technologies. The discussion draft currently requires that refiners comply with the existing Renewable Fuels Standard (RFS), an LCFS that overlaps the RFS as it is gradually phased out in the bill, and hold allowances for the greenhouse gas (GHG) emissions that will result from consumer combustion of motor fuels. The LCFS alone will prove challenging and could create unintended consequences.

B. Adoption of a Low Carbon Fuel Standard is Redundant and Punitive

The discussion draft calls for phasing out the RFS and phasing in an LCFS. The LCFS would completely replace the RFS beginning in 2023. From 2014 - 2022, the LCFS would require that the petroleum portion of the fuel supply alone (excluding renewable fuels required by the RFS) cannot have annual average lifecycle GHG emissions greater than the 2005 baseline for transportation fuels (e.g. gasoline, diesel and jet fuel). Beginning in 2023, the Act would require a five percent reduction in lifecycle GHG emissions from the 2005 baseline and a 10 percent reduction beginning in 2030. NPRA has several concerns with this proposal.

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[1] U.S. Energy Information Administration, *Annual Energy Review 2007*, http://www.eia.doe.gov/emeu/aer/pecss_diagram.html

First, an LCFS is redundant, because transportation fuels would already be covered under the cap and trade program that is the dominant feature of the discussion draft. Manufacturers of transportation fuels will be forced to pay more for the carbon content of these fuels each year as the cap on carbon emissions decreases over time. In making carbon-based fuels more expensive and restricting carbon emissions economy wide, the cap looks to legally reduce the amount of carbon that can be emitted from the transportation sector. The LCFS proposal simply seeks to reduce the use of transportation fuels derived from crude oil faster than the pace required under the cap and trade program. *There is no justification for such a redundancy.*

Second, an LCFS could threaten American energy security by *significantly decreasing viable and available options – limiting the supply menu.* Canada currently is the largest exporter of crude oil to the United States. Much of this crude oil is derived from the ample oil sands deposits located in Canada's western provinces. The use of Canadian oil sands has increased exponentially so that many refiners throughout the United States are utilizing economical, heavier crudes to make their finished products. For example, refiners producing fuels and petroleum products in PADD II, which incorporates the entire Midwest, receive 74 percent of their oil imports from Canada.[2] Several environmental organizations have initiated efforts to block Canadian crude deliveries to the United States using arguments centered on "lifecycle" carbon emissions. If an LCFS were used to discriminate against or otherwise impede Canadian crude imports into the United States – as is the case in the LCFS California is currently considering – there would be several adverse impacts on American energy security and refinery production. Assuming the artificial unavailability of Canadian oil sands for domestic use, American refiners would be forced to use crude supplies from other regions – including sources from unstable countries or those not aligned with U.S. interests. Such a scenario threatens American energy security by severely constraining and shifting our import

[2] Canadian Association of Petroleum Producers, *Carbon Standards: What is the right choice for Canada and the US?*, Woodrow Wilson Cross Border Energy Forum, October 2, 2008, slide 3.

portfolio away from a near-by, friendly, and strategic ally and increasing our reliance on oil from potentially unreliable sources.

In addition to security concerns, forcing refiners to purchase more costly crude from unstable sources at a time when American refiners are already experiencing huge margin decreases – and even posting losses in some cases – could have the effect of raising the price of such crude slates further. High crude oil prices, combined with high LCFS credit prices, would have an adverse impact on refining capacity in the United States, increasing our reliance on foreign governments for *both our crude oil and refined products* and creating supply problems for U.S. consumers.

Third, crude oil supplies are a global commodity. All crudes produced, regardless of origin, will find their way into the global marketplace. Given this reality, policies requiring a shift in U.S. crude supply from Canada to other crude producers would likely have additional unintended consequences of increasing GHG emissions globally due to incremental transportation of crudes into the United States and out of Canada. Canada has chosen to develop its oil sands and if the United States refuses to import this product, it will find buyers elsewhere. The ensuing "crude shuffle" that could occur from more overseas tanker shipments to the United States and more Canadian tanker shipments of oil sands to Asia or another destination could easily result in global GHG increases. Canada is already taking steps to reduce the carbon footprint of oil sands operations and control carbon emissions generally. Canadian mitigation initiatives combined with the potential for unintended emission consequences leads to a logical conclusion that an LCFS should not be used to discriminate against our nation's top oil supplier.

Fourth, an LCFS could conflict with the existing RFS, adopted under the Energy Security and Independence Act of 2007 (EISA). As previously mentioned, the RFS phases out as the LCFS phases in, with the LCFS completely replacing the RFS in 2023. However, the LCFS proposal in the discussion draft fails to address many of the fundamental legal, scientific, and policy issues that currently exist with respect to the RFS. Under EISA, the fuels sector is already facing mandates that

may not be achievable. Specific GHG emissions reductions are required under these mandates. The achievability of these reductions is being questioned as new science indicates corn-based ethanol may result in more GHG emissions than gasoline on a lifecycle basis. It is ill-advised to regulate further when serious questions remain about what is possible or realistic even under existing mandates. Given this situation, significantly more scientific research needs to be conducted before the government should consider creating a LCFS.

There are many challenges with simply defining an LCFS. How to define lifecycle GHG emissions and determine the points of measurement are questions critical to determining the effectiveness of any program. To date, policymakers wrestling with this issue have yet to develop any workable consensus on these critical definitions. Such determinations would also create overly complex – and costly – regulations. In addition, there is serious concern over what tools are available to achieve an LCFS. One study focusing on the 110th Congress' Lieberman-Warner climate legislation assessed the impacts of the LCFS in that bill. It spoke directly to the issue of achievability, noting: "Since the LCFS requirements go beyond what can be accomplished with available low carbon biofuels, gasoline consumption must fall to make the share of low carbon biofuels sufficient to satisfy the LCFS. Therefore, delivered pump prices (including the price of LCFS credits, if a trading system is created) must rise sufficiently to choke off gasoline demand...."[3] The study concluded prices would have to rise more than 140 percent in the early years of the program to dampen demand enough for compliance achievability. It also made the assumption that corn-based ethanol would be available as a compliance tool, which, as previously mentioned, may not be the case. While the LCFS in Lieberman-Warner was more aggressive than that proposed in the Committee's discussion draft, that study highlights the implications of advancing a standard without necessary tools for achievement, which remains a significant concern.

[3] Smith, Anne E. and Montgomery, W. David, "Economic Analysis of the Lieberman-Warner Climate Security Act of 2007 Using CRA's NRM-NEEM Model," CRA International, April 8, 2008.

More recent reports continue to raise additional concerns about advancing an LCFS. A Marshall Institute report described an LCFS as a "highly inefficient means to reduce GHG emissions [because it] implicitly subsidizes consumption of a fuel such as ethanol that results in increased emissions."[4] The same report assessed the annual costs for a hypothetical LCFS effective in 2020 and derived that it would cost $65.5 billion—equivalent to $570 per household annually. It also found that the cost per ton of carbon removed by an LCFS is an order of magnitude greater than the estimated costs imposed by GHGs, and also an order of magnitude greater than the costs per ton of other measures that would reduce these gases.

Finally, imposing an LCFS on petroleum refiners places the compliance obligation squarely on an industry that has no ability to control the most critical factors necessary for the achievement of the program – alternative fuels, vehicle production, and infrastructure creation. Petroleum refiners have no method of ensuring the use of alternative and/or renewable fuels that have lower lifecycle GHG emissions than gasoline and diesel. Gasoline is carbon by nature. The only way to significantly reduce carbon from gasoline use is to blend gasoline with another "low carbon" product that petroleum refiners do not produce or to have vehicles on the road capable of running on lower carbon sources of energy (*i.e.*, alternative fuel vehicles). These low-carbon alternative fuels and vehicles currently do not exist in anywhere near commercial quantities and would likely take decades to develop and deploy. Without these compliance tools, the potential consumer impacts could be severe.

C. Compliance Timeframes in Discussion Draft Are Overly Aggressive

The discussion draft places a disproportionate and early compliance burden on the refining industry. Refiners must meet the earliest compliance mandate for fuels in 2013, while other sources

[4] Canes, Michael and Edward Murphy. "Economics of a National Low Carbon Fuel Standard." The Marshall Institute. April 2009. http://www.marshall.org/pdf/materials/642.pdf.

do not begin to be phased in until 2014. NPRA believes such time frames look to achieve aggressive reductions before adequate compliance tools become available.

Gasoline is carbon by nature and *refiners will have few options to reduce compliance costs other than constricting production.* In addition, the requisite costs for compliance will be overwhelming. NPRA internally produced informal estimates indicated that one, smaller sized refinery with 100,000 barrels per day of capacity would have to spend over $360 million annually if it were required to purchase emissions allowances for the fuels it produced. Our estimate was developed assuming a conservative carbon price of $26 per ton and taking into account 30 days of down-time for maintenance per year. It also assumed that refinery would receive five percent of its allowances for free. In some cases, such compliance costs represent more than one third of the profit for some large independent refiners during a robust year. Based on results from last year, when much of the refining sector saw negative margins, such a cost could easily be more than many of our companies could bear. On an aggregate basis, these costs would add up to approximately $54 billion per year for the refining industry and escalate over time as the cost of the program increases. In 2008, NPRA commissioned a study of the Lieberman-Warner Climate Security Act, which concluded carbon costs for the refining industry would be $168 billion a year by 2030 under a cap and trade program similar to that proposed in the discussion draft.

D. Refining Industry Is Energy Intensive and Subject to International Competition

The nation's domestic refining industry is incorrectly excluded by definition from qualifying for the rebates provided to other "energy intensive" sectors in Title IV of the discussion draft. The production processes used by the domestic refining industry is extremely energy intensive. Refiners also face intense global competition in the transportation fuels marketplace. As a result, *domestic refining industry should not be excluded from eligibility for rebates under the discussion draft.*

Two factors determine whether an industry impacted by the carbon constraints in the discussion draft is eligible for rebates: 1) the energy intensity of its manufacturing operations; and,

(2) its exposure to international competition. The discussion draft incorrectly concludes that the domestic refining industry is not energy intensive and does not face foreign competition that would prevent it from passing through increased costs caused by carbon constraints.

1. The Domestic Refining Industry Is Energy Intensive

The draft legislation's assumption that the refining industry is not "energy intensive" is derived from a calculation that severely underestimates energy intensity in the refining industry. Section 403(b) of the discussion draft includes a methodology for calculating energy intensity using the U.S. Census Annual Survey of Manufacturers. While this may be an appropriate method for many industries, it clearly is not for petroleum refineries. Most of the fuel used at petroleum refineries is "still gas." Still gas is a hydrocarbon generated as a byproduct at the refinery and, as such, is not reflected in the U.S. Census Annual Survey of Manufacturers because it is not purchased. Still gas is one of the many components of the crude oil that refiners purchase and process. If it were not indigenous in crude oil, refiners would have to purchase that required energy elsewhere; therefore, it is a real cost because it represents lost production and associated product value. Similarly, a coal-like substance called petroleum coke is often created and burned in the refining process. Like still gas, "pet coke" is a byproduct derived from crude oil and the energy it produces would have to be purchased elsewhere if it were not processed from the barrel of crude oil. As hydrocarbons, both pet coke and still gas generate CO2 when burned. Therefore, a refinery would be responsible for securing allowances for these CO2 emissions.

If a refinery must secure allowances, then still gas and pet coke volume should be counted when calculating energy intensity. Although still gas and pet coke data are not available in the U.S. Census Annual Survey of Manufacturers, this data is reported by the Energy Information Administration (EIA) reported in its "Petroleum Supply Annual."[5] Recognizing still gas and pet

[5] To view EIA's still gas and petroleum coke data for 2007: http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/refinery_capacity_data/historical/2008/table12.pdf

coke use would more accurately measure refinery energy costs used for calculating petroleum refining energy intensity.

2. The Domestic Refining Industry Is Uniquely Vulnerable to Foreign Competition

The energy market is global and dynamic, and imposing disproportionate compliance burdens on U.S. refiners will hurt the U.S. economy by increasing our reliance on foreign refiners for refined products. The legislation imposes these compliance burdens because it assumes that refiners: 1) do not have significant exposure to foreign competition and 2) will be able to pass through most additional costs to consumers. These are incorrect and counter-productive assumptions.

The refining industry is unique in that refineries around the world can produce identical and globally fungible grades of finished products. In other words, a gallon of diesel produced in India can be used in the same manner as a gallon of diesel produced in Indiana. Therefore, a U.S. refinery competes directly with other refineries across the world. If U.S. refineries scale back production due to higher marginal operating costs that cannot pass through to the consumer, a refiner in India will make up for that reduction in finished product supply.

America already imports upwards of 10 percent of its finished product and many foreign refineries are being built for the sole purpose of exporting refined products to the U.S. market. These foreign refiners can be built more quickly and at lower cost than American refineries or refinery expansions. The existing cost differences between foreign and domestic refiners are evidenced in permitting and construction time frames. In the same amount of time it took a U.S. refiner to receive the necessary federal, state and local permits for a refinery modernization, another refining company was able to build and bring to full operation a 600,000 barrels per day refinery in India. The Abu

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For tables other than Table 12:
http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/refinery_capacity_data/historical/2008/refcap2008.html
To view EIA's entire "Petroleum Supply Annual:"
http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/historical/2007/psa_volume1_2007.html

Dhabi National Oil Company (ADNOC) is expanding its refinery at Ruwais by 95 percent, from 417,000 barrels per day to 817,000 barrels per day[6] and the total refining capacity of the six Gulf Cooperation Council (GCC) countries (Bahrain, Kuwait, Qatar, Oman, Saudi Arabia, and the UAE) is expected to increase by 45.5 percent in 2010—to 6.3 million barrels per day from 4.33 million barrels per day.[7] Although the domestic refining industry has added capacity over the last 10 years, such expansions pale in comparison to these foreign projects.

In relation to pass through of carbon costs, only two market conditions would lead to full pass through of additional costs to consumers: "perfectly inelastic demand" or "perfectly elastic supply." Perfectly inelastic demand means that consumers will buy the product no matter what it costs. Perfectly elastic supply means that producers can supply any amount of their product at the same marginal costs. Supply and demand for finished petroleum products meets neither of these criteria. The demand for refined products is elastic, as consumers change their behavior to reduce their consumption of fuels when prices rise and have the option to substitute with ethanol and flexible fuel-vehicles. The supply for the refining industry is not elastic—foreign refiners can freely access the U.S. market, and can frequently sell their products for less, particularly if their home country has not committed to an internationally recognized GHG-emission-reduction path.

History has shown that the refining industry is not able to pass through all additional costs. *Previous variations in the "crack spread," the difference between the price of a barrel of finished petroleum products and the cost of a barrel of crude oil, demonstrate that there is not a linear correlation between the two prices.* Prior empirical evidence from the literature on gasoline tax incidence also indicates that that cost pass through rates may be only 50 percent for various

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[6] *The National.* "ADNOC committed to expansion." March 24, 2009.
http://www.thenational.ae/article/20090324/BUSINESS/833220926/1005.

[7] *Oil & Gas Journal.* "GCC countries' refining capacity to rise 45% by 2010." October 10, 2008.
http://www.pennenergy.com/index/articles/display/308651/s/articles/s-oil-gas-journal/s-processing/s-gcc-countries-refining-capacity-to-rise-45-by-2010.html

petroleum products.[8] In addition, market conditions from last year highlight the inability of the refining industry to pass costs through, particularly in times of falling demand. When oil prices skyrocketed to over $140 dollars per barrel, fuel prices increased significantly, but not proportionally. A consumer's willingness to change fuel suppliers over a penny per gallon retail price difference prevented prices from increasing in proportion to cost, causing refiners and retailers to eat much of last year's high crude costs. In addition, the subsequent demand decrease when fuel prices reached record high levels forced refiners to absorb even more costs. The realities of this situation are evidenced by the fact that throughout most of last year, many refiners were actually losing money. *Since refiners cannot pass through all of their costs now, it is highly unlikely they will be able to pass through the significant costs of a carbon control program, particularly in light of increasing competition from abroad.*

E. Allocation of Emissions Allowances

The issue of pass-through speaks directly to the issue of allowance allocations in a cap and trade program. Although the discussion draft does not address allowance allocation, NPRA is concerned about this issue and its potential impact. Past climate change proposals, such as the Lieberman-Warner Climate Security Act, have discriminated against the refining industry with respect to allowance allocations. Such a policy would adversely impact the industry and consumers.

The refining sector is unique under the proposed legislation in that both the product and the facility making it are regulated. The transportation sector represents approximately 30 percent of the nation's total greenhouse gas emissions, *but the refining industry would not receive any allocations in order to account for those emissions under several climate proposals introduced to date.* In addition, foreign importers are responsible only for their finished product emissions, not the process emissions from refineries abroad. Failing to account for foreign process emissions could

[8] NERA Consulting- Market Conditions and the Pass-Through of Compliance Costs in a Carbon Emission Cap-and-Trade Program, January 2008.

automatically give foreign-based refiners a 10 percent cost advantage over the U.S. refining industry. If emissions allowances are not distributed in an equitable and transparent manner, they will damage the competiveness of U.S. refiners and endanger our domestic supply of gasoline, jet fuel, home heating oil and other petroleum-based products.

F. Impact of Discussion Draft on American Jobs

Any climate change legislation enacted by Congress must, in addition to protecting our economy, make every possible effort to protect and preserve existing American jobs. Imposing a CO2 control program that increases costs and operating burdens for American refiners will damage their ability to operate domestically and could lead to lost jobs when refiners are forced to slow or shutter facilities. The promise of "green jobs," as opposed to existing, well-paying refining industry jobs, may prove illusory, to the detriment of our tens of thousands of employees and their families, as well as to the overall U.S. economy.

A recent study found that a "green jobs" creation campaign in Spain actually destroyed jobs and required over half a million dollars to create each job. [9] Spanish researchers found that each "green" megawatt installed in Spain destroyed 5.39 jobs in non-energy sectors and that only one in ten of the "green jobs" was of a permanent nature, as the rest were in construction and administration. The study projected that if the U.S. subsidized renewable producers to achieve a similar portion of "green jobs" as Spain, the U.S. could lose 6.6 million to 11 million jobs while creating three million largely temporary "green jobs."

G. International Participation and Achievability

Although the draft legislation seeks to reduce GHG emissions 83 percent by 2050, the structure of the legislation creates two challenges to achieving meaningful global emissions reductions.

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[9] "Study of the effects on employment of public aid to renewable energy sources." Universidad Rey Juan Carlos. March 2009. http://www.juandemariana.org/pdf/090327-employment-public-aid-renewable.pdf

First, this legislation does not contain adequate provisions to ensure international participation. While the Obama Administration has signaled its willingness to participate in the UN climate talks later this year, *China has indicated that it will not participate in any program that places restrictions on its emissions.* International participation is a critical issue, as we need to assure that any program we implement will actually create global reductions while also protecting our economic competitiveness. Any legislation enacted must contain provisions to prevent leakages of both jobs and emissions. *Without international participation, any carbon control measures taken by the U.S. would have little or no impact on potential climate change.*

Our second concern with the legislation deals with the achievability of the announced goal. In 2008 NPRA commissioned a study assessing the impact of Lieberman-Warner on the transportation sector and the economy. The study took into account the potential for electric vehicles and other potential alternatives to come into the market and be used as carbon reduction tools in the transportation sector. The study concluded that even after considering the possibility for all alternatives, the most cost effective pathway for reductions would be through the use of ethanol (again, assuming it does not lead to more GHG emissions). NERA projected that 68 billion gallons of ethanol would be needed to achieve transportation emissions reductions under a framework calling for a 70 percent reduction in GHG emissions by 2050. These results mirror EIA's conclusions of what it would take to meet a 25 percent RFS by 2025. In its analysis, EIA, concluded the fuel supply would need to contain 66 million gallons of ethanol – an amount that completely exhausts the entire American biomass supply.[10] These results raise serious sustainability issues, especially in light of two recent studies showing that ethanol production played a role in the rise in food costs[11] and that

[10] Executive Summary of "Impacts of Potential Climate Change Policy on the Refining and Petrochemical Sectors." Prepared by NERA Economic Consulting for National Petrochemical & Refiners Association. April 2008. http://www.npra.org/files/NERA_Report_Executive_Summary_S_2191.pdf

[11] Congressional Budget Office. "The Impact of Ethanol Use on Food Prices and Greenhouse-Gas Emissions." April 2009. http://www.cbo.gov/ftpdocs/100xx/doc10057/04-08-Ethanol.pdf

ethanol production requires the use of more water than previously thought.[12] They also highlight the need for policy makers to assess whether or not the tools necessary for a more diverse transportation energy mix will be available along the timelines for required emissions reductions in the discussion draft.

IV. Conclusion

Federal climate change legislation must be fair and effective in achieving its goals. A federal policy to address climate change must be based on cost-effective approaches that maintain the global competitiveness of the entire U.S. economy and treat all sectors and industries equitably. Such policy must enhance our energy security, ensure the strength of our economy, and contain realistic assessments regarding the development of technologies necessary to achieve required emission reductions.

NPRA feels the Committee needs to address critical issues in the discussion draft before the goals of a finalized legislative approach can be achieved, particularly in the transportation sector. Crude oil and the transportation fuels derived from crude are vital pieces of our economy and everyday life. Climate policy must recognize the continuing need for these energy sources in the near future and throughout the long term transition to a more diverse energy portfolio. Failure to do so could result in adverse consequences for our economy, threatening investment in future technologies.

Thank you for the opportunity to testify at this hearing today. I would be pleased to answer any questions my testimony may have raised.

[12] Sattler, Casey. "Study: Corn Ethanol's Water Needs Vary Significantly by Region." Oil Daily. April 16, 2009. www.oildaily.com

Mr. MARKEY. Thank you, Mr. Drevna. I have been on the Energy Committee for 33 years, the Natural Resources Committee for 33 years, so that is 66 years of hearings that I have gone to, and the Speaker created a Select Committee on Global Warming and Energy Independence and that gave me 3 more years of hearings that I have had on the subject, so I do think of it as a marathon, believe me. Most of these issues have been percolating around here for a long, long time. That much I can promise you.

Our next witness is—and I don't think anyone else is ever going to try it again, go to the number of hearings I have gone to on these subjects. You can already see the effect that today's hearing has had on our membership.

Our next witness is——

Mr. UPTON. If the gentleman would yield for just a second, I remember when Mr. Dingell had hearings like these and he had coffee in front of everybody and so they went maybe a little faster.

Mr. MARKEY. In many ways they went a lot faster with that coffee in front of them.

Mr. Andrew DeLaski is the executive director of the Appliance Standards Awareness Project, a coalition dedicated to advancing cost-effective appliance and equipment efficiency standards. He is joining us here today from my home State of Massachusetts, so we welcome you, Mr. DeLaski.

Mr. SPERLING. Excuse me, Chairman. I have to leave. I have a flight back to California out of Dulles now. I am really sorry.

Mr. MARKEY. And we apologize to you, Dr. Sperling, and by the way to all of the witnesses and those who are accompanying our witnesses today, you could, I think, capture the intensity of interest which the members had in the questioning of Vice President Gore and Newt Gingrich, so it went for an unexpectedly long period of time and it is with our apologies to you that we request that you work with us over the next month or so towards developing a bill which does reflect, you know, the highest aspirations. Thank you, sir.

Mr. SPERLING. Thank you.

Mr. MARKEY. Again, back to you, Mr. DeLaski. Whenever you are ready, please begin.

STATEMENT OF ANDREW DeLASKI

Mr. DELASKI. Thank you, Mr. Chairman. I will just say a word about ASAP. ASAP is a coalition project which consists of representatives of energy efficiency advocacy organizations, environmental and consumer groups including low-income advocacy organizations, State government and utilities. Our mission, as you said, is to advance cost-effective energy efficiency standards for appliances, lighting and equipment.

My testimony today is limited to subtitle B concerning the appliance and equipment standards in the bill. I will summarize just a few key points from my in-depth testimony. Congress first enacted natural appliance, equipment and lighting standards in 1988, as Chairman Markey well knows, in legislation that you authored. It added new standards in 1992, 2005 and 2007. In general, Congress has established initial standards by statute and directed the Department of Energy to review standards on a set schedule, increas-

ing to higher efficiency levels if shown to be technically feasible and economically justified. The American Council for Energy Efficient Economy, ACEEE, estimates that absent existing national standards, U.S. electricity use of peak electric demand would be about 10 percent higher in 2010 than currently projected. ACEEE also estimates that consumers and businesses which buy the affected products will net more than $400 billion in net savings from already existing standards.

The enormous energy, environmental and economic benefits delivered by national product efficiency standards have contributed to a history of strong bipartisan support and cooperation for new standards and enhancements to the Department of Energy's program structure. The bill before us today builds on this successful history.

We thank Chairman Waxman and Subcommittee Chairman Markey for including the important appliance efficiency subtitle in ACES. The subtitle consists of three parts. Sections 211 and 212 enact specific new standards for six categories of products including portable electric spas, as we learned earlier. Section 213 provides critical enhancements to improve overall effectiveness and responsiveness of a DOE program, and sections 214 and 215 provide the voluntary programs including EnergyStar. We estimate that the specific standards included in ACES will save at least 17 billion kilowatt-hours annually by 2020, or roughly enough to meet the needs of 1½ million typical U.S. households. The standards included in the bill would reduce power sector carbon dioxide emissions by about 12 million metric tons per year in 2020.

I would like to especially call out the outdoor lighting standard initially introduced by Representative Harman. This standard offers the lion's share of the savings from the specific standards in the bill. Discussion between members of the industry and efficiency proponents that I work with are ongoing. We remain optimistic that we will have further joint recommendations to present to you shortly on outdoor lighting.

The program reforms in ACES are just as important as the specific efficiency standards. As we have gained experience with DOE rulemakings through the course of several Administrations, we have learned some of the shortcomings of a statutory structure which can stand in the way of cost-effective efficiency gains. The bill contains several important reforms which address some of these shortcomings, and I will highlight just two but we support the entire package of reforms for the Department of Energy's program. First, the bill makes clear the DOE authority to apply more than one efficiency metric as part of a single product's efficiency standard. While Congress has set more than one requirement for at least a dozen products in statute, DOE has recently held that the law prevents the agency from including more than one requirement per product. Often a standard for a given product must include more than one element to capture different aspects of a product's efficiency, for example, energy and water efficiency, gas and electric efficiency in the case of a furnace which uses both gas and electricity, or to capture the cost-effective savings from controls or other technologies that are not reflected in a product's test method. For example, successful application of smart grid technology and

demand response technology may depend on specific appliances including particular control features. Such features are typically not represented in a performance test method but may be a critical feature of future energy efficiency standards. The Department's current interpretation of the law will prevent this sort of requirement in future appliance standards. This provision passed the House in 2007 and we strongly urge you to act on it again.

Another area I would like to highlight concerns the preemption limits that national standards place on State building codes. House and Senate energy bills have proposed federal targets of 30 percent savings in new buildings in the near term and 50 percent savings later through better building codes. However, the preemption associated with national appliance standards effectively puts savings from space and water heating and air conditioning off limits even when such savings would be very cost-effective for new construction and major renovations. The discussion draft will create new flexibility for State building codes while still preserving a basic structure, a basic federal preemption framework.

There are several other program reforms which we also support. Suffice it to say that as a package, these reforms significantly strengthen the national appliance standards program and will pave the way for greater energy savings and benefits.

Finally, with respect to the voluntary programs, we are concerned that the limits in section 215 which are placed on the EnergyStar program would make some of the existing EnergyStar programs, home furnaces and other products, would end those programs. We urge that section be modified.

In sum, we support the subtitle and look forward to working with the committee to make it even better.

[The prepared statement of Mr. DeLaski follows:]

Testimony of Mr. Andrew deLaski,
Executive Director
Appliance Standards Awareness Project (ASAP)

Before the U.S. House of Representatives
Energy and Commerce Committee

Hearing on:
American Clean Energy and Security Act of 2009

April 24, 2009

Summary

Congress first enacted national appliance, equipment and lighting standards in 1988 and added new standards as parts of the Energy Policy Acts of 1992 and 2005 and the Energy Independence and Security Act of 2007. In general, Congress has established initial standards by statute and directed the U.S. Department of Energy (DOE) to review standards on a set schedule, increasing to higher efficiency levels if shown to be technically feasible and economically justified. The American Council for an Energy-Efficient Economy (ACEEE) estimates that, absent existing national standards, U.S. electricity use and peak electric demand would be about 10% higher in 2010 than currently projected. ACEEE estimates that consumers and businesses which buy affected products will net more than $400 billion by 2030 (2008$) due to already existing standards. The enormous energy, environmental and economic benefits delivered by national product efficiency standards have contributed to a history of strong bi-partisan support and cooperation for new standards and enhancements to DOE's program structure.

Subtitle B of **American Clean Energy and Security Act (ACES) of 2009** builds on this successful history. We thank Chairman Waxman and Chairman Markey for including this important appliance efficiency subtitle in ACES.

The subtitle consists of three parts:

- Sections 211 and 212 enact specific new standards for six categories of products;
- Section 213 provides critical enhancements to improve the overall effectiveness and responsiveness of the DOE program, and;
- Sections 214 and 215 relate to voluntary programs, including ENERGY STAR, which work in conjunction with standards to promote sustained improvements in energy efficiency.

We estimate that the specific standards included in ACES will save at least 17 billion kilowatt hours annually by 2020, or roughly enough to meet the needs of 1.5 million typical U.S. households. The standards would reduce power sector carbon dioxide emissions by nearly 12 million metric tons per year.

The program reforms in ACES are just as important as the specific standards. As we have gained experience with DOE rulemakings over the course of several administrations, we have learned of some of the shortcomings of the statutory structure which can stand in the way of cost-effective efficiency gains. Some shortcoming were addressed in EISA – for example, Congress granted the agency authority for regional standards for climate sensitive products and required periodic DOE review of all standards.

ACES contains eight additional reforms which significantly enhance the potential for energy, economic and environmental benefits. We support these reforms with some modifications and recommend a few more.

1. Multiple metrics (sec. 213(a))

While Congress has set more than one requirement for at least a dozen products in statute, DOE has recently held that the law prevents the agency from including more than one requirement per product. Often, a standard for a given product must include more than one element to either capture different aspects of its efficiency (e.g.; energy and water efficiency; electrical and gas efficiency; peak and average efficiency) or to capture cost-effective savings from controls or other technologies that are not reflected in a product's test method. For example, DOE held that it could not adopt a standard for home boilers recommended by industry and advocates because it consisted of a performance requirement plus a ban on standing pilot lights and a controls requirement. In the not-so-distant future, successful application of Smart Grid and demand response technology may depend on specific appliances including particular control features. Such features are typically not represented in a performance test method, but may be a critical feature of future energy-efficiency standards.

This provision passed the House in 2007 and we strongly urge you to act on it again.

2. State building codes and preemption (Sec. 213(j))

House and Senate energy bills have proposed federal targets of 30% savings in new building in the near term and 50% savings later through better building codes. However, the preemption associated with national appliance standards effectively puts savings from space and water heating and air conditioning equipment off limits, even when such savings may be very cost-effective for new construction and major renovations. ACES would create new flexibility for state codes, while still preserving a basic federal preemption framework. It would provide two options. First, states could adopt above federal code requirements included in certain model codes. This provision already exists for commercial heating and cooling equipment; ACES extends the same approach to residential equipment. Second, states could include code-compliance options which include above federal minimum products as long as other reasonably achievable options include only minimally-compliant products. We strongly support this provision – it will make a big difference for improving the overall efficiency of new homes.

3. DOE collection of key data for making standards decisions (Sec. 213(e))

It's very difficult to make good regulatory decisions without good data on efficiency performance and costs. The statistician's adage, "Garbage in; garbage out" applies well to decisions about new standards. However, DOE sometimes fails to obtain critical data needed for developing new standards. ACES would require DOE to conduct a rulemaking to determine what data manufacturers must submit, inclusive of efficiency performance data, to enhance DOE decision making. Improved data will also aid other programs such as ENERGY STAR. For example, in the past few weeks DOE posted data on ENERGY STAR product market share in 2007, but noted that the data appeared flawed.

4. Remove the Catch-22 from the state waiver petition process (Sec. 213(g))

Under current law, the Secretary can approve a state application for a waiver from federal preemption for a given standard needed to meet the "unusual and compelling" needs of that state. However, manufacturers can deny petitioning states access to information needed to meet the requirements of the waiver applications process. ACES would eliminate this Catch-22, while still preserving the basic decision criteria of the waiver process. Waivers would remain difficult, but no longer verge on the impossible.

5. State authority to seek injunctive enforcement (Sec. 213(i))

Compliance with federal standards is essential for achieving the expected energy savings. Under present law, only the federal government may bring enforcement actions, but since there is no federal budget for this, no significant enforcement is taking place. ACES would allow states to bring their expertise and resources to bear on compliance by enabling them to seek injunctive enforcement of federal standards in federal court on an equal basis to the Federal government. All provisions of federal law apply. Such a provision was included in EISA for general service incandescent lamps. It should be extended to other regulated products.

6. Closing the reflector lamp loophole (Sec. 211(b)(3))

Based on DOE's data, reflector lamps comprising about 30% of sales have been left out of proposed standards for this category due to a legal interpretation arising from EISA. While EISA set specific standards for certain reflector lamps, we do not believe it was the intent to shelter other lamps from DOE standards in perpetuity, creating a big loophole. Recently, manufacturers and advocates agreed on a timetable for a DOE rulemaking to address this problem, and this timetable was adopted in the Senate committee markup of their appliances bill (S.598, Sec. 7). We urge the House to adopt this compromise as well.

7. Enhanced decision criteria for new standards (Sec. 213(d)(1))

New standards must be economically justified as determined by the Secretary according to seven factors. Although these factors give the Secretary significant discretion, DOE has sometimes ignored important benefits. ACES would rectify this problem by requiring the Secretary to consider the economic benefits of reduced emissions and the impact of energy savings on the overall energy price level. These are important national benefits which should be weighed in decision making. While we support these enhancements, we recommend dropping a final addition concerning commercial availability and market share (Clause (X) on page 242). DOE already must demonstrate "technological feasibility" and routinely searches out all technical options. We are concerned that this new clause could be construed as the basis for a market share test, which would be a new restriction on DOE standards.

8. Strengthen the rebuttable presumption (Sec. 213(d)(2))

The main decision criteria for new standards provide the Secretary significant discretion. An alternative decision tool is based on simple payback – if a standard pays back any additional up-

front cost in three years or less, it is presumed to be justified. However, DOE has ignored this provision, in part because the statute lacks guidance on what is required to rebut a standard meeting the payback criterion. ACES provides a clearer test: a standard may only be rebutted if there is clear, convincing and reliable evidence of hardship imposed on consumers or manufacturers outweighing the benefits. In addition, ACES extends the payback period to 5 years, making the clause more likely to have an impact. We support this clause with one modification. To accommodate products with short operating lives, the rebuttable presumption should be based on the shorter of 5 years of 75% of a product's life to avoid paybacks longer than a product's operating life

We also recommend several program reforms included in Senators Bingaman's and Murkowski's appliances bill (S. 598) as marked up in their committee last month. These include:

- A process and deadlines for DOE response to stakeholder request for test procedure rulemakings;
- Deadlines for DOE response to petitions for standards rulemakings;
- A study of current compliance with standards, and;
- Requirements for DOE and EPA to review ENERGY STAR levels and to establish more reliable methods for demonstrating compliance.

In addition to these critical program reforms ACES includes a number of specific new standards.

The biggest energy saver among the proposed new standards would cover **outdoor lighting** such as street lights, parking lot lights and other area lights. This proposal, originally introduced by Representative Harman (H.R. 1732), is based on a concept first brought forth by Philips Lighting. Discussions between efficiency organizations such as my own, Phillips and other lighting companies are ongoing. We strongly support the concept of national standards for these products and look forward to working with other stakeholders and the Committee. We are especially concerned that any final standard be adequately strong and that the standard and any exemptions, if necessary, are carefully constructed so as to avoid unintended loopholes and lost savings.

The second largest energy saver among the standards included concerns **portable light fixtures** such as table and floor lamps. This standard is based on a state requirement from California and is supported by both efficiency organizations such as my own and the American Lighting Association, which represents makers and sellers of portable light fixtures.

The bill also contains four additional standards covering **electric spas** or hot tubs; **drinking water dispensers**, **hot food holding cabinets** and **commercial furnaces**. We support these standards which were developed in consultation with trade organizations including the Pool and Spa trade association, the Air-conditioning Heating and Refrigeration Institute (AHRI) (for furnaces) and individual makers of the other products. All but the commercial furnace standard are based on state requirements in effect in multiple states; the commercial furnace standard is based on a voluntary national standard dating from 1999.

Finally, ACES includes two sections dealing with **voluntary programs**. Section 215 would set limits on the **ENERGY STAR** program, prohibiting ENERGY STAR levels which exceed a three to five year consumer payback. We think this approach is far too restrictive for ENERGY STAR. As a voluntary program covering several scores of products, EPA and DOE need more flexibility to develop appropriate criteria in consultation with stakeholders. For example, the test in ACES would immediately make illegal the current ENERGY STAR program for home furnaces, and no substitute level makes sense. This would leave a gaping hole in ENERGY STAR for the biggest energy consuming appliance in many homes. Other existing ENERGY STAR specifications would also be invalidated.

Section 214 would create a **"Best-in-Class Appliance Deployment Program"** aimed at incentivizing the development and market growth of the next generation of very efficient products. This program, based on concepts developed by Natural Resources Defense Council with input from major national retailers and manufacturers, could be a strong complement to the existing national standards program and the ENERGY STAR program: While standards establish a national floor and ENERGY STAR demarcates and promotes, in general, products which are among the most efficient 25% of current offerings, this new program would provide financial incentive to increase market share of the very most efficient available. Such an effort could pave the way for improved ENERGY STAR levels over time, and eventually, improved standards.

INTRODUCTION

My name is Andrew deLaski and I am the Executive Director of the Appliance Standards Awareness Project or ASAP. ASAP is a coalition project led by a Steering Committee consisting of representatives of efficiency advocacy organizations, state government, consumer and environmental organizations and utilities. Steering Committee members include the American Council for an Energy-Efficient Economy (ACEEE), the Alliance to Save Energy, Natural Resources Defense Council, Consumer Federation of America, National Consumer Law Center, Pacific Gas and Electric, the Northwest Power and Conservation Council, the Energy Foundation and Earthjustice. I have been the Executive Director of ASAP since its founding in 1999 and have worked extensively on both national and state standards over the past decade. I've been intensively involved in DOE rulemakings under three administrations, participated actively in the development of the standards provisions in EPACT 2005 and EISA 2007. I have been involved in helping to advance state standards which have formed the basis of more than a dozen state laws over the past several years. EPACT and EISA together included more than 20 new standards (mostly based on state standards) and critical program enhancements such as limited authority for regional standards for climate-dependent products and requirements for regular DOE reviews of all standards.

The standards in EPACT 2005 and EISA 2007 were added to the framework created by the National Appliance Energy Conservation Act of 1987, and amendments enacted in 1988 and 1992 (EPAct). Consensus standards negotiated between appliance manufacturers and energy efficiency advocates provided the foundation for each of these laws. Most federal standards build on previous state standards: after several states adopt standards on a product, manufacturers generally prefer uniform national standards to a patchwork of state standards. But where manufacturers and efficiency advocates disagree, Congress has commonly delegated decisions to DOE, allowing each side to make its best case and then having the Secretary of Energy decide.

Typically, when Congress has enacted a specific new standard, initial standards are provided by statute and a schedule is established for review and strengthening if improvements are technologically feasible and economically justified.

DOE completed eight major new standards during the Clinton administration and four during the Bush administration, but fell behind on many legal deadlines. Under the terms of a consent decree signed in November 2006, DOE must catch up on 22 overdue standard reviews and, if warranted, complete upgrades by mid-2011. Concurrently, the agency has several deadlines from the recent laws coming due. Thus, rulemaking processes currently underway or about to begin cover some 25 product categories. Under a provision enacted in 2005, DOE must report to Congress every six months on its compliance with deadlines.

Impacts to date are impressive: according to the National Commission on Energy Policy, appliance standards rank second only to auto fuel economy standards in terms of energy saved from national policies.[1] Altogether, ACEEE estimates that U.S. electricity use and peak electric demand would be about 10% higher and U.S. total energy use about 5% higher in 2010 if not for

[1] http://www.bipartisanpolicy.org/files/news/finalReport/HL2.c%20-%20Supplemental%20Info%20on%20EE.pdf .

already existing federal standards. Net savings to consumers from standards already adopted will exceed $400 billion by 2030 (2008$).[2]

However, much more savings are possible through a combination of further updates to existing standards completed through the DOE rulemaking process, plus adding new products to the federal standards program. We estimate that new standards due from DOE within the next few years have the potential to cost-effectively save about 165 billion kilowatt hours annually by 2020 – roughly the amount of electricity used by all the homes in Ohio, Michigan, Illinois and Indiana combined. Such standards could reduce peak demand by another 60,000 megawatts, roughly enough to eliminate the need for 200 power plants at 300 MW capacity each and cut annual global warming emissions by 150 million metric tons. Savings grow over time: ACEEE estimates that U.S. energy use in 2030 can be reduced by about 2.5 quadrillion Btu's (about a 2.2% reduction from projected levels) and carbon dioxide emissions can be reduced by at least 165 million metric tons, a 2.6% reduction from projected levels.[3]

Fortunately, the federal standards program has a long history of bipartisan support, at the Committee level and on the House and Senate floor. Standards laws have been signed by Presidents Reagan (two laws), George H.W. Bush, and George W. Bush (two laws).

The proposed appliance efficiency subtitle of the American Clean Energy and Security Act (ACES) of 2009 builds on these solid foundations. We thank Chairman Waxman and Chairman Markey for introducing this bill and moving the discussion forward on how best to improve the appliance standards program. In the sections below, I comment on the appliance efficiency provisions in ACES, and also on some additional provisions that we recommend be added to increase the energy savings achieved and improve the appliance standards program's processes and interactions with state initiatives.

The provisions of Subtitle B, "Lighting and Appliance Efficiency Programs," fall into three categories, each of which is discussed below:

- Section 213 provides critical **program enhancements** to improve the effectiveness and responsiveness of the DOE's efforts.
- Sections 211 and 212 enact specific **new standards** for five categories of products.
- Sections 214 and 215 relate to **voluntary programs**, including ENERGY STAR, which work in conjunction with standards to promote sustained improvements in energy efficiency.

PROGRAM ENHANCEMENTS IN "ACES"

ACES includes several very important program improvements which will strengthen DOE decision making, improve agency responsiveness to all stakeholders, and remove barriers to

[2] Calculations from a forthcoming ACEEE report to be published spring 2009.

[3] Ibid. Preliminary estimate of savings can be found at: http://www.standardsasap.org/documents/DOE_schedule.pdf. Percentage reductions are relative to reference case in EIA's 2009 *Annual Energy Outlook*.

improved state energy efficiency policies. In addition, we recommend several enhancements included in pending Senate legislation.

1. Multiple metrics (Sec. 213(a))

The past two administrations have disagreed on whether DOE may set more than one standard for a product. For quite a few products Congress has imposed more than one standard for a product. Some examples are listed below.

Product	Metrics
Heat pumps	Cooling efficiency and heating efficiency
Clothes washers	Energy Factor and Water Factor
Dishwashers	Energy Factor and Water Factor
Residential boilers	AFUE, restrictions on pilot lights and a control requirement
General service incandescent lamps	Maximum Watts, minimum life
Fluorescent lamps	Efficacy and color rendering
External power supplies	Active mode efficiency and no-load mode watts
Compact fluorescent lamps	Initial efficacy, lumen maintenance, lamp life, rapid cycle test
Ceiling fans	Efficient light kits, several control requirements
Walk-in coolers and freezers	Insulation, glass, motor, control, lighting, and door requirements
Ice-makers	Energy use and water use

The list above includes two very different groups. Most combine two *performance* parameters, such as cooling efficiency and heating efficiency, where the product combines multiple energy-using functions. Some combine a performance standard with one or more *prescriptive* requirements, such as boiler controls and minimum life for lamps. This situation is critical for obtaining savings where energy-saving technology options have developed more quickly than rating methods have been revised, as in the case of boiler controls.

Uncertainty about DOE's authority has caused several problems in recent years. In the current rulemaking for general service fluorescent lamps, DOE decided it was prohibited from revising the now outdated requirements for color rendering, even though both advocates and industry recommended that this part of the standard be updated. In 2007 DOE turned down a consensus agreement on new residential boiler standards, requiring the parties to go to Congress to successfully ask that this provision be included in EISA. Similarly, just last month, DOE declined to adopt new multi-metric standards for commercial warm air furnaces developed by the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE).[4]

[4] See pp 38 to 40 of the Proposed Rule made available on March 12, 2009 by DOE at http://www1.eere.energy.gov/buildings/appliance_standards/commercial/ashrae_products_docs_meeting.html but not yet published in the *Federal Register*. This proposed rule confirms an initial determination issued on July 16, 2008 (73 Fed. Reg. 40770). DOE asserts it lacks authority to adopt the ASHRAE requirements which, for commercial furnaces, would eliminate standing pilot lights, set a limit on jacket losses and require power venting or automatic flue dampers.

Another very important potential application of this authority is to require that some products have two-way communication interfaces, so they can communicate with the "Smart Grid". For example, some electric industry representatives have suggested that DOE consider such a requirement for electric water heaters.

The question is whether DOE, in revising standards, can also use more than one metric if such a standard is technically feasible and economically justified. The Clinton administration ruled that DOE has this authority; the Bush administration took the contrary view. If the law is this unclear, it should be clarified, as this amendment would do. This amendment *does not* require DOE to set any standards with multiple metrics; it just gives DOE the option. Even with this amendment, DOE cannot set a multiple metric standard if such a standard is not technically feasible or economically justified. Some manufacturers argue that multiple standards on particular products are costly or onerous. This argument should be made as part of the open rulemaking process at DOE. Concerns some manufacturers have about some products should not affect DOE's ability to set appropriate standards for all products.

This provision passed both the House and Senate in 2007 but was left out of EISA at the last minute. It should be adopted this year.

2. State building codes and federal preemption

Under present law, states are generally preempted from setting requirements in their building codes which exceed federal minimums.[5] States with performance-based building codes must use minimum-efficiency equipment when developing code requirements. Performance-based codes provide an overall level of performance and permit many paths for reaching these goals (e.g. more insulation, better windows, reduced air infiltration, or improved equipment). But if equipment is limited to only federal minimums, some states are finding they cannot set strong enough codes to meet their energy and climate goals. Also, this part of federal law creates a loophole in performance based codes, as builders exceeding federal minimums can install less insulation, even though insulation lasts for the life of the building while equipment lasts for only one to two decades.

ACES allows greater flexibility in state codes to encourage improved efficiency for products covered under federal appliance standards. This provision is based on concepts developed by the Alliance to Save Energy in consultation with states and other stakeholders. It would allow states limited authority to use covered products with above-federal-minimum efficiency levels in formulating their building codes, while keeping the basic framework of preemptive federal standards. The proposed amendment includes two changes:

1. The first change allows the use of above-federal-minimum products in codes at an efficiency level set in the International Energy Conservation Code (IECC) or in the American Society of Heating, Refrigeration and Air-conditioning Engineers (ASHRAE) model code. Federal law already allows states to adopt many *commercial* product standards in their codes at levels above federal minimums if contained in an ASHRAE model code. Creating a similar structure for *residential* products would enable states to

[5] There is an existing path requiring trade offs, but it is so complicated as to be virtually unusable.

require the use of more efficient products in construction covered by their prescriptive building codes at levels set in a national standard-setting process. This reform is most needed to enable improved in new construction even if such improvements do not make sense in existing buildings. For example, efficient furnaces make good economic sense in all new construction in all climates, but in warmer climates may not make sense for replacement installations.[6]

2. The second change allows states to offer options for meeting their codes using above-federal-minimum covered products as long as at least one option assumes covered products at the level of federal standards, and that this option is "reasonably achievable using commercially available technologies". In other words, if a state set performance requirements that were based in part on high efficiency furnaces, they would have to provide an explicit pathway for installing a minimum efficiency furnace, making up the lost savings with other measures such as more insulation or improved windows. This would enable states to establish a performance standard that meets the needs of the state as long as they provide a clear path for code compliance using covered products that do not exceed federal-minimum efficiency standards.

3. DOE collection of key data for making standards decisions

The distribution of efficiency levels among products sold is a key piece of information for establishing new standards; however, DOE has sometimes failed to obtain such data in developing new rules. DOE usually asks for such information, but manufacturers sometimes decline to provide it. ACES would require DOE to conduct a rulemaking to determine what data manufacturers must submit, inclusive of efficiency performance data, to enhance DOE decision making. Existing law includes provisions to protect confidential data. Improved data will help DOE's decision-making process for standards, and will also aid other programs such as ENERGY STAR. For example, in the past few weeks DOE posted data on ENERGY STAR product market share in 2007, but noted: "The validity of the clothes washer data for quarter one and quarter three is questionable. It is expected that the incorrect coding of previously qualified units for these two quarters resulted in a higher than actual market share projection. The drop in refrigerator market share in the fourth quarter is also due to data from one retailer."[7] This data provision would help DOE to get accurate data, enabling far better assessments of program effectiveness.

4. Removing the Catch-22 from the state waiver petition process

Under current law, federal standards preempt state standards, unless a state submits and DOE approves an application for exemption from preemption. Such application must demonstrate that "such state regulation is needed to meet unusual and compelling State or local energy or water interests" and that such regulation "will not significantly burden the manufacturing, marketing,

[6] Indeed, some builders find installing higher efficiency (condensing) furnaces (and power-vent water heaters) to be *less* expensive than using lower efficiency products, since it avoids the need for a conventional chimney.

[7] "2007 Sales Data – National, State and Regional" available at: http://www.energystar.gov/index.cfm?c=manuf_res.pt_appliances.

distribution, sale or servicing of the covered product on a national basis." The detailed requirements for states to get waivers from federal preemption include submittal of information that may be obtainable only from manufacturers, who may oppose the waiver. ACES would prevent DOE from denying a state a waiver from preemption for failing to provide information which manufacturers refuse to make available to the state. The amendment would also limit DOE from denying waivers to states for failing to explore every conceivable energy saving alternative to standards or for not having a formal state energy plan. States would still have to demonstrate that they meet the primary determination factors, as summarized above, but the provision would remove some secondary requirements that impose needless roadblocks on state action. Even with these amendments, states would still have a difficult case to make, but these amendments at least make it possible to make the case.

5. State authority to seek injunctive enforcement

Compliance with federal standards is essential for achieving the expected energy savings. Under present law, only the federal government may bring enforcement actions, but since there is no federal budget for this, no significant enforcement is taking place. This amendment would allow states to bring their expertise and resources to bear on compliance by enabling them to seek injunctive enforcement of federal standards in federal court on an equal basis to the Federal government. All provisions of federal law apply. Such a provision was included in EISA for general service incandescent lamps. It should be extended to other regulated products.

6. Reflector lamp loophole

EISA extended existing reflector lamp standards to some previously exempted lamps. DOE under the previous administration interpreted the EISA language to permanently bar DOE from addressing any other exempted reflector lamps, which was not the intent we agreed to when we helped negotiate the EISA language. The new administration is now reviewing this interpretation, but if there are legal doubts, Congress should correct the law.

Due to this interpretation, final standards for incandescent reflector lamps due in June 2009 may include a huge loophole (about 30% of total sales) which will only grow bigger because these exempted lamps are lower cost than regulated products. The proposed amendment closes the loophole by requiring DOE to do a quick rulemaking to consider standards for the exempted products. The rulemaking is quick because it can build on the three-year rulemaking for related products that is now nearing completion. If manufacturers believe that standards for these products are not technically feasible and economically justified, they can make these arguments during the rulemaking. If DOE fails to complete the rulemaking on time, the standard DOE establishes this June for other reflector lamps would apply. Further, the amendment requires that DOE conduct a future rulemaking (completed by 2015) for reflectors which considers all technology on an equal basis rather than just incandescent technology.

Traditionally, among incandescent lamps, reflector lamps have led in efficiency innovations. With EISA, general service incandescent lamps (the pear-shaped light bulb) are moving towards advanced incandescent technology. The reflector lamp loophole is protecting some common reflector lamps from having to make this transition, even though the advanced technology can be

applied -- in fact, advanced incandescent products are presently available in retail stores for the main exempted category.

Recently, manufacturers and advocates agreed on a timetable for a DOE rulemaking to address this problem, and this timetable was adopted in the Senate committee markup of their appliances bill (S.598, Sec. 7). We urge the House to adopt this compromise as well.

7. Enhanced decision criteria for new standards

New standards must be economically justified as determined by the Secretary according to seven factors (EPCA section 325(o)). Although these factors give the Secretary significant discretion, DOE has sometimes ignored important societal benefits. ACES would rectify this problem by requiring the Secretary to consider the economic benefits of reduced emissions and the impact of energy savings on the overall energy price level. For example, DOE found in its recent rulemaking for home furnaces that the decline in gas demand resulting from a strong standard would lower the commodity price of natural gas. These important national benefits should be weighed in decision making.

While we support these enhancements, we recommend dropping a final addition concerning commercial availability and market share (Clause (X) on page 242). The existing law specifies that revised standards must be set at the "maximum level which is technologically feasible and economically justified." DOE already must demonstrate "technological feasibility" and routinely searches out all technical options. We are concerned that this new clause could be construed as the basis for a market share test to determine economic justification. However, standards are in part designed to overcome market barriers to efficiency that can result in low market share. A market share test would set the rationale for standards on its head. Therefore, we recommend that clause X be dropped.

8. Strengthen the rebuttable presumption

The main decision criteria for new standards provide the Secretary significant discretion. An alternative decision tool is based on simple payback – if a standard pays back any additional up front cost in three years or less, it is presumed to be justified. This provision should provide a floor which protects against standards which are too weak. However, DOE has ignored this provision, in part because the statute lacks guidance on what is required to rebut a standard meeting the payback criterion. ACES provides a clearer test: a standard may only be rebutted if there is clear, convincing and reliable evidence of hardship imposed on consumers or manufacturers outweighing the benefits. In addition, ACES extends the payback period to 5 years, providing a higher floor for future standards. We support this clause with one modification. To accommodate products with short operating lives, the rebuttable presumption should be based on the shorter of 5 years or 75% of a product's life to avoid paybacks longer than a product's operating life.

Additional program reforms

We recommend to the House several enhancements included in the Senate appliances bill introduced by Senators Bingaman and Murkowski (S. 598), as marked up by the Senate Energy and Natural Resources Committee last month. These provisions are as follows:

Appliance test procedures

In 2007, EISA directed DOE to review and revise appliance test procedure changes over a seven-year period. But seven years is a long time and some revisions cannot wait. A provision in S.598 (Section 02) would allow parties to petition DOE to adopt changes to specific DOE test procedures. DOE reviews the proposal in line with established procedures and criteria and is given a deadline for making decisions. It also requires timely responses from DOE to petitions, something that is a problem. As an egregious example, a petition submitted by the California Energy Commission in May 2008 to repeal a useless television test procedure from 1977 has not even been acknowledged, let alone acted upon. Direct final rules are permitted in both S.598 and ACES (Section 213(b)) which encourages consensus agreements that can accelerate updates and ease DOE's workload. These sections would need to be reconciled.

Schedule for DOE to rule on petitions

Current law has a provision permitting interested parties to petition DOE to revise a specific standard. However, no deadlines are provided. This section *(S. 598, Section 4)* gives DOE 180 days to respond to a petition, and if the petition is granted, three more years to publish a final rule on the standard.

Studying compliance with Federal standards

About 45 products are now regulated and, to our knowledge, no one has ever conducted a systematic assessment of compliance. Enforcement is important in order to ensure that energy savings are real, and to protect the vast majority of law-abiding companies from unscrupulous competitors. We have heard informal reports that some standards are not being fully followed. Some Congressional offices have expressed interest in improving standards enforcement. A first step in such efforts is to conduct a study to see what the problems are and where they lie. Section 7 of S. 598 would have DOE conduct such a study. We envision that DOE would hire one or more contractors to survey products on the market for each regulated product category, ascertaining as best as possible from available data which products are in compliance with standards and which are not. Such surveys would be made using the Web (manufacturer, wholesaler, and retailer sites), and by visiting a sample of retail stores. Some products on the market would be purchased and independently tested to see if they were in compliance or not.

NEW STANDARDS IN ACES 2009

The House discussion draft includes new standards for five categories of products. We estimate that the specific standards included in ACES will save at least 17 billion kilowatt hours annually

by 2020, or roughly enough to meet the needs of 1.5 million typical U.S. households. The standards would reduce power sector carbon dioxide emissions by nearly 12 million metric tons per year.

The table below summarizes estimates of energy savings from the proposed new standards:

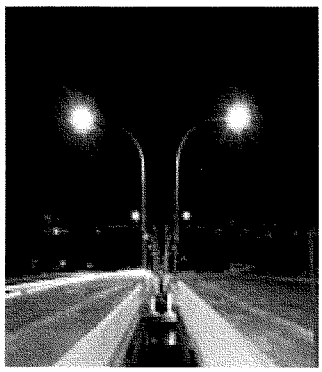
Product	2020 kWh Saved (millions)	2020 Peak Demand Reduction (MW)	2020 CO_2 Emissions Reductions (MMT)	Net Discounted Consumer Benefits (million $)
Portable lighting fixtures	3,856	573	2.62	3,700
Outdoor lighting fixtures	12,570	Small, on off-peak	8.54	Not yet estimated
Water dispensers	250	35	0.17	230
Hot food holding cabinets	314	103	0.21	290
Portable electric spas	185	43	0.13	100
Total	17,175	754	11.67	4,300

Notes to table: Net Discounted Consumer Benefits are for purchases through 2030. 2020 kWh savings for outdoor lighting fixtures adapted by ACEEE from Philips estimates cited above, based on a 20 year average fixture life. CO2 savings are prorated based on ratio of kWh to CO2 savings for other products.

Outdoor lighting fixtures (Section 211(a))

We thank Representative Jane Harman for introducing HR 1732 which would set standards for outdoor lighting and Representatives Waxman and Markey for including outdoor lighting standards in ACES. We support the concept of federal standards and look forward to working with members of industry and the committee to work out acceptable language.

Outdoor lighting fixtures are generally fairly high wattage products and are on for many hours each night. Outdoor lighting accounts for about 8% of U.S. lighting energy use and 2% of total U.S. electricity use. The largest outdoor lighting uses are roadways (streets and highways) and parking lots.[8] Current systems use a variety of lamp types, including incandescent, mercury vapor, low and high pressure sodium (yellowish light), and metal halide lamps. In the past few years, rapid technical strides have been made and a new generation of more efficient types is emerging including LED lighting and advanced metal halide and high pressure sodium lamps. In addition, efficiency can be improved with electronic ballasts, use of lighting controls and improved fixture designs. Substantial energy can be saved by standards that steadily eliminate the least efficient fixtures from the market in favor of more efficient products.



LED Lighting, I-35 Bridge, Minneapolis. (DOE)

[8] Navigant Consulting. 2002. *U.S. Lighting Market Characterization.* Washington, D.C.: Buildings Technologies Program, U.S. Department of Energy.

Early this year Philips Lighting approached efficiency advocates[9] to explore the possibility of new standards for outdoor lighting. This coalition is actively discussing this proposed standard with other lighting companies and we are optimistic that strong standards will emerge. This process of negotiation concurrent to legislative consideration is similar to that which led to the successful enactment of standards for general service incandescent lamps in EISA.

As proposed in ACES, the standard would regulate the whole system efficiency of *new* outdoor lighting fixtures with an initial requirement of 50 lumens per watt, effective 2011, rising to 70 lumens per watt in 2013 and 80 lumens per watt in 2015 (existing fixtures would not be affected). Additional provisions would require 2-level or dimming controls and good lumen maintenance (maintenance of light levels over time). Advanced LED, metal halide, and high pressure sodium systems would all comply, but old technologies would not. The proposed standards would also outlaw the ongoing sale of the least efficient high light output outdoor lamps. New, more efficient replacements are readily available.

Philips Lighting has analyzed the likely savings from this standard and estimates that this standard would eventually save about 30 billion kWh per year from fixture efficiency improvements alone, once existing fixtures are fully replaced. The bi-level controls would add additional savings. They estimate annual carbon dioxide emissions reductions of more than 16 million metric tons and annual energy bill reductions of about $3.6 billion once all fixtures are replaced.[10]

Portable lighting fixtures and GU-24 lamps (Sections 211(b))

Standards for portable lighting fixtures and GU-24 lamps were established in California in 2008 and this provision makes this standard a national one (section 5). This standard transitions new fixtures away from use of inefficient screw-in incandescent lamps, and towards an array of more efficient choices including compact fluorescent lamps, LED lighting, or low/medium wattage halogen lamps. A variety of options are provided to manufacturers and consumers, so an appropriate choice can be found for all applications. For example, under the provision, there are two main compact fluorescent options – a dedicated ENERGY STAR compact fluorescent fixture or including ENERGY STAR screw-in compact fluorescent lamps in the box with the fixture. The provision also builds upon current DOE and EPA ENERGY STAR standards for LED fixtures, providing guidance for an important emerging type of light.

In addition, the GU-24 provision follows California rules to prevent a new type of universal compact fluorescent base (GU-24) from being used with incandescent lamps. Unlike present bases, the GU-24 base can be used with many types of compact fluorescent lamps. Industry, utilities, and ENERGY STAR staff are planning to widely promote its use as a way to guarantee lighting energy savings. However, these efforts would be undermined if GU-24 incandescent

[9] Alliance to Save Energy, Appliance Standards Awareness Project, and Natural Resources Defense Council

[10] Cook, Keith. 2008. "Proposed Outdoor Lighting Efficiency Standards". Washington, DC: Philips Lighting.

lamps are introduced because no energy is saved if incandescent lamps are used in GU-24 fixtures. Section 6 would prevent this from happening.

In the process of negotiating these federal provisions, a few refinements to the California regulations were negotiated between efficiency advocates led by ACEEE and the American Lighting Association (the industry trade association for these products) to strengthen some of the requirements, gradually phase in the requirement for testing for whole system efficacy, and exclude purely decorative fixtures from the whole system efficacy requirements. For example, for LED fixtures over the 2012-2016 period, the bill permits these fixtures to either meet the current DOE ENERGY STAR LED fixture specification, or provides an option for a higher "light engine" efficacy ("efficacy" is a lighting industry term for efficiency), without requiring testing of whole system efficacy. As of 2016, new standards will apply, to be developed by DOE by 2014. Given California's pioneering role, this provision also allows California to revise its current standard, but this authority expires in 2014. Similar provisions were included in EISA and EPAct 2005, when California standards were adopted as federal standards. These changes represent thoughtful compromises on these issues, compromises that have the support of both efficiency advocates and ALA.

ACEEE estimates that this provision will reduce U.S. electricity use in 2020 by about 3.9 billion kWh, enough to serve about 350,000 average U.S. residential customers for a year.[11] These standards will reduce peak electric demand in 2020 by about 570 MW, equivalent to a typical new coal-fired power plant or two typical natural gas-fired power plants. Net present value financial savings to consumers will exceed $3.7 billion from purchases through 2030, accounting for both the value of the energy saved and the modestly higher purchase cost for complying fixtures. By 2020, this standard will reduce carbon dioxide emissions by about 2.62 million metric tons, helping to make a significant dent in greenhouse gas emissions. This is equivalent to taking 485,000 cars off the road for a year.[12]

While we support this provision, we think it can be improved in one important respect. The bill permits halogen fixtures rated up to 100 Watts, but provides no efficiency standards for these products. We recommend that halogen lamps be required to meet efficiency levels similar to those Congress adopted for general service incandescent lamps as part of EISA. We are now trying to develop a specific proposal in discussions with ALA.

Bottle-type water dispensers

Bottled water dispensers are commonly used in both homes and offices to store and dispense drinking water. Designs include those that provide both hot and cold water and those that provide cold water only. In 2000, the EPA issued a voluntary ENERGY STAR performance specification for standby energy of 1.2 kWh per day and 0.16 kWh per day for "hot and cold" dispensers and "cold only" dispensers, respectively. "Hot and cold" water dispensers tend to be

[11] At 11,000 kWh/year per household, per EIA data.

[12] Based on 12,000 miles/vehicle each year, a fuel economy of 20 MPG, and 20 pounds of CO_2 emitted per gallon. There are 2,204.6 pounds per metric ton. With these assumptions each car emits about 5.44 metric tons of carbon dioxide equivalent annually.

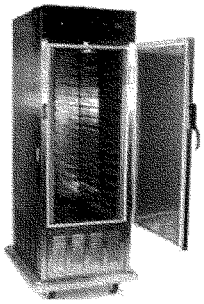
much less efficient than "cold only" because they must maintain water tanks at two temperatures in a small space. The greatest factor determining energy efficiency is insulation of the water reservoirs. Older models of "hot and cold" dispensers often do not have insulated hot water tanks, which increases heat dissipation and standby energy waste. Adding insulation between the tanks and increasing existing insulation levels can reduce standby energy waste. A Pacific Gas & Electric Co. report found that a reduction from the baseline "hot and cold" dispenser daily energy consumption of 1.93 kWh to the proposed 1.2 kWh would save nearly 38% of annual energy consumption. The slight cost (about $12) to improve a basic unit to meet the proposed standard would be earned back in lower energy costs within about 6 months at national average energy prices. EPA data indicate that just over 40% of water dispensers sold meet the ENERGY STAR specification.[13]

In December 2004, the California Energy Commission adopted the ENERGY STAR standard for "hot and cold" dispensers as a mandatory standard, affecting units sold after January 1, 2006. Subsequently the same standard has been adopted in Connecticut, Maryland, New Hampshire, Oregon, Rhode Island, and the District of Columbia. We recommend that this same standard be adopted as a federal standard and that DOE be directed to develop a revised standard by 2013, effective three years later.

I provide estimates of energy and economic savings for this proposal later in this testimony.

Commercial hot food holding cabinets

Hot food holding cabinets are used in hospitals, schools and other applications for storing and transporting food at a safe serving temperature. They are freestanding metal cabinets with internal pan supports for trays. Most are made of stainless steel and are insulated; however, there are some models that are non-insulated and are often made of aluminum. The main energy-using components include the heating element and the fan motor.



Source: Carter-Hoffmann

The ENERGY STAR specification sets a maximum idle energy rate issued for hot food holding cabinets of 40 Watts per cubic foot of measured interior volume. Appropriate insulation in hot food holding cabinets is the key mechanism to meet this specification. Insulated cabinets also have the advantage of quick preheat times, less susceptibility to ambient air temperatures, and a more uniform cabinet temperature. The recommended maximum idle energy rate translates to a 78% annual energy savings of 1,856 kWh relative to a basic, inefficient model. These energy savings cover the estimated additional cost of more efficient units within 3 years. Data is uncertain, but it appears that about 40% of hot food holding cabinet sales meet this

[13] Nadel, S., A. deLaski, M. Eldridge, and J. Kliesch. 2006. *Leading the Way: Continued Opportunities for New State Appliance and Equipment Efficiency Standards.* Washington, DC: American Council for an Energy-Efficient Economy.

specification.[14]

In December 2004, the California Energy Commission adopted this level as a statewide minimum standard, effective January 2006. Subsequently the same standard has been adopted in Connecticut, Maryland, New Hampshire, Oregon, Rhode Island, and the District of Columbia. We recommend that this same standard be adopted as a federal standard and that DOE be directed to develop a revised standard by 2013, effective three years later.

I provide estimates of energy and economic savings for this proposal later in this testimony.

Portable electric spas (hot tubs)

Portable electric spas are self-contained hot tubs. They are electrically heated and are popularly used in homes for relaxation and therapeutic effects. The most popular portable spas hold between 210 and 380 gallons of water; however, some models can hold as much as 500 gallons. "In-ground" spas are not included in this category.

Source: Sundance

Over half the energy consumed by a typical electric spa is used for its heating system. Heat is lost directly during use and through the cover and shell during standby mode. Improved covers and increased insulation levels are key measures to improving efficiency and can decrease standby energy use by up to 30% for a spa of average-to-low efficiency. Another measure is the addition of a low-wattage circulation pump or improvements to pump efficiency that would generally save 15% of standby energy consumption of an average-efficiency spa. Automated programmable controls, which would allow users to customize settings based on predicted usage patterns, are a third measure to improve efficiency and could save roughly 5% of a spa's standby energy consumption.[15]

In December 2004, the California Energy Commission (CEC) adopted a maximum standby energy consumption standard of 5 ($V^{2/3}$) Watts for portable electric spas where V = the total spa volume in gallons and 2/3 means to the two-thirds power. Standby energy consumption represents the majority (75%) of the energy used by electric spas and refers to consumption after the unit has been initially brought up to a stable temperature at the start of the season and when it is not being operated by the user. The energy consumption calculation ($V^{2/3}$) used by CEC approximates total spa surface area, which is directly related to standby energy use. A maximum standby energy requirement indexed to total spa surface area thus requires spas of all sizes to be equally efficient.

The California standard is a modest initial effort and is probably met by the majority of spas now being sold. CEC estimates that the products meeting the standard cost $100 more than basic models. At national average energy prices, this additional cost is covered within 4.3 years.[16]

[14] *Ibid.*
[15] *Ibid.*
[16] *Ibid.*

Connecticut and Oregon have subsequently adopted the California standard. We recommend that the same standard be adopted as a federal standard and that DOE be directed to develop a revised standard by 2013, effective three years later.

VOLUNTARY PROGRAMS

Finally, ACES includes two sections dealing with voluntary programs. We are concerned that the proposed language related to Energy Star would place overly restrictive limits on the program, limiting its applicability and effectiveness. We suggest an alternative approach to enhance the program based on a proposal worked out in the Senate committee. A second proposal in ACES proposes a new program to foster the most efficient products.

Limits on ENERGY STAR

We are concerned that Section 215 which would set far too restrictive limits on the ENERGY STAR program, prohibiting ENERGY STAR levels which exceed a three to five year consumer payback. As a voluntary program covering dozens of products, EPA and DOE need more flexibility to develop appropriate criteria in consultation with stakeholders. For example, the payback test in ACES would immediately make illegal the current ENERGY STAR program for home furnaces and water heaters, and no substitute level makes sense. This would leave gaping holes in ENERGY STAR for the biggest energy consuming appliances in many homes. Sometimes, for rapidly evolving product categories like home electronics, ENERGY STAR has attempted to guide market development of more efficient products as when it established standards for Digital Television Adapters (DTAs) well in advance of market availability *of any products*. It would have been impossible for EPA to demonstrate cost-effectiveness for the DTA ENERGY STAR level. Yet, this level, ultimately, formed the foundation for the efficiency qualification criteria for products receiving federal rebates, thus saving significant amounts of energy. We urge the Committee to drop this section.

As an alternative, we recommend the House adopt section 3 of S. 598 which requires agency review and compliance documentation which should help ENERGY STAR address some recent problems. ENERGY STAR has been a valuable and very successful program to promote the sale of high efficiency products. The program was started by EPA, but for many years DOE has taken the lead on some products, under the terms of an interagency MOU. In October 2008, *Consumer Reports* published a report on ENERGY STAR, finding a few problems. Specifically, they found that a few manufacturers were distorting refrigerator test results, and since the program relied only on manufacturer testing, there was no mechanism to catch this problem. The article also noted that some appliance specifications needed updating, as indicated by the fact that a majority of products on the market earned the ENERGY STAR rating, although DOE and EPA generally target the top 25% of products for the label.

Our understanding is that the agencies have been working to address these problems, but Section 3 of S. 598 requires them to take action. Specifically, it requires some type of independent certification or review of product testing for each product, while giving the agencies and each industry flexibility as to what type of certification/review most makes sense for a product. This

provision also requires DOE and EPA to review the ENERGY STAR specification when the market share for a product category reaches 35%. If a review begins when market share reaches 35%, market share can grow considerably in the year or more it takes to complete the review, set a new specification, and put the new specification into effect. While 35% is a good review threshold for most products, there are exceptions (e.g., compact fluorescent lamps where ENERGY STAR is a quality mark and not just for the best products). Therefore, the provision permits the agencies to revise this percentage on a product-specific basis as part of their first review. We believe these provisions will improve the ENERGY STAR program, while giving the agencies needed flexibility.

Best-in-Class Appliance Deployment Program

Section 214 would create a "Best-in-Class Appliance Deployment Program" (BICAD) aimed at incentivizing the development and market growth of the next generation of very efficient products. This program, based on concepts developed by Natural Resources Defense Council (NRDC) with input from major national retailers and manufacturers, could be a strong complement to the existing national standards program and the ENERGY STAR program: While standards establish a national floor and ENERGY STAR demarcates and promotes, in general, products which are among the best 25% of current offerings, this new program would provide financial incentive to increase market share of the very most efficient available. Such an effort could pave the way for improved ENERGY STAR levels over time, and eventually, improved standards.

According to NRDC, BICAD would establish three types of monetary incentives for retailers and manufacturers based on the sale and development of best-in-class high-efficiency building equipment, consumer electronics and household appliances.

1. The first incentive is directed at retailers for sales of Best-in-Class Product models. The Secretary of Energy selects a class of product for the program and determines the most efficient product models within that class. Retailers could then obtain a bonus for each sale of a Best-in-Class model. The size of the bonus would be based on the energy consumption savings of the Best-in-Class Product model compared to the average product in the class. In order to make sure the program remains up-to-date, the Secretary would review the standards and qualifying Best-in-Class Product models on an annual basis.

By targeting the incentive at retailers, this program can significantly increase the sales of the most efficient products – benefiting both consumers and the environment – at far less cost than traditional programs that only offer incentives to customers.

2. The second incentive provides a bounty to retailers when a sale of a Best-in-Class Product model is accompanied by the retirement and recycling of an existing inefficient functioning product. Bounties would be based on the difference of energy use between the retired product and the energy use of an average new product in the product class, discounted for the retired product's estimated remaining life. The

legislation also includes a provision to establish standards for environmentally responsible methods of recycling.

This program ensures that old and inefficient products do not remain in use either in the consumer's home or through resale.

3. BICAD's third incentive would reward manufacturers for the development and production of Superefficient Best-in-Class Products. The Secretary will determine the highest efficiency product that can be mass-produced and then provide a bonus to manufacturers for products meeting that standard. This will spur the creation of more efficient products and make those products more affordable.

Among the key concerns which should be taken into account as this provision is further developed include making sure that levels are adequately aggressive and ensuring that free-ridership (incentives paid for sales that would have happened absent the program) is kept to a minimum.

TECHNICAL CORRECTIONS

When the EISA conference negotiations were completed, a number of errors were made in compiling the final bill. We have worked with industry and Committee staff to identify these problems and develop suggested edits. We generally support the technical amendments contained on pages 113 to 143 of the discussion draft and will provide any detailed comments to committee staff. We are also working on additional technical corrections intended to ensure that all products fall within the scope of the EISA provision for regular reviews and that enforcement and other general provisions apply to all products added by EPACT 2005 and EISA. We will provide recommendations as soon as possible.

CONCLUSION

We support Subtitle B of ACES with some modifications as described in this testimony. The specific proposed standards will save enough electricity to power about 1.5 million typical American homes annually. ACES also contains many important reforms to the national appliance standards which will enhance the responsiveness of DOE to stakeholders, improve DOE decision making and remove needless roadblocks to state efficiency initiatives.

Mr. MARKEY. Thank you, Mr. DeLaski, very much.

Our final witness is Mr. Dwight "Sonny" Richardson. He is the chairman of the National Association of Home Builders Construction Codes and Standards Committee. He is also president of Richardson Home Builders in Tuscaloosa, Alabama. Please begin when you are ready, Mr. Richardson.

STATEMENT OF CHARLES RICHARDSON

Mr. RICHARDSON. Thank you, Mr. Chairman, Ranking Member Upton and Ms. Baldwin. I appreciate the opportunity to travel to Washington to discuss the energy bill, the carbon cap bill, global climate change bill with you on behalf of the 200,000 members of the National Association of Home Builders, NAHB.

As you well know, we in the home building industry are facing devastating times in addition to the environmental and energy challenges facing our country. From building 2 million homes in 2006, we expect to construct less than 500,000 this year nationwide. Nonetheless, amidst the worst housing downturn since the Great Depression, I can personally attest to the strides our industry has made in energy efficiency and sustainability for our Nation's new homes. According to the Energy Information Administration, newer homes, those built since 1991, account for only 2.5 percent of all energy consumed nationally. Our industry has pioneered development of the only national green building standard approved by the American National Standards Institute and has invested millions in an industry-transforming green building program, saving both energy and natural resources.

Drawing on my lifetime experience, I am a second-generation home building, in the construction field, I believe that some of the policy approaches put forth in the American Clean Energy and Security Act draft are unlikely to produce the expected energy savings. In particular, the provisions in section 201 aggressively increase energy targets for new homes, provide greater authority for the Department of Energy to modify codes and give little flexibility to State or local areas with specific geographic and climatic conditions. The current language is problematic for a number of reasons. In the broadest sense, seeking significant savings from new homes, smallest, most energy efficient misses the target. Increasing costs and reducing affordability for newer, more efficient homes adversely affects lower and moderate income families that spent the most as a percentage of income on energy. In some instances, the provisions in section 201 exceed a number of successful programs such as EPA's Energy Star for Homes and many green building programs, not just the new national green building standard. Striving solely for small incremental savings without accommodation for the more robust sustainability framework of a green program means that the more environmentally sound green homes could be noncompliant with the targets outlined in section 201 yet these homes have a smaller carbon footprint because of sustainable design and resource considerations not covered by energy codes alone.

On the other hand, NAHB is pleased to see that section 202 of the draft legislation provides resources to consumers to upgrade their existing homes and buildings and equally pleased that Vice President Gore supports this path. This will direct the resources of

the federal government at the largest consumer of energy in the residential sector, older homes. According to the Census Bureau, there are roughly 128 million homes in the United States today and fully 74 percent, or 94 million, were built before the existence of modern energy codes. Home builders have done their part and are doing their part to make newer homes more efficient. Now the federal government can help residents of existing homes continue to help to do their fair share to reduce energy consumption.

Despite our economic challenges, our home building industry has voluntarily taken the initiative to develop a rigorous national green building standard, continues to implement energy efficiency in new construction and is working diligently to preserve housing affordability for the next generation of green and energy efficient homes. NAHB supports improving efficiency in national model codes and participates along with many others in the development process of the International Code Council. Because codes by their very nature do not address all aspects of energy consumption in housing, NAHB hopes that Congress will carefully consider an integrated energy strategy for the residential sector. This includes many aspects beyond the reach of codes such as equipment efficiency, occupant behavior, plug loads and appliance choices. Our NAHB members are stakeholders in both the building and energy efficiency industries. We look forward to working with the subcommittee to craft policies that effectively address the energy challenges facing our Nation and housing.

My written comments provide additional details on these points as well as recommendations for changes to the draft legislation the committee will soon consider. Thank you for the opportunity to appear today and testify on behalf of my National Association of Home Builders.

[The prepared statement of Mr. Richardson follows:]

Statement of Sonny Richardson,

On Behalf of the National Association of Home Builders

"Legislative Hearing Regarding American Clean Energy Security Act"

Subcommittee on Energy and the Environment
House Energy and Commerce Committee

April 24, 2009

Chairman Markey, Ranking Member Upton, and distinguished members of the Subcommittee, my name is Sonny Richardson and I am a home builder from Tuscaloosa, Alabama. I am pleased to present testimony today on behalf of the 200,000 members of the National Association of Home Builders (NAHB), representing every aspect of the residential construction industry – single family and multi-family builders, light commercial builders, remodelers, material suppliers, appliance manufacturers, real estate professionals, and housing finance interests.

Facing the brunt of the economic downturn and the worst housing market since the Great Depression, I can personally attest to the devastating losses and historic declines facing our industry. Falling from a height of two million new homes constructed in 2006 to less than 500,000 projected for 2009, the housing industry has suffered overwhelming setbacks that continue to force our small business members (comprising 80% of our association) out of business. This affects the ability of our industry to deliver the next generation of housing to the market that will be more energy and resource efficient. Because NAHB members build about 80% of all the new homes in the United States, we must necessarily influence the manner in which energy efficiency and sustainable technologies are introduced into our nation's housing stock. As one of those promoting energy efficiency and affordability in my industry, I am excited to testify today about both the challenges and opportunities facing us as we work collectively to evaluate and improve efficiency in the residential sector.

The challenge of climate change affects everyone, including the residential construction industry. NAHB members are responding in numerous ways, contrary to assertions that builders generally oppose efficiency. NAHB invested millions of dollars in developing a national green building program and creation of the first and only *National Green Building Standard*™ approved by the American National Standards Institute (ANSI). Home builders embrace robust national policies to address today's environmental challenges and support effective measures to implement greater sustainability and efficiency in the broadest possible manner. This written statement explains the realities of the housing market and explains how the provisions in the *American Clean Energy and Security Act of 2009 Draft* (ACES Act Draft) to update state building energy efficiency codes (Section 201) may not achieve true energy savings, but are likely to impair affordability for millions of future residents of green and energy-efficient dwellings.

Residential Energy Consumption Realities

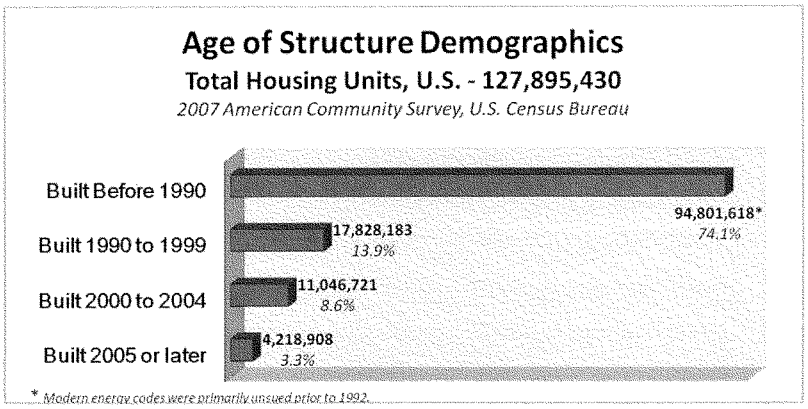
Although targeted as a major untapped reservoir of potential energy and greenhouse gas emissions (GHGs) savings, the residential sector has already moved at lightning speed to embrace energy efficiency and sustainability in new buildings. In fact, according to the Energy Information Administration (EIA), newer homes, i.e., homes built after 1991 – represent the smallest fraction, 2.5%, of all the annual national consumption in 2001.

Energy Consumption in 2001 in Trillions of Btu

Total	**96,498**	**100.00%**
Residential Sector	**20,228**	**20.96%**
Manufactured Housing	**1,301**	**1.35%**
Fossil Fuel Used to Generate Electricity	815	0.84%
Consumed by Residence	486	0.50%
Single Family and Multifamily Built before 1991	**16,498**	**17.10%**
Fossil Fuel Used to Generate Electricity	8,743	9.06%
Consumed by Residence	7,755	8.04%
Single Family and Multifamily Built 1991-2001	**2,429**	**2.52%**
Fossil Fuel Used to Generate Electricity	1,386	1.44%
Consumed by Residence	1,043	1.08%

Sources: Annual Energy Review by the Energy Information Administration; the 2001 Residential Energy Consumption Survey, Energy Information Administration.

This is important because it demonstrates the shortcomings of a policy approach that is designed to require aggressive increases in efficiency for new construction that ultimately may not deliver the greatest energy savings. The biggest return on efficiency investment in the residential sector would be realized by improving older homes, which according to the U.S. Census Bureau comprise 74.1% of the current U.S. housing stock:



Because building codes and construction practices have improved over time, newer homes are dramatically more energy efficient. The ability to realize additional energy savings from an already super-efficient segment of the residential sector via building codes is extremely limited, and thus cannot be expected to deliver dramatic results in terms of greenhouse gas (GHG) emissions reductions or consumer utility savings. NAHB suggests that a much more robust approach to integrated energy efficiency in the residential sector is the best way to achieve the goals of reducing energy consumption and GHG emissions.

The Role of Building Energy Codes

I am an active participant in the code development process that occurs through the International Code Council (ICC) and can confirm that much of the rhetoric today about what building codes can do for energy savings, aimed at the public and policymaker alike, is terribly shortsighted. Some groups suggest that all concerns about the built environment and the GHG

emissions attributable to it could easily be ameliorated with a few aggressive building code regulations. Others recognize that energy efficiency is more than just building codes and that greater focus is needed on sustainability and the overall performance of the home. Regrettably, facts about what is actually attainable through energy code requirements is often lost in broad platitudes while the true realities of residential energy consumption and the development of effective policies to address it holistically are cast aside.

It is true that codes are consistently improved through a normal cyclical process whereby stakeholders from every interested party – enforcement officials, environmentalists, builders, etc. – convene to discuss the merits of certain changes, eventually producing a revised code for adoption by state or local governments. It is false to assume that just requiring states or local governments to adopt arbitrary above-code compliance targets for all new construction is going to translate into deliverable energy savings. A state or local government may decide to adopt an aggressive energy code for new construction, but without resources to enforce it, or without resources to address existing homes, such requirements are not meaningful on a broad scale.

The implementation of energy codes at the local level and the need for geographic flexibility is one reason why the federal government is limited in terms of what it can expect state and local governments to deliver. Under the police powers of the U.S. Constitution, states are given the authority to determine appropriate building codes within their jurisdiction. Some states confer this authority to local municipalities and set up a framework whereby climatic and geographic concerns can be specifically addressed in their individual jurisdictions. For example, Florida needs the flexibility to require hurricane impact resistant building standards, and similarly may require more efficient air conditioning equipment because these are specific geographic demands that make sense for that state. Whereas requiring the same codes in Michigan – i.e., hurricane impact resistant building standards and high-efficiency air conditioners – might be completely illogical.

Because geography, climate, and other conditions impact the combined structural safety, soundness, and energy performance of residential structures in various parts of the U.S., it is necessary to have the flexibility to adopt national model codes that fit specific needs. While the federal government should encourage greater efficiency through incentives (e.g., Section 45L New Energy Efficient Home Credit), it would falter in local code enforcement and risk bypassing specific local needs. In this regard, it could also supersede existing public-private programs (e.g., Energy Star®), and overlook successful green building programs. Provisions like Section 201 of the ACES Act Draft that require states to adopt above-code targets without reference to the robust sustainability framework of more environmentally-sound green building not only leave states or local areas out of compliance with federal law, but essentially downgrades sustainability for the sake of code compliance. NAHB believes it should never be the case that a state must choose between such extremes, especially since green homes save both energy *and* resources.

State and local governments need to be actively engaged in developing code equirements that are appropriate for the structures built within their jurisdictions. The federal government needs to support them with resources for code implementation that saves energy and resources while not endangering public health or adversely affecting affordability for consumers that generally bear the largest burden (as a percentage of income) of energy costs, i.e., lower and moderate-income families. The federal government can embrace greater efficiency in our nation's housing stock in a manner that supports housing affordability so that everyone, at all price points, can enjoy a green and energy-efficient home.

Energy Efficiency and Affordability

One of the most important aspects of the current code development process is the ability to consider costs and benefits to improvements in efficiency stringencies and to determine paybacks in terms of energy savings for certain features based on initial costs. These "payback periods" are important for demonstrating those changes that can deliver more immediate consumer savings in terms of initial costs versus changes that may take decades or longer to

payback in energy savings. For example, a change in the lighting requirements from incandescents to fluorescents or LED, which NAHB supports, has a 1-2 year payback to the consumer in terms of energy savings versus upfront costs while increasing attic insulation may take decades or never payback. In this regard, the law of diminishing returns applies, i.e., only minimal additional energy savings can be realized by an incremental increase in any given energy efficiency measure.

However, when the frame of reference is shifted from the payback in energy savings to the consumer, for example, to a "life cycle" of a building or home, per Section 201, these reasonably-determined cost considerations for the consumer are bypassed entirely. In this instance, a consumer would be responsible for paying for efficiency features that may payback over the entire time a home exists, rather than realizing any meaningful energy savings during the time in which he or she might occupy the home (often less than 10 years).

It is also possible that some changes in efficiency features may never payback during the lifetime of the structure. For example, requiring double-pane low-e windows in southern Florida has an energy savings payback of over 300 years. NAHB suggests adding language, as passed by the House in previous energy legislation – H.R. 3221, Roll Call No. 832, August 4, 2007 – that states that changes to the codes must be "*technically feasible and economically justified based on available appliances, technologies, materials, and construction practices.*" This will help accommodate changes that put the consumer first in energy savings paybacks and energy efficiency.

Despite the dramatic downturn and the virtual halt of new construction in the U.S., NAHB believes that we must preserve affordability for the new homes that must be built once the market turns around. In this regard, if the government adopts the approach of mandatory energy codes embraced in a "life cycle" costing approach, there is great potential risk for harm to marginal first-time home buyers. These buyers are typically characterized by lower incomes, limited up-front cash for down payments, with intent to purchase relatively modest-priced homes. Ironically,

these lower-income marginal buyers are also the ones that share the larger burden of energy costs as a percentage of income and therefore often cannot and should not be expected to wait decades for future paybacks from efficiency features.

Mandated criteria that increase up-front costs for new homes in exchange for a future payback may work well at the top of the market, or even in the average case, yet have the effect of pricing out marginal first-time buyers at the lower end of the market. NAHB does not believe the assertion that a broad public policy objective should be achieved on the backs of a relatively narrow segment of the market with limited resources. Similarly, NAHB hopes that Congress will not impose policies that increase costs for newer, more energy efficient homes in a manner that relegates lower and moderate-income families to less-efficient older housing stock.

Energy Performance

Some argue that building envelope improvements – often accomplished through code change requirements – are the best way to address building efficiency because it is assumed that builders will simply absorb the additional costs. The truth is that builders cannot simply push thousands of dollars of efficiency upgrades onto consumers, particularly in instances where consumers are not even demanding such features, and expect to remain competitive in the market. Many of the features that consume energy in a home are not chosen by builders or covered by codes, but ultimately affect the home's energy performance and can, in some cases, offset envelope improvements that are covered by codes.

The exponential growth in electronics use and plug-connected equipment in a home will have dramatic affects on a home's ultimate energy performance. In April 2008, the Electric Power Research Institute (EPRI) presented information at an event on Capitol Hill that showed that by the year 2030, 30% of all the energy consumed in a home will be "plug load" capacity[1]. The proliferation of big screen televisions, computers, cell phone chargers, DVR's, and even

[1] Electric Power Research Institute, presentation by Arshad Mansoor, Ph.D. – "*Energy Efficiency Across the Electricity Value Change.*" April 16, 2008 - Great Energy Efficiency Day, Washington, D.C.

digital photo frames will have major consumption implications that should be addressed. The growth of plug-connected usage in residential energy consumption threatens building performance and can easily offset energy savings from envelope and equipment improvements.

The Green Building Movement

NAHB's experience and support for voluntary energy efficiency and green predates many of the available green ratings systems today. Long before green was a part of every day lexicon, NAHB members were actively engaged in building green homes, as part of an organic process that has significantly reshaped residential construction. Aside from our members' work in efficiency programs, like Energy Star® and the Department of Energy's (DOE) Building America program, we have been long-standing pioneers in what is now known as the green building movement.

In the early 1990's, local builders began driving sustainable residential construction that incorporates a flexible framework to accommodate geography, resources, and energy efficiency. As the movement grew, NAHB members became more engaged and, in 1998, NAHB establishe a national group to work specifically on green building issues. By 2004, the industry, including over sixty stakeholders, began developing a set of national guidelines to recommend to builders how to incorporate ever-increasing sustainability benchmarks for compliance with green criteria. These became known as the National Green Home Building Guidelines.

However, as the need to develop a more reliable verification methodology became apparent, the members of NAHB agreed to work collaboratively with the ICC to undertake a rigorous standards-developing process that ultimately produced the first standard approved by the American National Standards Institute (ANSI) for green residential construction and remodeling in the United States – the *ICC-700 National Green Building Standard*™. The development of the *National Green Building Standard*™ is the most recent, and most robust, effort undertaken by the industry to set compliance markers for green building in the various

aspects that comprise residential construction – single family, multifamily, remodeling, and land development.

The process began in early 2007 when a group of 42 stakeholders convened in Washington D.C. representing federal (U.S. EPA, DOE), state, and local governments, building code officials, design professionals, building supplier manufacturers, sustainable building interest groups, utilities, builders, and energy efficiency consultants [see Appendix A]. These experts worked together to develop rigorous, environmentally-sound, and defensible criteria for green residential construction incorporating the seven primary principles of sustainability: energy efficiency, water efficiency, resource efficiency, lot and site development, indoor environmental quality, global impact, and home owner education. After several revisions and over 3,000 public comments, the standard was approved by ANSI on January 29, 2009 and is the only green standard approved by a third-party Standards Developing Organization (SDO), (i.e., ANSI), for residential construction and remodeling in the U.S.

The *National Green Building Standard*™ complies with federal law requiring federal agencies to utilize voluntary consensus standards in the market when available. The National Technology Transfer Act of 1996 (P.L.104-113) states in Section 12 (d)(1) that:

> *In general.--Except as provided in paragraph (3) of this subsection, all Federal agencies and departments shall use technical standards that are developed or adopted by voluntary consensus standards bodies, using such technical standards as a means to carry out policy objectives or activities determined by the agencies and departments.*

NAHB understands the importance of providing a viable, rigorous, and consensus-based alternative to the plethora of privately developed green rating systems flooding the market as the green movement continues to grow. NAHB believes the federal government similarly understands the importance of this concept. By passing this law, it has appropriately identified the need to recognize those standards that have undergone the lengthy and rigorous approval

procedures inherently equipped with adequate safeguards against undue private or corporate influence, confirmed by approval from unaffiliated SDOs.

One very important aspect of green building is, of course, energy efficiency. To be sure, green building embodies more than just energy efficiency, however this is a major component of building performance; primarily because of the costs associated with it, i.e., utility bills. Due to concerns about the variability of consumer behavior and how consumption habits could potentially offset some efficiency gains in the envelope, the developers of the National Green Building Standard™ made sure to underscore the importance of educating homeowners about maintenance and home operation with a requirement in the standard. This adds value by educating the consumer about how personal conservation habits in the home are equally as important as improving the construction techniques of the home itself.

Existing Homes & Remodeling

Beyond green building, the shift in demand for remodeling for greater energy efficiency is a rapidly growing trend in the residential sector. NAHB supports the approach and intent of Section 202 in the ACES Act Draft legislation will provide direct dollars to consumers to improve the energy efficiency of existing homes and buildings. Section 202 does not mandate specific above-code targets, but rather approaches older homes holistically and directs the limited resources of the federal government directly at the largest part of the energy consumption problem, i.e., older homes. NAHB urges a similar approach be employed in new construction in lieu of the requirements for arbitrary code targets proposed in Section 201.

Additionally, existing homes offer a great opportunity for savings by simply replacing less efficient appliances with Energy Star® rated models. This can save an average of 30 percent over standard appliances and deliver meaningful energy savings in the form of decreased utility bills for consumers. While some efficiency upgrades are more costly than others (e.g., new heating/cooling systems versus replacing incandescent bulbs) each has the potential to save energy for the consumer operating an existing home. All of these components are important for

having an integrated approach towards energy efficiency. NAHB hopes that Congress will focus on the biggest part of the energy loss problem in the residential sector while supporting incentives to encourage above-code programs for new construction.

Conclusions and Recommendations

Improvements in residential energy efficiency and the growing green building movement are absolutely changing the dynamics of the housing market today. In some instances, the changes and improvements may be occurring at a slower pace than desired by policymakers and others, but claiming that nothing is occurring towards improved efficiency and sustainability is patently false. The reality is that a mix of incentives, consumer education, changes in construction technologies, and adoption of locally-enforceable and meaningful efficiency measures with a focus on older homes is needed to drive greater efficiency in the residential sector.

There are many opportunities for the government to work with home builders to achieve the goal of improved building efficiency in the ACES Act Draft legislation. NAHB recommends the following changes to address integrated energy efficiency in both new and existing homes:

- Modify the language in Section 201 to accommodate efficiency gains outside of code-controlled envelope requirements as builders reach to achieve increases in future editions of the energy code. Avoid allowing DOE to modify ICC codes or ASHRAE standards that may not accommodate every state's climate demands simultaneously or equally.
- Congress must restore its commitment to energy incentives that help offset upfront costs of efficiency upgrades. To do this, Congress should extend, or make permanent, Section 45L, Section 25C, Section 25D, and Section 179D of the tax code.

- Congress should employ the approach set forth in Section 202 to provide consumers with direct funding to improve efficiency of existing homes and buildings and consider applying a similar policy towards new construction.
- Lastly, Congress should consider embracing a broad possible green building policy and provide consideration for homes that achieve compliance with green building standards that have been approved by the ANSI, such as the *ICC-700 National Green Building Standard*™ for residential construction, remodeling, and land development. This recognition is important not only because the standard complies with federal law governing consensus standards (National Technology Transfer Act P.L. 104-113), but also because energy code targets by themselves cannot accommodate the more robust sustainability framework of green building, which achieves greater environmental performance as a whole over energy efficiency alone.

Appendix A

Consensus Committee on the
National Green Building Standard™

Representatives from the following organizations, companies, and government offices participated in the development of the criteria as approved by the American National Standards Institute (ANSI) for the ICC-700 2008 National Green Building Standard™:

American Forest & Paper Association
American Gas Association
American Institute of Architects
Bowen Collins and Associates, Consulting Engineers
Brick Industry Association
Build Green New Mexico
Building Owners and Managers Association (BOMA) International
Building Quality
City of Dearborn, Michigan, Department of Building & Safety
City of Denton, Texas, County Building Inspections
City of Keene, New Hampshire
City of Rio Rancho, New Mexico
City of St. Paul, Minnesota
City of Scottsdale, Arizona
CNIC Housing – Commander, Navy Installation Command, U.S. Navy
ConSol
Edison Electric Institute
Fairfax County, Virginia, Department of Public Works
Gas Appliance Manufacturers Association (GAMA)
Green Builder, LLC
Green Building Initiative, Portland, Oregon
Green Built Michigan (Lansing)
Gypsum Association
K. Hovnanian Homes/Landover Group
Manufactured Housing Institute
NAHB Land Development Committee
National Multi Housing Council
North American Insulation Manufacturers Association
Plastic Pipe and Fittings Association
Plumbing Manufacturers Institute
Portland Cement Association
State of California, Department of Housing and Community Development
Steel Framing Alliance
Sustainable Buildings Institute
Town of Parker, Colorado
United States Environmental Protection Agency
United States Department of Energy
U.S. Green Building Council
Veridian Homes
Village of Arlington Heights, Illinois
Whirlpool Corporation
Winchester Homes, Inc.

Mr. MARKEY. Thank you, Mr. Richardson, very much, and now we turn to questions from the subcommittee members and we begin with the gentlelady from Wisconsin, Ms. Baldwin.

Ms. BALDWIN. Thank you, Mr. Chairman, and Mr. Genzer, I am not starting with you just because your daughter goes to UW Madison but I do have a question because I think you would be great to answer.

I have been sharing with my fellow committee members about how I spent my spring recess, which included an energy tour of my home State and meeting with innovators and renewable energy producers. One of the sites that I had the chance to visit was Johnson Controls. Johnson Controls does a wide range of things but they have a building energy efficiency segment of their business and in fact we had a representative of Johnson Controls testify a few months back before our subcommittee. Just a couple of weeks ago the company announced that they would be involved in retrofitting the Empire State Building using innovative processes and state-of-the-art tools that should help reduce the building's energy consumption by a pretty impressive 38 percent per year with technologies that will pay off in a 2-year timeframe. That would probably place it, I think, in the top 10 percent of all U.S. office buildings in terms of energy efficiency. But one of the things I found interesting in my discussions with employees at Johnson Controls was an interesting conundrum. Because many of the commercial buildings turn over ownership so often, sometimes as rapidly as every 3 years or so, the incentive of owners to make energy efficiency improvements and investments often just don't exist, and so I would love to hear your thoughts about how we on this panel could incentivize this sort of energy efficiency improvement in some of these buildings. I have been tossing around a few ideas of my own but I would to hear yours right now.

Mr. GENZER. Thank you. First of all, the whole energy service performance contracting programs that Johnson Controls is really one of the leaders in is a great model. In fact, a lot of the funds that came through the stimulus package targeted to the State energy program, what we are seeing in a lot of the states is that a lot of those funds are being targeted to energy service performance contracts. So that is one of the real preeminent examples and we can certainly give you more information on a state-by-state basis as that moves forward. In terms of incentives for commercial building owners where they need payback periods in a shorter period of time, one of the elements of the draft bill now, the Retrofit for Energy and Environmental Performance program that is in the bill, I think Representative Welch is the chief sponsor of that, included targets for commercial buildings on a per-square-foot-basis for extra incentives. So we think that is a great idea. It is one of the steps. There is also additional things that could be done in terms of energy service performance contracts.

We are trying to do a lot more at the State level on that and extension of the commercial building energy efficiency tax deduction is another one that would be helpful. We are spending a lot of time working with commercial building owners on a State-by-State basis to try to see if there are additional incentives. So we would certainly work with them and it is a great idea, and also I think Mr.

Gardiner might have a comment about the tie-in with the energy efficiency resource standard.

Ms. BALDWIN. Absolutely, and I actually have another question and a time limit, so if you want to make a quick comment, Mr. Gardiner, and then I have——

Mr. GARDINER. Just as I said in my opening statement, that under an energy efficiency resource standard what happens is that utility companies offer rebates including to commercial building owners to do this and so it takes away the problem that you identify, which is one of the serious barriers to efficiency which is the builder or the landlord isn't necessarily the person who is responsible for paying the energy bill, may not own the building for a long period of time so the rebates that utility companies offer under the provisions in the draft discussion under the energy efficiency resource standard are, I think, a critical incentive.

Ms. BALDWIN. Let me jump in quickly with my second question, and I am very supportive of the EERS in the bill. Based on information I have received from my constituency, I feel like Wisconsin is well suited to comply with the EERS through at least 2012. However, I do have a question. One of the things we talked about in another section of the bill is the potential for widespread deployment of electric vehicles over the next 15 or more years, and if we see this widespread deployment, the base quantities for retail electricity distributors could grow quite rapidly and thus the amount of electricity savings that they will be required to achieve could grow rapidly, could kind of potentially transform the EERS savings required, making them a little bit more challenging to meet, and expensive to meet, and I am wondering if this is the intent, and if not, is there anything we should be looking at modifying in anticipation of the potential of widespread deployment of electric vehicles.

Mr. GARDINER. The Energy Information Administration says today that actually if you look out towards the future that the amount of electricity that vehicles like that might consume is still projected to be relatively small. That could, of course, change in the way that you suggest and we think that was a good idea so I think that there could be some provision that would allow the Secretary of Energy, for example, to modify that if he or she saw that the amount of electric vehicles were consuming a large amount of energy. But I think at the moment it looks like it is a relatively small problem, at least through 2020, but it is an issue and I think it is certainly worthy of further discussion to look at.

Mr. FRIEDMAN. If I could just make a quick comment, our blueprint included a significant ramp-up in plug-in hybrids to reaching 20 percent of sales by 2030, so expecting very aggressive progress on that technology, and under our blueprint when you invest in efficiency and when you invest in renewable electricity, the grid can handle that, and frankly, I would love to have the problem where we have too many plug-ins on the road. That is a problem I look forward to having some day.

Mr. MARKEY. The gentlelady's time has expired. The chair recognizes the gentleman from Michigan, Mr. Upton.

Mr. UPTON. Well, thank you, Mr. Chairman, and I too sadly will have to leave you with the last panel on your own, I am afraid, I

regret to say. Before I start, I want to put into the record a letter from the International Code Council addressed to yourself, Chairman Waxman, Mr. Barton and myself.

[The information was unavailable at the time of printing.]

Mr. MARKEY. We will include it in the record without objection.

Mr. UPTON. And I want to focus just a little bit on autos before I get in my auto and depart. Mr. McCurdy and Mr. Reuther are good friends of mine too. I appreciate all the work that you have done for our State as we try to have the auto industry survive. Mr. McCurdy, you talked a lot about having a single standard, and of course, that is in the bill but the standard is California, and the way that I read it, it allows them to in fact change the standard, and when they change it, that is California, so does the rest of the Nation then follow their lead. Is that your understanding of the way that it is in the draft as well?

Mr. MCCURDY. Mr. Upton, thank you for your comments earlier too and I very much appreciate working with you and I have for a number of years. Section 221, I believe, is the section you are referring to and sub 4, and I think the draft made an effort to address at least three of the concerns in the first three sections about the standard. The fourth section, I think Mr. Reuther and I both would concur, needs work and that is the area that we would like to see the committee continue conversations. I think the Obama Administration has an opportunity to create a single national approach that would be administered by the federal government so that we eliminate the duplicative and potentially conflicting standards. The reason there are concerns, it is not just a question of stringency. The structure is one of the major challenges of compliance, enforcement, and several other provisions, and that has to be harmonized and I think the Administration is going to try to address that, and I think they are going to have to work with Congress as well. So again, you know, we do strongly support a single national standard.

One comment that my friend, Mr. Reuther, made with regard to future. It is clear that under the EISA, the energy bill of 2007, which we supported and the CAFE provisions that we can see our way to 2016. Beyond that, though, is an area of major concern. It is a concern because of the need for clarity and predictability because of the need to ramp up to produce the kinds of technologies. Mr. Friedman mentioned 20 percent plug-in hybrids by 2030. That is an extremely aggressive number. We would like to be there but I am not sure that without proper incentives, without a real energy policy that incentivizes consumers, there is certainly no guarantee that that will occur. So we need—there is not one single silver bullet technology but it is clear we need certainty and predictability, and I think that section is one that on a bipartisan basis that we should address and look forward to working with you on it.

Mr. UPTON. And Mr. Reuther, do you want to comment on that at all?

Mr. REUTHER. We read the draft bill a little bit differently. To us, it appears to say through 2015 there would be a harmonized standard but after that point in time nothing is clear except there is a green light for California to go ahead, and as I indicated in testimony, we would like to see longer-term harmonization and cer-

tainty both for the environmental fuel savings benefits but also because it will assist the companies in knowing what is required of them, where they have to put their emphasis in terms of investments and technology.

Mr. UPTON. Now, both of you talked about substantial investment to be able to get to that point and I presume that that comes from, as you said, Mr. McCurdy, 5 percent of the allocation. I would presume then if the Obama Administration's request of 100 percent auction, therefore leaving nothing to be taken out of that for allocations, you all would be opposed to the bill. Is that right?

Mr. MCCURDY. Well, I said either allocations or revenue, so it is a question. I think that section in the bill is not clear. I am sure it is something that the committee is going to be working on but the point I hope is clear, and that is, if we are going to be held accountable or responsible for EPA's number of 17 percent of the emissions and we understand the incredible cost associated with addressing that, that there should be dedicated revenues or allocations for the investments needed for research and development, production, retooling, which is going to be quite substantial.

Mr. UPTON. Just in closing, I know my time is expired, I was glad to hear you talk about the clunkers bill. I think that is very important to get the consumers back into the showroom and send the green light to all of our autoworkers, whether they be suppliers or assembly folks. It is key and I am glad that we have bipartisan support led by our colleague, Betty Sutton from our committee and Candice Miller from Michigan, which I am a cosponsor. Thank you.

Mr. MARKEY. The gentleman's time is expired. We recognize another sponsor of the cash for clunkers legislation, Mr. Inslee, for questioning.

Mr. INSLEE. Thank you.

Mr. McCurdy, some of us have been looking at the Project Better Place model of trying to improve infrastructure for charging and swapping out batteries. Could you give us your group's thoughts about it? How do we make that work? We do have a provision in the bill that will help development of infrastructure. I appreciate your comments on that.

Mr. MCCURDY. Thank you, Mr. Inslee.

Mr. INSLEE. And I don't mean to limit my comments to Project Better Place. There are other companies involved in this as well.

Mr. MCCURDY. No, you are exactly right. It is good to see you and I appreciate your support. As I indicated in my written statement, fuels and autos are a system and for the past few decades I think the focus has been on the autos and not as much on fuels or the system. If we move to the electrification of vehicles, whether it is—and again, there are a number of business models out there, we can't comment on which one is most likely to succeed but it is clear the infrastructure has to be there and you have to move now in order to pave the way for whether it is plug-ins, fully electric vehicles, whether it is—and that is where the smart grid comes in. It is also where utilities, I think, are going to be incentivized to address that as well. What you need is the ability to recharge, whether it is home, through a smart grid at night when the rates are lower or your place of work or if you moving around urban environments, and it is clear the current infrastructure is not there to sup-

port that, so this is an important investment. Better Place, that you mentioned, is one where they have a different business model but they want to have fast charging or replace the batteries themselves. Again, we are not going to down-select one particular technology but we think the infrastructure could be supportive of the entire electrification process.

Mr. INSLEE. Thank you. I appreciate it.

Mr. MCCURDY. I wanted to ask Mr. Sperling and Mr. Drevna, the discussion about the low-carbon fuel standard, Mr. Drevna—and I missed your oral testimony but I was just reading your testimony and you were making reference that you thought that there was a possibility that the approach to the bill would discriminate against certain petroleum products, I think you were referring to Canadian tar sands, and I don't understand that criticism. Basically the bill would have "some discrimination" but it is based on carbon content. All the creators' children would be treated the same, it is just dependent on how much carbon content is in each fuel source. So I don't consider the bill discriminatory in that sense. It simply judges each system based on its carbon content. Perhaps Mr. Drevna and Mr. Sperling could comment on that.

Mr. DREVNA. Thank you, Mr. Inslee. Unfortunately, Mr. Sperling had to catch an airplane. The question about the low-carbon fuel standard, what you are saying, there are two parts to it that we see. One is that the bill, the draft itself has a cap, a cap-and-trade mechanism, and the bill also contains a low-carbon fuel standard. We view those two things, as I said in my oral testimony, at best duplicative and redundant and at worst is punitive and counterproductive. We have no control over the—the only way to get low-carbon fuel standard is to blend non-carbon fuels into gasoline or diesel. We have no control over the technology, advancing those new fuels. We have no control over the infrastructure. If you have a cap, that is a performance standard. Then you are saying you have to do more, do a low-carbon fuel standard and then when you look at the renewable fuel standard that we are still obligated under EPACT 2005 as amended by EISA 2007, we have got three potentially competing kinds of legislation and regulation we have to look at. I think there is a misconception among a lot of folks, and I know the draft says well, we are going to phase out the RFS as we ramp up the LCFS. In theory, that sounds marvelous. In practicality, it is very difficult for refiners to do so. We don't have a magic switch that we flip one day and say oK, now we are out of the RFS and went to the LCFS. It is almost like the proponents believe that there are two dimmer switches, one we are going to raise on the LCFS while we lower the RFS. Unfortunately, Mr. Inslee, it simply doesn't work that way, and again I go back to saying, if you have a cap, you have a performance standard, you know, it is one thing to have a belt and suspenders, you know, but these two are competing. They could potentially be competing because there are many studies out there right now that suggest that a low-carbon fuel standard is actually more energy intensive than other ways of reducing carbon, and I will be more than happy—I don't want to use up all your time. I will be more than happy to——

Mr. INSLEE. I appreciate that. I think you came up with three criticisms I hadn't even heard yet.

Mr. DREVNA. Well, and again, I will be more than happy to discuss these with you. This is why I suggested that, you know, we would suggest another hearing on this for the transportation sector. We heard a lot this morning about a lot of things involving electricity. We really—you know, from my parochial interest, and I shouldn't even say parochial. This is a nation's interest. From our interest, we have to fully understand what the impact is going to be on transportation fuels because as we all know, this is what drives the economy.

Mr. INSLEE. I appreciate it.

Mr. Friedman.

Mr. FRIEDMAN. Thank you, Congressman, and thank you very much for your leadership on the low-carbon fuel standard. You have been very important to making progress in this area. I think part of what we are seeing, when people don't want to make progress they try to make things sound a lot more complicated than they really are. The low-carbon fuel standard is a very straightforward policy that creates market for cleaner fuels, and one of the problems, one of the challenges with a cap-and-trade system is if we do it right, if we add in the complementary policies, sure, we will maybe increase gasoline prices 15, 20 cents a gallon. Well, it took a near quadrupling of gas prices last summer to get significant change out of consumers. Fifteen or 20 cents a gallon is not going to stimulate low-carbon biofuels, it is not going to stimulate electric vehicles, it is not going to stimulate fuel cell vehicles. A low-carbon fuel standard will do just that. Also, it is not just about alternative fuels. Refineries have the potential to increase efficiency 10 to 20 percent. We have got a wellspring of efficiency improvements that can be sent throughout the economy and refineries are part of that. So there is a lot of potential. This is really a lot simpler than I think people make it seem. It is really the same case with vehicle standards. Once EPA sets strong enough standards, California has already made clear they will cede to EPA's authority when they set strong standards.

Mr. INSLEE. Thank you. I am over my time. I just want to make one closing comment. Throughout these discussions, one of the things we are trying to do is really promote the creation of new technology. We have to have new technologies here, and even if we could do certain things at zero cost today that don't get us to the ultimate goal, we have to create these new technologies. I think this helps.

Mr. MARKEY. The gentleman's time has expired. I would like to continue on a little bit with the subject that Congressman Inslee was discussing, and that is fuel economy standards and the automotive sector, and ask if I could, Mr. Reuther and Mr. McCurdy and Mr. Friedman, if we could just have a little discussion about the 2007 fuel economy standard, 35 miles per gallon for the fleet by 2020, combined with the $25 billion in the Green Car Factory Funds, combined with the $2 billion for the Battery Fund that has been created in the stimulus, and just give me some sense of your optimism about how we just might reach a tipping point in 3, 4, 5 years where we move much more rapidly than even the law re-

quires because of the adoption of these green car new technologies that will be manufactured by every company not only in the United States but around the world. Mr. McCurdy.

Mr. MCCURDY. Thank you, Mr. Chairman. We obviously applaud the efforts to dedicate some revenue or some funds after the passage of EISA, $25 billion section 136 funds. As we know, that was over a year ago. Those funds are just now—the loans are just now starting to be made available. The battery money is important. You have particularly strong interest in those technologies. That is a step, a small step in the right direction. If you recall, the NHTSA estimates for the cost to the U.S. sector for compliance with CAFE was going to be roughly $85 billion. So 25 is a down payment. I think it is an important step. But if you want to accelerate that, which is really where you would like to go, it is going to take considerable more investment, and it is not just a question of money. I mean, with all due respect to Mr. Friedman, it is not as easy as perhaps some would say in theory. I mean, you actually have to go beyond the laboratory and get it deployed. In the manufacturing world and when you are dealing with consumers, the real key is being able to have it where it is a warrantable product that will last whether it is in the rather cold climate of Wisconsin in the winter or the summers in Arizona, and so batteries, that is a big challenge to battery and electrification. But having said that, we are very optimistic and hopeful about transformation to the new technologies and we want to work with Congress and the Administration in order to make that happen.

Mr. MARKEY. Thank you.

Mr. Reuther.

Mr. REUTHER. We believe that the 2007 law was a very good law and we are optimistic the companies will be able to meet the standard in that law and perhaps do even better than that. It is my understanding that already enough applications have been submitted to exceed the $25 billion. It has already been appropriated for the section 136 program and that is part of why we believe that there is a need to provide additional funding going forward. I also have to underscore, though, that the ability of the companies to achieve better results in the future is being impacted by the current severe recession in the industry, which is severely straining the financial resources of the companies. It is also changing the underlying assumptions. I mean, one of the key assumptions that goes into the cost-benefit analyses is the number of vehicle sales. That affects the reductions that you get and emissions. It affects the cost of diffusing the technology across the entire fleet. So I think everyone is going to have to go back and revisit the calculations on what can be achievable going forward, given the dramatic change that we are seeing in the nature of the auto market.

Mr. MARKEY. As the auto marketplace once again goes from 10 million cars a year back up to 16 or 17 million cars per year which are sold in the United States, and I do subscribe to Vice President Gore's analysis that as we recover and as the Chinese and Indian economies and other developing countries' economies continue to expand, we will see an inexorable rise in the price of gasoline here in the United States. Do you think that it is likely that the automotive industry will plan now that they have this much lower de-

mand for that 16- or 17-million-vehicle world that will be re-created in 3 or 4 years hopefully in a way that has a higher percentage of vehicles coming from this energy efficient or plug-in hybrid or straight hybrid vehicles, Mr. Reuther?

Mr. REUTHER. Well, I think a lot of analysts are questioning whether we will be getting back to the 16, 17 million vehicles sales level, that there may have been a long-term change in the overall demand. So I think that is an important thing. We do agree that over time the gas prices are going to be going to higher levels. I mean, we believe there is a need for the government to try and incentivize and drive the electrification of the industry and to drive that process as quickly as possible, and we want to work with you to be supportive of that.

Mr. MARKEY. I am just working from my own personal set of assumptions, that maybe we do have to pay cash for clunkers, which I think we ultimately will wind up doing here, but there is going to be a point at which people spend their own cash for new cars, and that is when the economy recovers and I think it is a pretty good bet that people will not like riding around in clunkers if they have got the cash back in their pockets and I think that is a good planning premise.

Mr. Friedman?

Mr. FRIEDMAN. Thank you, Mr. Chairman. As I said in my testimony and I will reinforce today, I think that there are good reasons to try to help the auto industry through these difficult times to invest in the auto industry to help them get through these difficult times. Any time you invest in technology you create more jobs, and if we invest in the auto industry tied to performance standards, any time the federal taxpayers put out money, they should expect something in return so there should be performance standards tied to those investments. If we make those investments, I do think the auto industry can make significant changes. In fact, we are already seeing it. This is an article from Business Week. Detroit finds green in recycled fuel economy ideas. It is about how Ford wants mixed fuel saving tricks from the 1950s and is now using them to boost mileage and cut emissions. The auto industry has the technology. The engineers and autoworkers are incredibly talented. If you give them the chance, if you make the investment in them, if you trust them to help cut our emissions and make us less dependent on oil, they will deliver.

Mr. MARKEY. Thank you, Mr. Friedman.

Let me ask you, Mr. McCurdy.

Mr. MCCURDY. I just have one comment on that Mr. Chairman. As you know, I have had long discussions and conversations about this. Four dollar gasoline did more to move consumers to fuel-efficient vehicles and choices than any regulation, any edict, any government action, and if prices do recover—and just one other point, your numbers are accurate on production levels. We have dropped from a high of 17 million vehicles to below 10 million vehicles currently annualized sale. Assuming a V-shaped recovery, and that is an optimistic assumption, you are looking at 2014, 2015 minimum to get back to those kinds of levels. We would welcome 12 and 13 million unit sales at this point. But the important thing is, even with this downturn, this industry continues to invest more than

any other industry in those technologies, in research and development.

Mr. MARKEY. Thank you, Mr. McCurdy.

And let me ask you, Mr. Bowles, one final question, and that is to relate to us the lesson, if you can succinctly, that the regional greenhouse gas initiative that Massachusetts and nine other States are a part of that has kind of an equivalent system out in California, the West Coast and that other States are looking at. What can we learn from what happened in terms of having a system in place that creates new incentives for reducing the amount of greenhouse gases that are emitted into the atmosphere?

Mr. BOWLES. Thank you very much, Mr. Chairman, for the question, and really on behalf of the 10 RGGI states, I think we can report remarkable success. We learned from the experience of the European Union and the windfall profits that were given to power generators when they were given on an allocation basis their permits and then held them in reserve and ultimately sold them later at a greater price and ended up making money off the permits when the point was to reduce greenhouse gas emissions. In Massachusetts, we have adopted 100 percent auction policy. We have been through three auctions in the Nation's first functioning cap-and-trade. The price of the auctions have gone up modestly at each point from about $3 a permit to about $3.50 a permit. In Massachusetts we have raised $43 million that we are plowing back into energy efficiency. We are seeing jobs being created by people saving money on their electric bills from those investments. So I think what we have taken from it is that an auction system works, it works brilliantly. We haven't had big surprises. We have generated resources back for economically efficient returns that are protecting the environment and creating jobs at the same time.

Mr. MARKEY. And can you give us some sense of what the response is in those 10 States to this system that right now is limited to the utility sector?

Mr. BOWLES. Yes, very well. I mean, in Massachusetts we are spending about $150 million a year on energy efficiency anyway as a baseline. We are adding significant new resources and expanding those programs so I would say it has been very well received in Massachusetts and I think across the footprint of the 10 RGGI States.

Mr. MARKEY. OK. Great. Here is what I am going to ask each one of you to give us your 30-second summary as we move forward in terms of what you want this committee to remember as we move forward over the next month on passing a climate change and energy bill out of this committee. We will go in reverse order and we will give you, Mr. DeLaski, the first shot.

Mr. DELASKI. I will just reiterate that our support for the subtitle concerning appliance standards and urge you to keep that subtitle strong and to maintain the reforms to enable the Department of Energy to set standards stronger as they move forward to get their program back on track.

Mr. MARKEY. Thank you very much.

Mr. Drevna.

Mr. DREVNA. Thank you, Mr. Chair. If I could sum it up in 30 seconds or less, I would urge the committee and the Congress to

make sure we know all the consequences intended and unintended as we forge on, as you forge on with the legislation. It is just too important, and again from the transportation sector, I think we should sit down again and talk about the transportation sector and talk about what is in the discussion draft and where we have some concerns and where we have some other ideas for you. Thank you very much.

Mr. MARKEY. Thank you, Mr. Drevna, very much.

Mr. Genzer.

Mr. GENZER. The stimulus package was a good start, a great start on energy efficiency funding, things you have been fighting for for 35 years. The Retrofit for Energy and Environmental Performance program and the other elements of the efficiency part of this bill should definitely good forward and it is also time to move forward aggressively on building codes, both at the residential and the commercial level.

Mr. MARKEY. Thank you, Mr. Genzer.

Mr. Gardiner.

Mr. GARDINER. The energy efficiency resource standard that is contained in the discussion draft is a great deal for consumers. It is going to save them $170 billion. It is also a critical—coupled with the renewable electricity standard, it is a critical cost containment strategy that will yield the lowest cost carbon reductions as we go forward to reducing greenhouse gas emissions.

Mr. MARKEY. Thank you.

Mr. Friedman.

Mr. FRIEDMAN. Thank you, Mr. Chairman. The key to addressing transportation is looking at it as a system, addressing vehicles, fuels and a smarter transportation infrastructure and more investment in transit. This bill deserves to pass because it addresses all of these issues. It requires leadership from the Administration on top of that but it sets us down the right path. The thing that we have to do is prepare for our future, and if we look back at $4-a-gallon gasoline, one of the things that that did is, it started moving consumers away from car companies that weren't ready and to the car companies that were ready with the best technology. We can't afford for that to happen again. We need to make sure they all have the best technology.

Mr. MARKEY. Thank you, Mr. Freidman.

Mr. Reuther.

Mr. REUTHER. UAW believes that discussion draft has many excellent provisions. We look forward to working with you and the entire subcommittee to refine the vehicle efficiency standards to provide longer-term certainty both on fuel economy environmental benefits and certainty to the companies on the directions they need to go with the technology, and we look forward to working with you to make sure that the resources are there so that the companies can do that.

Mr. MARKEY. Thank you, Mr. Reuther.

Mr. McCurdy.

Mr. MCCURDY. Mr. Chairman, I said earlier automakers are committed to reducing CO_2 from the vehicles that we sell and the plants where we manufacture them. We think the discussion draft provides a platform for discussion. We share some of the concerns

as indicated by Mr. Reuther and believe that we can work to improve those.

Mr. MARKEY. Thank you, Mr. McCurdy.

And Mr. Bowles.

Mr. BOWLES. Mr. Chairman, thank you again for this hearing today and the opportunity. Three points to recall. One is, please keep the strong federal-State partnership found in the draft. It builds on mechanisms that work and accelerates them, not replacing them. Second, with due respect, we urge you to get on with it. Congressional leadership on clean energy and climate change is long overdue. You have personally been a tremendous advocate. Movement through this body is vitally important. And third, the promise of the clean energy economy is real. It is happening in the Commonwealth of Massachusetts. We thank you for your leadership.

Mr. MARKEY. Thank you, Mr. Bowles, very much. And by the way, I just would like to say that any three of you would be a fantastic panel alone at an ordinary time and I appreciate your understanding that time is of the essence. This is the year. Copenhagen is in December. We have to move and we have to have these issues, and you are right, we are getting it on, Mr. Bowles. You saw that today with the Vice President and Speaker Gingrich. We are in the middle of an historic debate in this committee. We thank you all, very much, for your participation.

While this panel leaves and the next one assembles behind their names, we will take a 2-minute break.

[Recess.]

Mr. MARKEY. Ladies and gentlemen, thank you so much. We invite our witnesses to come and to sit behind their nametags at 4:25 on Friday afternoon. I just want you to know that this is all part of our plan to get rid of everybody so we could have the most important panel to ourselves with unlimited questioning by the chairman and by Ms. Baldwin, and so the whole day, this has been the plan, just so we have this special panel for that purpose.

To begin, I am going to ask Congresswoman Baldwin to introduce our first witness.

Ms. BALDWIN. Thank you, Mr. Chairman. I am pleased to introduce a constituent whose expertise in conservation and climate change is well known and well documented. During her 17 years with the Nature Conservancy, Tia Nelson led that organization's climate change program where she played a key role in developing forest protection and restoration as a climate change mitigation strategy. Tia received the EPA's climate change leadership award in the year 2000. Since 2004, Tia has served as executive secretary of the Wisconsin Board of Commissioners of Public Lands, and in 2007, Governor Jim Doyle appointed Tia as co-chair of the Governor's Task Force on Global Warming, a broad coalition of Wisconsin's experts and leaders that in 2008 produced a nearly unanimous report on the ways Wisconsin can be a leader in addressing the challenges presented by climate change, reduce our dependence on fossil fuel and advance the State's energy independence objectives. As the daughter of Wisconsin's great Congressman, governor and U.S. Senator Gaylord Nelson, the founder of Earth Day, you can certainly say that Tia's dedication to preserving land and water

resources is in her blood. She is carrying on her father's great environmental legacy and forcefully creating her own. He would be justly proud to see her with us today. Tia.

STATEMENTS OF TIA NELSON, EXECUTIVE SECRETARY, BOARD OF COMMISSIONERS OF PUBLIC LANDS, STATE OF WISCONSIN; BILL BECKER, EXECUTIVE DIRECTOR, NATIONAL ASSOCIATION OF CLEAN AIR AGENCIES; CARL ROYAL, COUNSEL, SCHIFF HARDIN LLP, FORMERLY SENIOR VICE PRESIDENT AND GENERAL COUNSEL, CHICAGO MERCANTILE EXCHANGE; JON ANDA, EXECUTIVE-IN-RESIDENCE, FUQUA SCHOOL OF BUSINESS, DUKE UNIVERSITY, VISITING FELLOW NICHOLAS INSTITUTE FOR ENVIRONMENTAL POLICY SOLUTION; DAVID DONIGER, POLICY DIRECTOR, CLIMATE CENTER, NATURAL RESOURCES DEFENSE COUNCIL; PATRICIA MULROY, GENERAL MANAGER, LAS VEGAS VALLEY WATER DISTRICT/SOUTHERN NEVADA WATER AUTHORITY; ANNE E. SMITH, VICE PRESIDENT, PRACTICE LEADER OF CLIMATE AND SUSTAINABILITY, CRA INTERNATIONAL; AND WILLIAM L. KOVACS, VICE PRESIDENT, ENVIRONMENT, TECHNOLOGY AND REGULATORY AFFAIRS, U.S. CHAMBER OF COMMERCE

STATEMENT OF TIA NELSON

Ms. NELSON. Thank you so much for your very kind introduction. I am quite grateful. I am proud to be represented by you in Congress and grateful too for your environmental leadership. Thank you, Chairman Markey, for your endurance this week. I am grateful to be here today. In the interest of conservation and efficiency, I plan on trying to be very brief and talk very fast.

I am here to share with you a little bit about Wisconsin's experience. Governor Doyle, who has been a leader on the issue of climate change, appointed a task force which I co-chair with my distinguished colleague, Roy Filley from WPPI Energy, and Roy and I co-chaired a group of 29 stakeholders representing industry, tribes, environmentalists, manufacturers, labor interests, agricultural interests, citizens, and we reached near-unanimous consensus on our report which Tammy just held up for you.

The governor tasked us with three objectives. Number one was to identify short- and long-term targets for emissions reductions. Number two was to present policy recommendations to achieve these goals. Number three was to identify opportunities to address climate change while growing Wisconsin's economy and creating jobs. We worked for a year. We produced a report, as I said, near-unanimous support. That report has many similarities to your bill, Mr. Chairman. The renewable energy and efficiency titles are quite similar. The renewable portfolio standard, the low-carbon fuel standard, the energy efficiency language, the building codes, the lighting standards and a few others are remarkably similar to our report. These are the measures that are most cost effective, as you know, and we in our process identified them similarly.

So first and foremost, Mr. Chairman, I would like to applaud you. The committee draft offers real solutions to address climate change, promote energy independence and modernize our energy infrastructure, and I support the draft you have put forward and

believe if we work together it will work for Wisconsin and for the Nation.

The biggest challenge for us is working on cost containment. Wisconsin, as progressive and long of an environmental tradition as we have, Wisconsin is heavily reliant on coal. About 70 percent of our energy comes from coal. We are the third largest manufacturer in the United States. This means that cap and trades poses some real cost challenges for us but we believe that we can work with you on those costs. The draft does not propose an allowance structure and I am not here to support a particular approach but I thought it would be valuable to share with you what we did in the task force because what we did in the task force ended up uniting this diverse group of stakeholders to support a bill that has strong emission reduction targets. They are almost identical to yours, a little tougher in the mid term and a little weaker in the long term but effectively about the same. We have tough targets. We have tripling conservation and efficiency increasing renewables two and a half fold and it is quite—and endorsing a cap and trade, not a State cap and trade but a federal cap and trade.

The biggest issue for us to discuss was how to do cost containment as a heavy coal-dependent State. We came up with an idea that I haven't heard yet that I hope you will seriously consider. The discussion to date has been about allocation issues and whether to auction all allowances or allocate them for free. These are the two extremes. What we did was come up with a compromise. That compromise united the group. That compromise suggested that up to 90 percent of the allowances in the early years, maybe for a period as long as 10 years, up to 90 percent would be allocated but not for free, would be allocated at a small fee, and that you would increase the auction percentage and decrease the allocated at a fee percentage over time to give us time to transition our economy in essence. That fee structure gives you cost certainty, gives you cost containment. It creates a predictable revenue stream which you can then draw on to help low-income folks do energy efficiency, do investments in climate research and so on. So that is how we got at the issue of cost abatement. For a State like Wisconsin, offsets will also be important. We have very important forest and farm industries and we believe that changes in land-use practices can help mitigate climate change. I was thrilled to see in your bill that you included offsets both international and domestic and recognized the role of forestry. Many people don't know that deforestation is more than 20 percent of annual greenhouse gas emissions globally and as a matter of fact, those emissions exceed the emissions from all of the planes, trains and automobiles in the world. You cannot address climate change without addressing the issue of deforestation and assisting developing countries in funding alternatives to destroying not only their forests and emitting greenhouse gases but other environmental benefits of the forest.

So those are the two most important issues for us in terms of cost containment. We want to embrace most strongly your draft bill and discuss with you ways to help make it work for Wisconsin. We are grateful for your leadership and I thank you.

[The prepared statement of Ms. Nelson follows:]

Testimony of Tia Nelson
Co-Chair, Governor James E. Doyle's Global Warming Task Force
House Subcommittee on Energy and Environment
Friday, April 24, 10:00 AM

Introduction

Good afternoon Chairman Markey, Ranking Member Upton, and Members of the Committee.

My name is Tia Nelson and I am the Executive Secretary of the Board of Commissioners of Public Lands for the State of Wisconsin. In 2007, I was appointed by Wisconsin Governor Jim Doyle to serve as one of two co-chairs of Wisconsin's Task Force on Global Warming. I'm honored to appear before the Committee today to highlight the findings and recommendations of our Task Force and to share my perspectives on the discussion draft of the American Clean Energy and Security Act of 2009.

Wisconsin's Task Force on Global Warming

Wisconsin's Task Force on Global Warming consisted of a diverse group of stakeholders representing a broad political spectrum: electric utilities and cooperatives, non-profit advocacy organizations, large manufacturers, labor unions, agricultural organizations, forestry interests, Native American tribes, and key Legislative committee members. The mission given to us by Governor Doyle was threefold:

1) Identify short- and long-term goals for reductions in greenhouse gas emissions;
2) Present policy recommendations to achieve those goals; and,
3) Identify opportunities to address global warming locally while growing our state's economy and creating new jobs.

After more than a year of hard work, the Task Force delivered a final report to Governor Doyle in July 2008 that garnered nearly unanimous support from our diverse membership.[1] Our final report included recommended greenhouse gas reduction targets, economic and environmental modeling results, and more than 60 different policy recommendations covering just about every piece of the climate change puzzle.

Governor Doyle and his Administration have already implemented several of those recommendations. Most of the others will be included in a comprehensive climate change bill soon to be introduced by our State Legislature. Wisconsin will have a head start on implementing policies that closely resemble many of the provisions in the bill before you today. And we are poised to act as a full partner with the federal government once comprehensive, nationwide climate change regulation is in place.

What makes the Wisconsin Task Force process and its product so unique is that it represents such a broad and strong political consensus in support of aggressive action on climate change. The Task Force membership, as well as Governor Doyle, knew that federal action was necessary and likely inevitable, and that it would be important for Wisconsin to prepare itself in advance and develop a set of policy recommendations that would meaningfully reduce greenhouse gas emissions and make sense for Wisconsin's economy.

Perspectives on the Discussion Draft

First and foremost, I want to applaud the Chairmen for bringing before this Committee a discussion draft that offers real solutions to confront climate change, promote energy independence, modernize America's energy infrastructure, and make our nation more

[1] The final report is available at http://dnr.wi.gov/environmentprotect/gtfgw/documents/Final_Report.pdf.

competitive globally. I support what the Chairmen have put forward, and I think we can make it work for Wisconsin and for the nation as a whole.

I'm proud to say that significant portions of the Chairmen's draft closely track what the Wisconsin Task Force recommended. The renewable energy and energy efficiency titles in the discussion draft, in particular, are remarkably similar in many respects to the recommendations developed by our Task Force, and not surprisingly, I offer my wholehearted support for those aspects of the bill. Specifically:

- The proposed Renewable Electricity Standards and Low Carbon Fuel Standards in the discussion draft closely resemble similar provisions and targets recommended by Wisconsin's Task Force.
- The discussion draft also includes a variety of measures related to energy efficiency, including building codes, lighting standards, and appliance standards. Our Task Force concluded – as have others – that these types of measures are the most effective and least costly actions that can be taken to reduce greenhouse gas emissions. We recommended mandatory utility investments in energy efficiency that I believe would achieve results similar to those of the Energy Efficiency Resource Standard proposed in the discussion draft.

Perhaps most importantly, the discussion draft proposes ambitious, science-based, economy-wide greenhouse gas emission reduction goals and a cap-and-trade system for meeting those goals. I fully support these targets, which are roughly equivalent to what Wisconsin's Task Force recommended to Governor Doyle.

I would like to share with the Committee one of the lessons from Wisconsin's Task Force. Our technical modeling indicated that without a cap-and-trade program, even if all 60 or

so of our other policy recommendations were implemented, Wisconsin would only be able to achieve about half of its emission reduction goal. If Committee members support the emission reduction targets proposed by the Chairmen, energy efficiency and renewable energy policies alone will not be enough. In Wisconsin, our broad spectrum of Task Force stakeholders unequivocally acknowledged that federal cap-and-trade regulation is a critical component of any climate change solution.

With that said, cap-and-trade regulation should ensure that our emission reduction goals are met *at the lowest possible cost*. And I can tell you that the consensus of interests that we brought together in Wisconsin, in support of economy-wide, cap-and-trade regulation would urge that this Committee do everything it reasonably can to mitigate the compliance costs associated with comprehensive regulation.

The economic and fuel makeup of Wisconsin make it a unique voice in the climate change debate. Wisconsin ranks third among all states in manufacturing. We are therefore naturally concerned about whether cap-and-trade regulations will make our manufacturers less competitive in global markets. We also are more dependent on coal for electricity than most states, and unfortunately coal emits more greenhouse gases per unit of electricity than any other conventional fuel. These two characteristics – our strong manufacturing base and reliance on coal for power – mean that Wisconsin could shoulder a disproportionately heavier compliance burden, depending on how federal regulation is ultimately designed. These questions of fairness and proportionality are, without question, extremely challenging. And I offer no easy answers. But in the face of those challenges, Wisconsin's Task Force did not reject cap-and-trade and we did not water down our emissions reduction goals. Rather, we focused on cost mitigation as a

crucially important design feature of any cap-and-trade system. Specifically, we focused on two topics of great interest to this Committee: allowance distribution and the availability of offsets.

I understand that the Chairmen's draft does not propose an allowance distribution methodology, and I'm not here today to support a particular approach. However, I would like to share with the Committee what our Task Force recommended. The Task Force did not limit its design options to the either/or proposition of auction versus free allocation. Instead, we crafted a compromise:

- Allocate, for a reasonably small fee – perhaps as little as $2 per ton – to industrial sources and regulated utilities a substantial majority of the allowances that they will need to comply, for an initial transition period of up to ten years; and
- Auction the remainder of the unallocated allowances.

In reaching that compromise, the Task Force aimed to:

- Provide greater financial certainty to regulated entities than they would have if all allowances were auctioned;
- Minimize volatility, both in compliance costs and in overall economic impacts; and
- Create a predictable, guaranteed revenue stream for climate related purposes such as low-income bill assistance, energy efficiency programs, investments in renewable and clean energy, wildlife and habitat impact mitigation, and breakthrough research. This would create a substantial revenue source when applied to the large number of allowances under discussion.

Importantly, the Task Force did not forever rule out the possibility of a more robust auction distribution methodology. Task Force members did, though, make clear that for a state

like Wisconsin, an initial transition period would be necessary to allow its economy, power sector, and consumers enough time to adjust to a carbon-constrained world.

Also of great importance in the design of cap-and-trade are offsets. And offsets will be doubly important for states like Wisconsin. Not only do we have a strong manufacturing base and a heavy reliance on coal for power, we also possess abundant forest resources and a robust agricultural sector. As a result, offsets were an important issue for our Task Force, and they are an important issue for Governor Doyle, who has signed a Memorandum of Understanding with California, Brazil, and Indonesia to collaborate on forestry offsets. The signatories of this agreement represent 50% of the total tropical forests in the world.

I understand that offsets are a difficult and challenging subject, as I have spent much of the last 15 years working in this policy arena. But offsets are a potentially powerful cost control measure, and I believe all of the concerns about the legitimacy of offsets can be addressed through well-crafted regulations. The discussion draft, in my opinion, puts forth the right basic standard for crediting offset projects: the emissions reductions must be additional, verified, and permanent. As long as that basic standard remains at the foundation of any offsets program, I will strongly support the inclusion of offsets in a federal cap and trade program.

Land use will be important to addressing the challenge of climate change. Many people may not be aware that emissions from deforestation and forest degradation contribute approximately 20 percent of global emissions, which is more than all transportation-related emissions worldwide. Each year, a swath of tropical forest larger than the size of Wisconsin is destroyed – sending more than five billion tons of carbon dioxide into the atmosphere and damaging some of the planet's most cherished places.

Forest conservation and restoration will be critical to solving the climate issue – helping to ensure we are able to stabilize atmospheric CO2 at levels that scientists recommend. Including forest carbon activities in a carbon market would create a number of important benefits. First, it would provide a critical means of cost containment for U.S. businesses and consumers, particularly until advanced new energy technologies are ready to be deployed. Second, it would bring additional developing countries to the table in forging a more global climate agreement that addresses all major sources of emissions, while also leveling the competitive playing field for U.S. manufacturing and protects American jobs. Third, it would use the power of markets to generate what could be tens of billions of dollars to save the world's forests and their biodiversity from destruction. And lastly, it could improve the quality of life of local and indigenous communities by reducing the negative impacts of deforestation on communities and providing direct economic benefits in the form of new opportunities. My personal experience in the design and implementation of some of the worlds first such projects has taught me that we have the means to measure and verify the greenhouse gas benefits of these projects, while meeting a multitude of critical environmental challenges.

Closer to home, Wisconsin farms and forests can provide important opportunities to mitigate climate change, lesson compliance costs and improve land use practices. Our task force analysis identified several strategies which can generate real and additional greenhouse gas benefits while providing economic incentives to land owners through offset investments. Improvements in timber management, and no or low till farming look particularly promising for instance.

The Committee is to be commended for recognizing that greenhouse gases know no boundaries and that protecting forests and improving agricultural practices here and abroad is an

important component to any effective climate change strategy. Additionally, we know that changes in timber management practices, tillage practices, and animal waste storage, among other strategies, have important benefits not just for climate, but for habitat, water and soil quality too. The right kind of biomass can help us be more energy independent, and reduce our reliance on coal. Our forest lands and agricultural industries have an important role to play in helping reduce and mitigate greenhouse gas emissions. If we get the rules right, forest and farms can be an important part of the climate change solution.

As a conservationist, I believe we must also recognize that climate change is already upon us. Although the Task Force did not directly address impacts and adaptation, Wisconsin's unique animal and plant communities, as well as our cherished inland lakes, superior mixed forests, and the Great Lakes, will almost certainly be adversely impacted by climate change. In fact, some impacts are already evident. Investing in these systems through a robust adaptation program – for example by empowering and funding state coastal and forest land acquisition and protection programs – will be essential to our successful adaptation to the adverse impacts of climate change.

Conclusion

In conclusion, I thank the Chairmen for presenting a thoughtful discussion draft. The draft is similar in many ways to the recommendations reached by our diverse group of stakeholders in Wisconsin. I offer my whole hearted support for the fundamental provisions of the bill, most notably the greenhouse gas reduction targets, and urge the Committee to do everything it can to mitigate costs without backing away from those targets. I want to thank the

Committee for giving me the opportunity to testify today on this pivotal issue and I look forward to your questions.

Mr. MARKEY. Thank you. In the same way that we had Mr. Reuther earlier, the Nelsons of course are environmental aristocracy, and I think everyone is feeling good to be on this panel with you here on the 39th anniversary and hopefully by the 40th anniversary of Earth Day we will have resolved all of these issues.

Ms. NELSON. I am going to hold you to that.

Mr. MARKEY. Well, I think we can do it but it is, as you can see from the earlier preliminary rounds that we had here, it is going to be contentious but I think ultimately achievable.

Ms. NELSON. Well, you have a big challenge but I want you to know that Wisconsin is keen to work with you on overcoming some of those challenges.

Mr. MARKEY. Thank you. I appreciate it.

Our next witness is Bill Becker, executive director of the National Association of Clean Air Agencies. He served as the first executive director of the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officers. So whenever you are comfortable, Mr. Becker, please begin.

STATEMENT OF BILL BECKER

Mr. BECKER. Thank you, Chairman Markey and Congresswoman Baldwin. My name is Bill Becker. I am the executive director of the National Association of Clean Air Agencies. We are an association of air pollution control agencies in 53 States and territories and more than 165 major metropolitan areas across the country, and undoubtedly every one of them is watching this hearing through the Internet today and into the evening.

Chairman Markey, our association applauds you and Chairman Waxman and your staffs for not only the incredible amount of hard work that went into drafting this proposal but for your leadership and the level of commitment being put forth for moving this legislation so quickly and yet so thoughtfully. By carefully balancing the vast array of diverse interests, you found a center point around which consensus can ultimately be achieved. You have put the prospect of success on this critical issue which for so long has been so elusive within reach and taken together the core components of this bill comprise a solid foundation for a realistic and federal climate program. We are particularly pleased that you have included a mandatory economy-wide greenhouse gas reduction strategy with quantifiable and enforceable limits and significant near, mid and long-term reduction targets, generally strong language protecting the rights of States and localities to exercise leadership in responding to global warming, performance standards for stationary sources of greenhouse gases, a renewable electricity standard, a low-carbon fuel standard, requirements for cleaner, more efficient transportation, provisions for adapting to global warming and many others.

Is this precisely the bill that our association would have written had we held the pen? No, not exactly, but we fully understand the perspective from which you crafted this legislation and toward that end have developed a set of recommendations that we believe are consistent with that perspective and can be incorporated into the bill without upsetting the balance you worked so hard to achieve. Our written testimony details each of our recommendations, and what I would like to do is spend a couple of minutes highlighting three of them.

First, we agree with the emissions reduction targets in the bill that are significant and that they are part of a compromise, part of the U.S. CAP proposal. At issue, however, is whether they are sufficient to avert dangerous anthropogenic warming. Since the last IPCC report was released in early 2007, scientific developments have shown that global warming is proceeding more quickly and with greater impacts than previously thought. Accordingly, we urge that you consider strengthening the reduction targets or at the very least ensure that these targets not be weakened as the bill moves through Congress.

Second, while we support the offset integrity provisions in the discussion draft, which are designed to ensure that any offset credit represents permanent, enforceable, additional and verifiable emissions reductions, we are concerned about the generous offset credit pool which would allowed capped sources to use up to 2 billion offset credits each year to meet their compliance obligations. When cap sources purchase offset credits rather then reduce their own greenhouse gas emissions, this dilutes the effectiveness of the cap.

And finally, we are pleased that the bill would amend the existing Clean Air Act savings clause to make clear that States and localities have the authority to enact various important measures and strategies. I am sorry Congressman Upton isn't here for this because we think it is very clear in the bill that you have preserved not only California's ability to retain its own greenhouse gas standards for motor vehicles but you have not tampered with the authority in the Clean Air Act under section 177 for other states to opt into California's program.

We are troubled by the provision in your bill that would preempt State and local governments from 2012 through 2017 from implementing or enforcing their own caps, thereby compelling the dissolution of regional cap-and-trade programs such as RGGI, the Midwestern Accord and the Western Climate Initiative as well as California's program. We recognize this provision may be intended to create a breather during which the federal cap-and-trade program would be the only one in existence. Nonetheless, this would revoke an important state and local authority. Moreover, we fear that if the bill is weakened as it moves through the legislative process yet this timeout remains, States would be required to surrender their successful programs and revenue in exchange for an inferior federal program. Instead, these State and regional path-breaking programs should be provided the option to decide whether the federal program is rigorous enough and the choice to transition into the federal program.

So in conclusion, a successful national climate protection program must be predicated on a strong local-State-federal partnership. In order for our Nation to meet our greenhouse gas targets, we must ensure that all levels of government are fully engaged in the design and implementation of this program. We look forward to working with the committee as it moves through Congress and to President Obama's desk for signature. Thank you.

[The prepared statement of Mr. Becker follows:]

NACAA
national association of clean air agencies

Testimony of
Bill Becker, Executive Director
National Association of Clean Air Agencies
before the
House Committee on Energy and Commerce
on the March 31, 2009 Discussion Draft of the
American Clean Energy and Security Act of 2009

April 24, 2009

Introduction

Good afternoon. I am Bill Becker, Executive Director of NACAA – the National Association of Clean Air Agencies – an association of air pollution control agencies in 53 states and territories and more than 165 metropolitan areas across the country. On behalf of NACAA, I appreciate this opportunity to provide our association's perspectives on the March 31, 2009 discussion draft of Chairman Waxman's and Chairman Markey's *American Clean Energy and Security Act of 2009*.

First and foremost, NACAA commends the Chairmen and their respective staff for the incredible amount of hard work that went into drafting this important legislative proposal and for the level of commitment being put forth to move this legislation quickly, yet thoughtfully. We believe this bill is a solid national response to the urgent challenges posed by greenhouse gas (GHG) emissions and their impact on the Earth's climate.

Global warming is the most pressing environmental issue facing our generation. The Intergovernmental Panel on Climate Change (IPCC) stated in 2007 that the evidence that global warming is already affecting our planet is "unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level."[1] And since the IPCC report was released, even more compelling research and evidence have accumulated demonstrating that we need to act now to reduce GHG emissions.

[1] Intergovernmental Panel on Climate Change, "Climate Change 2007 – A Synthesis Report," (2007), at p. 2, *available at* http://www.ipcc.ch/ipccreports/ar4-syr.htm.

NACAA applauds this legislative effort and believes it sets the bar for future proposals. We have analyzed this comprehensive draft and developed comments that are intended to be helpful as you continue to refine the bill. In that spirit, I will focus my testimony on the following key issues:

- Emissions Reduction Goals and Offsets;
- Preservation of State/Local Authorities;
- Performance Standards for Stationary Sources of GHG Emissions;
- Applicability of Title V Requirements to GHG Sources;
- Clean Transportation and Transportation Efficiency;
- Promotion of the Deployment of Technologies in the Electric Power Sector;
- Black Carbon;
- Greenhouse Gas Registry; and
- Adaptation.

A. Emissions Reduction Goals and Offsets

The bill's cap-and-trade program covers the major GHG emitters in the U.S. economy and contains significant reduction targets. It would encompass 85 percent of U.S. GHG emissions and reduce these emissions to 3 percent below 2005 levels by 2012, 20 percent below 2005 levels by 2020, 42 percent below 2005 levels by 2030 and 83 percent below 2005 levels by 2050. NACAA recognizes that these reduction targets stem from the recommendations of the U.S. Climate Action Partnership (USCAP), a coalition of environmental groups and businesses, and are therefore grounded on sound scientific and economic considerations. We are concerned, however, that the reduction goals may fall short of what is needed to avert dangerous anthropogenic warming. Since the last IPCC report was released in early 2007, scientific developments have shown that global warming is proceeding more quickly and with greater impacts than previously described. Accordingly, NACAA urges this Committee to strongly consider strengthening the targets included in the proposal; at a minimum, it is imperative that they not be weakened as the bill moves through Congress.

The bill contains stringent offset integrity provisions designed to ensure that any offset credit represents permanent, enforceable, additional and verifiable emissions reductions. The bill also requires that 1.25 offset credits be used for any one emissions allowance, which gives more value to emissions reductions inside the cap than outside the cap. The percentage of offset credits that may be applied towards a source's compliance obligation is limited by section 722(c)(1)(B). We are also pleased that section 734(a)(1)(A)(i) appears to prohibit sources from obtaining offset credits if the activity that results in the emissions reduction was otherwise required by law. We do not believe sources should obtain offset credits because they were required – by federal, state or local government – to reduce GHG emissions or meet other environmental requirements.

We are concerned, however, about the generous offset credit pool, which allows capped sources to use up to two billion offset credits each year to meet their compliance obligations. To the extent capped sources purchase offset credits rather than reduce their own GHG emissions, this dilutes the effectiveness of the cap. Allowing up to two billion tons of GHG reductions from uncapped sources to substitute for GHG reductions from capped sources represents a lost opportunity to garner GHG reductions from capped sources. This provision is very troubling.

Title IV, Subtitle A of the bill provides for measures to ensure domestic competitiveness while preventing increases in GHG emissions in other countries. We support this approach as a means to drive GHG emissions reductions here in the U.S. while attempting to alleviate the pressure to transfer production, employment and GHG emissions to countries without GHG emissions reduction programs.

The bill provides for a review by the National Academy of Sciences (NAS) in 2012, and every four years thereafter, to ascertain whether the measures in the bill are adequate to meet the reduction targets and whether U.S. action in concert with international action is sufficient to avoid dangerous global warming. We support these provisions.

B. Preservation of State/Local Authorities

A successful national climate protection program must be predicated on a strong local-state-federal partnership. In order for our nation to meet our GHG emissions reduction targets, we must ensure that all levels of government are fully engaged in the design and implementation of this program.

We are pleased that the bill contains generally strong language protecting the rights of states and localities to continue to exercise leadership in responding to global warming by enacting more stringent GHG reduction policies and programs. As you are well aware, states and localities are carrying out a stunning array of climate initiatives:

- More than 900 mayors to date have signed the U.S. Conference of Mayors Climate Protection Agreement, to strive to meet or beat the Kyoto Protocol targets in their own communities;
- Thirty-five states have completed or are in the process of completing climate action plans;
- Twenty states have adopted GHG reduction targets;
- Seventeen states have developed or are developing mandatory GHG reporting rules;
- Twenty-nine states have adopted Renewable Portfolio Standards;
- Thirteen states and Washington, DC have committed to opting into California's GHG motor vehicle emissions control program;
- California, Washington and Oregon have set GHG performance standards for new power plants;

- California has adopted probably the most comprehensive and robust GHG reduction program in the world; and
- Three regions of the country – the Northeast/mid-Atlantic (through the Regional Greenhouse Gas Initiative (RGGI)), the Midwest (through the Midwestern GHG Reduction Accord (MGGRA)) and the West (through the Western Climate Initiative (WCI)) – are in varying stages of their processes toward implementing regional GHG reduction programs.

These examples illustrate the scope and depth of progress at the state and local levels on climate change issues. It is critical to recognize the key role state and local innovations have played, and will continue to play, in a national climate program.

In addition, many other states and localities have implemented programs that indirectly reduce GHG emissions. These include programs to reduce vehicles miles traveled, land use planning that encourages smart growth, promotion of public transit, stringent building codes, promotion of energy efficiency measures and the like. These initiatives are all important to ensuring that the nation meets its GHG reduction goals in a cost-effective manner. A federal cap-and-trade program alone will not be enough to achieve the needed reductions.

The bill would amend the existing savings clause in the Clean Air Act to make clear that, along with preserving the authority to enact other GHG emissions reduction measures (such as source-specific GHG reduction requirements or performance standards), it would not preempt state or local authority to cap GHG emissions, require the surrender of allowances or offset credits to a state or local government or compel the use of allowances or offset credits to meet a state or local requirement. The ability to require a source to surrender an allowance or offset credit is crucial so that GHG reduction measures enacted in a state or locality do not translate into increased GHG emissions elsewhere.

We sincerely hope that the federal program will be strong enough and timely enough so that state or local governments do not need to exercise these kinds of authorities. We support a strong mandatory economy-wide federal climate program. But in the event the federal program does not reduce GHG emissions sufficiently or in a timely manner, or some other deficiencies in the legislation emerge, state and local governments must have the authority to step in and institute their own state or local rules, policies and strategies necessary to tackle global warming.

We note that section 335 adds a new section to the Clean Air Act that preempts state and local governments, from 2012 through 2017, from implementing or enforcing a cap that covers any federally capped emissions during this six-year period. Our understanding is that the prohibition is narrow – it only applies to a specific tonnage limit on the amount of GHGs that can be emitted by a group of sources over a specified time period. Thus, it would not prohibit other important state or local climate initiatives during this time period, including GHG performance standards or reduction

requirements for state or local capped sources, or requirements that state or local capped sources relinquish allowances to a state or local government, for example.

The provision would require the dissolution of the regional cap-and-trade programs, including RGGI, WCI and MGGRA, as well as California's program. While we recognize that this provision may have been included in order to create a "breather," during which the federal GHG cap-and-trade program would be the only one in existence, we are concerned that this section takes away an important state and local authority (including revenue) and backstop to the national program. In particular, if the bill is weakened as it moves through the legislative process, and yet this section remains, it means states will be required to surrender their successful programs in exchange for a weak federal program. We believe instead that these path-breaking programs should be provided the *option* to decide whether the federal program is strong enough and, if so, they can *choose* to transition into the federal program.

C. Performance Standards for Stationary Sources of GHG Emissions

1. New and Reconstructed Coal-Fired Power Plants

NACAA believes that new/reconstructed coal-fired electric generating units (EGUs) should meet minimum emissions performance standards, even within a federal cap-and-trade program. The most cost-effective and efficient time to comply with environmental requirements is when a source is new or reconstructed. While NACAA supports the bill's performance standards, we believe they should be strengthened.

First, we are concerned that the bill allows significant EGU capacity that is permitted between 2009 and 2015 to be constructed without carbon dioxide (CO_2) controls because it is unlikely that the required carbon capture and sequestration (CCS) commercial availability finding will be made for another 10 to 15 years. Accordingly, we recommend that new/reconstructed facilities permitted during this period undergo case-by-case Best Available Control Technology (BACT) analysis and control for CO_2 emissions, including consideration of CCS. Requiring BACT will ensure that all relevant site-specific factors will be taken into account and that CCS will be advanced for this sector.

Second, while NACAA supports the increasingly stringent performance standards that take effect in 2015 and 2020, respectively, we believe that these performance standards should be a floor, not a ceiling, and that EGUs constructed/reconstructed during this period should also be subject to BACT for CO_2.

Finally, the bill should include incentives for early deployment of CCS.

2. *Other Major Sources of GHGs*

NACAA supports the bill's requirement for New Source Performance Standards (NSPS) for industrial sources that are not covered by the federal cap-and-trade program. These standards should apply to reconstructed sources, as well. For equity and other reasons, we believe that NSPS should also be developed for new/reconstructed major industrial sources inside the federal cap. Without such a requirement, new/reconstructed sources will be able to avoid reducing GHGs at their facilities and instead purchase offsets, two billion of which are available worldwide under this proposal. BACT should be required for these facilities, as well.

D. Applicability of Title V Requirements to GHG Sources

The bill contemplates that Title V operating permit requirements shall apply to stationary sources only when criteria pollutants are at major source levels, and that GHG emissions shall not be considered in this determination. We are concerned that such an approach will allow major sources of GHGs, such as combined cycle turbines, that emit more than 25,000 tons per year of GHGs, but less than major source levels of criteria pollutants, to avoid any Title V requirements.

State and local air pollution control agencies will be required to carry out numerous activities related to major GHG sources, including among others, monitoring, inspections, verification of offsets and enforcement. Accordingly, we recommend that the bill provide substantial resources for state and local air pollution control agencies to implement these activities; otherwise, implementation costs will fall solely to states and localities. Additionally, for sources that already have Title V permits that will be modified to include GHG emissions, state and local air agencies should be authorized to collect additional Title V fees reflecting the sources' GHG emissions and the additional work that will be required.

E. Clean Transportation and Transportation Efficiency

According to EPA, all told, the mobile source sector is responsible for 36 percent of total U.S. GHG emissions, taking into consideration upstream transportation fuel emissions, as well as nonroad mobile sources – a level that exceeds electricity generation, which accounts for 34 percent of all U.S. GHG emissions.[2] Given this significant contribution, it is imperative that a comprehensive strategy be developed and implemented to reduce GHG emissions from the mobile source sector. NACAA supports the provisions of this bill that work toward that goal.

[2] EPA's Advance Notice of Proposed Rulemaking on Regulating Greenhouse Gas Emissions under the Clean Air Act, 73 *Federal Register* 44354, at 44355 (July 30, 2008).

1. *Low-Carbon Fuel Standard*

NACAA endorses the inclusion, in section 121 of the bill, of a comprehensive, federal low-carbon fuel standard (LCFS) to reduce the lifecycle GHG emissions intensity of transportation fuels. An LCFS would not only reduce our nation's reliance on oil, but when implemented as part of a broader GHG reduction strategy, it would also hold great potential for easing the transition to a low-carbon economy. We are pleased that the proposed program covers all transportation fuels, contains safeguards against backsliding to dirtier fuels in the near term (2014 through 2022), requires the establishment by EPA of a baseline and sets long-term carbon intensity reduction requirements.

We do, however, have concerns with several aspects of this program. First, we believe the annual average lifecycle GHG emissions reduction requirements set forth in the bill – a 5-percent reduction beginning in 2023 and a 10-percent reduction beginning in 2030 – can and should be more rigorous. Second, we are concerned that by calling upon EPA to set a federal LCFS under section 211(c) of the Clean Air Act, the bill would preempt states other than California from implementing their own LCFS.

California is expected to adopt regulations this week to implement an LCFS that would reduce the carbon intensity of transportation fuels by 10 percent by 2020 – 10 years earlier than proposed in this bill. In addition, 11 Northeast and mid-Atlantic states have joined together to develop a regional LCFS. NACAA urges that a federal LCFS be at least as rigorous and timely as California's program – requiring a 10-percent reduction in annual average lifecycle GHG emissions beginning in 2020. Further, states in addition to California should be authorized to adopt LCFS programs that are no less stringent than the federal program. NACAA also recommends that the bill incorporate provisions to guard against "leakage" of fuels with high carbon content into fuels, such as home heating oil, that are not regulated under the LCFS. Finally, we recommend that the bill include provisions requiring EPA, in developing the national LCFS program, to address regional circumstances and differences.

2. *Mobile Source Standards*

NACAA agrees with the bill's authors that the Administration and EPA have broad statutory authority under the Clean Air Act to address emissions from mobile sources. Over the past four decades, utilizing the tools embodied in the Act, EPA has successfully developed comprehensive and effective programs that have very successfully and cost effectively reduced criteria pollutant and precursor emissions from mobile sources. In addition, the Act's wise provision of authority to states to go beyond federal standards has also been used to garner further important reductions and evaluate potential strategies. NACAA firmly believes that these same authorities can be used by EPA and the states with equal success to address the significant, long-term challenges associated with reducing mobile source GHG emissions.

We are pleased that section 221 of this bill calls upon EPA to utilize its Clean Air Act authorities to promulgate GHG emissions standards for an array of mobile sources, including new passenger cars, light trucks, heavy-duty vehicles and engines, marine vessels, locomotives, other classes of nonroad vehicles and engines, aircraft and aircraft engines.

NACAA also supports the language of section 221(a)(4) of the bill, which reaffirms California's legal authority to adopt and enforce its own mobile source emissions standards, and recommends that similar language be added to expressly reaffirm the legal authority of other states, under section 177 of the Clean Air Act, to adopt California's emissions standards.

Finally, with respect to motor vehicle emissions standards, we note in section 221(a)(3) that the expressed goal of the motor vehicle emissions reductions sought is to "achieve at least as much emissions reduction as would be achieved by implementation of the California law AB 1493 if enforced in the State of California and the other states that have adopted the standard." We recommend that this language be clarified to express clearly that national motor vehicle emissions standards under section 221(a) must be at least as stringent as California's standards under AB 1493, ensuring that California and the other states that have adopted California's standards will reap the full measure of anticipated emissions reductions.

3. *Planning Requirements*

NACAA concurs with the authors' evident assessment that a successful national climate strategy must ensure that the transportation sector contribute its fair share of GHG emissions reductions. In addition to reducing emissions from vehicles, engines and fuels, such a strategy must also include alternative approaches for integrating transportation and land-use planning. Toward this end, we support the bill's inclusion of requirements for the establishment by each state of a transportation-related GHG emissions reduction goal and the development and submittal by each metropolitan planning organization (MPO) with a population greater than 200,000 of a plan to achieve the goal.

We are particularly pleased the bill requires that the GHG emissions reduction goal be developed with the concurrence of the state air quality agency, as well as the state transportation agency. We believe firmly that the concurrence of the state air quality agency is imperative in this regard and urge that the "equal partnership" between state air quality and transportation agencies be preserved. We further recommend that the applicable local air quality agencies also be given a concurrence role in developing regional GHG emissions reduction goals, rather than a consultative role, as is currently provided in the bill.

We also support the designation of EPA as the lead agency in developing and promulgating regulations establishing standardized models and methodologies for developing goals, plans and strategies.

With respect to the GHG emissions reduction goals and plans, we are concerned that, beyond requiring that goals and plans be submitted (the goals to EPA and the plans to EPA and DOT), there are no requirements for ensuring that 1) the plan include provisions and strategies adequate to achieve the goal, 2) that the plan be implemented or 3) that the goal, or progress toward meeting it, be achieved. NACAA recommends that there be an element of enforceability, including performance and accountability provisions, incorporated into the bill. In addition, we commend the list of potential transportation and land use planning strategies included in the bill, and believe that a reduction target for vehicle miles traveled should be added to the list.

With respect to funding for this planning process, it is unclear what level of funding is intended under section 841(h), regarding competitive grants that EPA and DOT "may" award to MPOs "to develop or implement plans submitted under subsection (a)(2)." We urge that such funds be sufficient to cover infrastructure and software investments and personnel associated with implementation of projects identified in the plan.

F. Renewable Electricity Standard

Increasing the amount of electricity generated from renewable sources would significantly reduce GHGs from the electricity generating sector. NACAA supports the national renewable electricity standard (RES) included in the bill, which requires an increasing share of the electricity sold by retail electricity suppliers with annual sales greater than 1 million MW hours to come from renewable sources, starting with 6 percent in 2012 and ramping up to 25 percent beginning in 2025. Under the bill, renewable energy resources include wind, solar and geothermal energy, biomass or landfill gas, qualified hydropower and marine and hydrokinetic renewable energy.

In addition to reducing GHGs, such an RES would also create new jobs, stimulate capital investment, generate revenue and spur movement away from fossil fuels. Twenty-nine states have enacted standards for the use of renewables, and several others have put in place voluntary programs. We are pleased that while establishing a federal RES, the bill does not interfere with states' authority in this regard.

G. CCS Demonstration, Early Deployment Program and Commercial Deployment

Section 114 of the bill establishes the Carbon Storage Research Corporation to administer a program to accelerate the commercial availability of CCS technologies and methods by providing funding through grants, awards and financial assistance to utilities, national laboratories, academic institutions, federal and state research agencies and non-profit organizations. The program is

funded through assessments on fossil fuel-based electricity, to generate between $1 billion and $1.1 billion per year. Section 115 directs EPA to promulgate regulations within two years to establish a program to distribute appropriated funds to support the commercial deployment of CCS technologies in electric power generation and industrial operations.

CCS technology allows for the capture and sequestration of CO_2 emissions from coal-fired power plants. Thus, the development and commercial deployment of CCS technology is critical to meeting the nation's GHG reduction goals. We support the bill's provisions regarding CCS deployment. We also support the assessment of fees on fossil fuel-based electricity generators to support the acceleration of the commercial availability of CCS technology, as it aligns financial responsibility with carbon accountability.

However, the bill lacks provisions to stimulate the deployment of emerging renewable energy technologies for power generation, which emit no GHGs or conventional air pollutants. We recognize that the bill contains an RES, which will promote the use of renewable energy, as we discuss above. Nevertheless, the bill contains both financial assistance and a performance standard for CCS; likewise, along with the RES, the bill should provide financial inducements to promote the deployment of renewable energy technology.

As Dr. Ralph Izzo, President, Chairman and CEO of PSEG Inc. testified before the Subcommittee on Energy and Environment earlier this year:

> "[W]e need additional federal support for certain emerging renewable technologies . . . A market driven approach like the RES will appropriately drive investment toward what are currently the most cost-competitive forms of renewable generation. However, developing promising industries, like solar and offshore wind, is an important part of our long-term climate change solution."[3]

H. Black Carbon

Carbonaceous aerosols are produced by the incomplete combustion of fossil and biomass fuel and are composed both of light-scattering organic carbon and light-absorbing black carbon. Black carbon warms the planet by absorbing heat in the atmosphere and by reducing albedo (the reflection of sunlight from snow and ice). We are pleased that the bill requires EPA to take action on black carbon within one year of enactment. Strategies that reduce black carbon emissions will reduce global warming as well as various adverse human health impacts associated with exposure to

[3] Dr. Ralph Izzo, Testimony Before the House Committee on Energy and Commerce, Subcommittee on Energy and Environment, (February 26, 2009) *available at* http://energycommerce.house.gov/Press_111/20090226/testimony_izzo.pdf.

black carbon. According to the Institute for Governance and Sustainable Development, reducing black carbon emissions has the potential to save up to three million lives per year.[4]

Black carbon particles only remain airborne for weeks at most. Therefore, reducing emissions of these particles has an almost immediate benefit (compared to carbon dioxide, which remains in the atmosphere for more than a century). According to Professor Mark Jacobson of Stanford University, control of black carbon "particularly from fossil-fuel sources, is very likely to be the fastest method of slowing global warming" in the immediate future.[5]

I. Greenhouse Gas Registry

NACAA believes that accurate, verifiable GHG emissions data are the cornerstone of a cap-and-trade regime. The bill requires EPA to draft GHG reporting regulations "from scratch," and states that such regulations should "take into account...the protocols from the Climate Registry..." This language should be modified to provide that EPA's regulations be reasonably consistent with the protocols for the measurement, accounting and reporting of GHGs utilized by The Climate Registry (TCR).

Moreover, some states have implemented (or are planning to implement) GHG reporting requirements of their own that address the particular needs in their states, and may exceed federal requirements in terms of sectors covered, data required, emissions thresholds and other divergent provisions. These programs provide essential information to policy-makers, who need to understand GHG emissions trends, and should not be curtailed or preempted by federal regulatory requirements. Language should be incorporated into the bill to ensure no direct or indirect preemption of state GHG reporting programs.

The bill also provides that reporting entities submit data directly to the EPA Administrator, bypassing states. However, some states will likely collect GHG data from sources themselves, and the bill should include provisions allowing states to do so.

J. Adaptation

NACAA commends the inclusion of Title IV, Subtitle E on adapting to global warming. No matter what trajectory our GHG emissions take, all regions and communities in the U.S. will need to adapt to a warmer and different climate. The impacts we all must plan for include sea level rise,

[4] Institute for Governance and Sustainable Development, "Reducing Black Carbon May Be the Fastest Strategy for Slowing Climate Change," December 2008, at p.6, citing C. A. Pope III and D. W. Dockery, *Epidemiology of particle effects*, in S. T. Holgate, *et al.*, eds., AIR POLLUTION AND HEALTH 673– 705 (1999) and statistics from the World Health Organization.

[5] Mark Z. Jacobson, Testimony for the Hearing on Black Carbon and Climate Change, U.S. House Committee on Oversight and Government Reform 12 (18 October 2007), *available at* http://oversight.house.gov/documents/20071018110606.pdf.

more extreme weather events, migrations and possible extinctions of species, droughts and wildfires, and the acidification of oceans, to name a few.

For air quality regulators, warmer weather will make it even more difficult to fulfill our responsibility under the Clean Air Act to reduce ozone levels. Thus, we urge Congress to recognize that adapting to global warming will affect a myriad of activities under other programs and, accordingly, to adjust funding levels to account for the impacts of global warming on our work.

Conclusion

Once again, NACAA thanks the Committee for the opportunity to present our comments and perspectives on the *American Clean Energy and Security Act of 2009*. Taken together, the key components of the bill, including a mandatory, economy-wide GHG emissions reduction program with quantifiable and enforceable limits and significant near-, mid- and long-term reduction targets; a renewable electricity standard; a low-carbon fuel standard and requirements for cleaner, more efficient transportation, among other meaningful provisions, comprise a realistic and effective foundation for a federal program. It is our desire to work with this Committee to refine and further strengthen the bill and then move it through Congress and to President Obama's desk for signature We stand ready to be of assistance.

Mr. MARKEY. Thank you, Mr. Becker, very much.

Our next witness is Carl Royal, a member of the Securities and Futures Regulation Practice Group of Schiff Harden LLP. He has over 30 years of experience in the regulation of markets and market participants under the federal securities and commodities laws and he has spent 14 years at the Chicago Mercantile Exchange serving as senior vice president and general counsel, and on a day when we heard Ken Lay's name mentioned again, Mr. Royal can perhaps give us good instruction as to how to construct this marketplace in a way that will protect against fraud and manipulation. We welcome you, sir.

STATEMENT OF CARL ROYAL

Mr. ROYAL. Thank you, Mr. Chairman. I recognize that this bill and this committee's jurisdiction is covering a very wide territory as the various other speakers have already covered. I am going to focus on a very narrow aspect of that, and that is the trading part of cap and trade and how that market should be regulated.

I think there are two basic themes that are of critical importance here. First is just recognizing that it is very important to have a well-regulated market to avoid some of the abuses that we have seen in other markets. In this market in particular, because it has such an impact over so many sectors of the economy and there is going to be of great importance to users of emissions and the general public so I do believe that it is essential that the regulatory framework to be created by Congress protect the integrity of the market and ensure that the market achieve its environmental purpose. It therefore should meet the following objectives. It should be designed to be as transparent as possible. Participants in the market should be protected from manipulation and fraud and the market should resist the development of speculative bubbles that divert prices away from the fundamental drivers of supply and demand.

Because this market is one that is being created de novo, this gives Congress an opportunity to create a market that can avoid some of the problems that we have seen in other markets. In my view, if we can provide a regulatory framework that combines an exchange trading requirement, strict limitations on traders such as position limits and margin requirements, and tough enforcement provisions, it then would be possible to achieve protection of the public in those areas. I recognize that there have been other markets in recent months where there have been some serious problems, credit default swaps, for example, but I would point out that that was a market that exists in the unregulated over-the-counter market and is not necessarily a problem with the instruments but perhaps in the market and how it was not regulated effectiveness. If you move a market to an exchange environment, I think you can avoid many of those problems.

I think first that exchange trading maximizes market transparency because all parties in the market as well as the federal regulators have access to pricing information in real time and can see what other traders are doing. Second, exchange traded products have standardized terms that make them easy to understand easy to price. That improves market liquidity which helps keep the cost of trading low. Third, exchange trading comes with clearing by a

central clearinghouse acting as central counterparty to all transactions. Under central counterparty clearing, all positions are valued every day based on market prices as determined by a neutral party. If a position's value goes down, there is a daily call for cash called variation margin. This financial discipline would have prevented many of the problems that are now being faced by banks and other participants holding mortgage-backed securities and other forms of OTC derivatives that are worth much less than the banks are valuing them on their balance sheets.

Further details on some regulatory suggestions are contained in my written remarks, and I thank the committee for this opportunity.

[The prepared statement of Mr. Royal follows:]

Prepared Testimony of

Carl A. Royal

Of Counsel, Schiff Hardin LLP

Hearing on the American Clean Energy and Security Act of 2009
Before the U.S. House Committee on Energy and Commerce

April 24, 2009

Introduction

My name is Carl Royal. I am a member of the Securities and Futures Regulation Practice Group of Schiff Hardin LLP, a general practice law firm with offices located in Chicago, New York, Washington, Atlanta, San Francisco and other cities.

I have over 30 years of experience in the regulation of markets and market participants under the federal securities and commodities laws. In addition to my law firm experience, I spent 14 years at the Chicago Mercantile Exchange, where I served as Senior Vice President and General Counsel.

The Nature of Carbon Markets

In enacting a cap-and-trade program for greenhouse gases, Congress will be establishing the largest environmental market in the world. In many ways this market may look like other markets, but in reality this market differs fundamentally from other commodity markets such as soybeans or gold. The carbon market will trade in allowances whose supply is created by the government, where the supply is limited and decreasing, and the demand for which is driven by industrial users' compliance obligations.

Why have a market in carbon emission allowances? Such a market:

- helps achieve the most environmental good for the least economic cost;
- provides compliance flexibility (avoids one size fits all regulation);
- promotes innovation, which can spur the development of the low-carbon technologies of the future; and
- avoids government getting involved in picking winners and losers.

The carbon market exists solely in order to facilitate the reduction of global warming pollution in the most cost-effective way possible. Its purpose is to achieve a public good, and therefore the public has a strong interest in seeing that the market operates in a way that inspires

public confidence and trust. To put it directly, the market should be set up in a way that limits the kinds of irresponsible behavior and systemic failures that we have seen in financial markets in the last several years. It is essential that Congress erect a regulatory framework that protects the integrity of the market and ensures that the market achieves its environmental purpose. Policy makers will need to design a carbon emissions allowance market that is transparent, that prevents market participants from manipulating prices, and that can resist the development of speculative bubbles that divert prices away from the fundamental drivers of supply and demand.

Fortunately, the good news is that it's perfectly possible for Congress to do.

Key Principles in Market Design

The purpose of the new market will be to establish a trading mechanism for allowances to be priced and traded so that emissions can be reduced in the most cost-effective manner and the product can be a useful tool in emission abatement implementation and planning. Unlike most financial markets, the carbon market should not be viewed primarily as an investing opportunity or a means to facilitate commercial activities. Its regulation should be directed toward ensuring fair and stable pricing of the allowances, albeit with sufficient liquidity to provide an efficient means of trading the allowances. Thus, the regulatory and enforcement focus in a carbon market should be on four overarching objectives:

- First, the trading market should be designed to be as transparent as possible. In particular, trading should take place out in the open, and federal regulators must be able to monitor all trading activity.

- Second, the trading market should be protected from price manipulation and fraud. Price manipulation involves a participant in the market who attempts to create artificial movements in the prices of the allowance products or who imposes a deceit on or abuse of the market. Federal regulators should also prohibit fraudulent activities connected to the market, such as misrepresentations designed to induce a person to buy or sell an allowance.

- Third, regulators should write rules that help maintain fair and orderly markets. The rules of the trading markets should be designed so that no unfair trading advantages are created and that price movements are not distorted or disruptive. This also means that rules and regulations do not contain loopholes that allow some trading activities to occur in an unregulated manner, and that the rules prevent excessive speculation in the market that could lead to price bubbles or excessive troughs.

- Finally, rules and regulations should be designed in such a way as to make their enforcement simple and effective. The rules of the market become meaningless if they cannot be enforced effectively. Regulators should not allow trading activities that they cannot readily monitor or understand, and should design market rules that ease market surveillance and oversight.

Creating a Good Carbon Market Architecture

Because the carbon market is being created de novo, it can be built in a manner that avoids many of the problems that we have seen in markets recently. In my view, a combination of an exchange-only trading requirement, strict limitations (such as position limits and margin requirements) on traders, and tough enforcement provisions can protect the public from the excesses and abuses that have occurred recently in financial markets. This is essential because the environmental purposes of the market are best served by a well-regulated and well-behaved market.

Of particular concern is trading in the over-the-counter (OTC) market. The rationale usually given for OTC trading is that it would enhance financial innovation by allowing market participants (in particular Wall Street banks) more flexibility to devise and trade complex, customized financial tools to manage risks. However, this type of trading has been the source of most of the financial difficulties that we have seen recently. First, because the contracts were between private parties, OTC trading occurred outside of the public eye. Second, the products themselves were often very complicated and contained special terms that made them unlike any other contract. This made them difficult to value because there was no market price to which the contract could be compared. Third, when one party to the contract defaulted, the other party was

often not able to absorb the loss, which potentially could trigger a cascading series of defaults throughout the financial system.

That is not to say that derivative instruments based on emission allowances are a bad idea. To the contrary, derivative instruments can help companies manage the price risks associated with their need for emission allowances in future years. For example, assume that a company plans to open a new plant in five years. Because the plant is expected to emit a certain amount of carbon, the company knows that it will need to acquire a specified number of emission allowances when the new plant is operational. If the company chose not to use any derivative instrument, it could simply purchase the allowance in the secondary cash market when the new plant becomes operational. However, the company would then be exposed to the risk that the price of purchasing emission allowances might be substantially higher in five years than what the company had budgeted. Alternatively, if the company wished to hedge that price risk, it could purchase a futures contract with a settlement date (i.e., the date when the allowance would be delivered) near the time when the plant is expected to become operational. The price to be paid for the emission allowances in five years would be locked in at the time the futures contract is purchased, thus enabling the company to know what the price will be and to prepare its budget accordingly.

In a carbon market, the needs of regulated emitters are likely to be straightforward in terms of having adequate allowances to meet their compliance obligation and in managing their price risk with futures and options contracts. These products are easily standardized and well-suited to exchange trading. Requiring trading to occur on registered exchanges simultaneously addresses all three of the problems occurring in the OTC market. First, exchange trading maximizes market transparency, because all parties in the market have access to pricing

information in real time, and can see what other traders are doing. Because all trading activity occurs in just a few places and in the public view, it is easier for federal regulators to monitor trading activity and to detect attempts to manipulate prices. Indeed, the exchanges themselves often serve as a first line of defense in monitoring and regulating markets. Second, exchange-traded products have standardized terms that are frequently traded. This makes them easy to understand and easy to price, and it improves market liquidity, which helps to keep the cost low.

Third, the exchange clearing house acts as the central counterparty to traders, i.e., the clearing house in essence provides a performance guarantee to both the buyer and the seller of a cleared contract. This means that buyers and sellers need not worry about each other's creditworthiness; instead, they can rely on the creditworthiness of the clearing house. This is in stark contrast to transactions in OTC derivatives, where a firm needs to monitor closely the credit standing of the other party in order to avoid transactions with a party that might later become insolvent (as happened with Lehman Brothers). When a clearing member enters into a trade on an exchange, it is required to post a certain amount of margin (performance bond) to cover the maximum expected one-day loss the resulting position could incur. The clearing house marks the position held by each clearing member every day to the daily closing market price of each position. If the value of the positions held by a clearing member goes down, the clearing member is required to make a payment (known as variation margin) to the clearing house equal to the decline in the value of its positions. This payment must be made by early the next morning, before the market opens for trading.

The central counterparty system thus provides a high degree of financial integrity. All positions are valued every day based on market prices as determined by a neutral party. If a position's value erodes, there is a daily call for cash. Under this system of daily marking-to-the-

market, a firm cannot hide its losses by pretending that its position has a value equal to its historical book value. This financial discipline would have prevented many of the problems now being faced by banks holding mortgage-backed securities and OTC derivatives that are worth much less than the value attributed to them on the banks' balance sheets.

In addition to requiring that all trading take place on exchanges, the market should be designed to create a structure to set and adjust trading rules and restrictions to prevent market abuses and excesses. There are a number of standard tools that can be used to control market behavior. These include rules on position limits and margin requirements for traders, restrictions on short sales, and limits on trading if prices move dramatically in a given time period. Market regulators should make full use of these tools to dampen volatility, prevent speculative bubbles, and prevent market abuses.

At the same time, regulation should not be so stringent that it chokes off trading interest to the point that market liquidity is hurt. When a market stops being liquid, it is subject to extreme price swings as desperate buyers drive up prices in a bidding frenzy, or panicked sellers try to unload their positions at fire sale prices. Experience in the U.S. commodity futures markets has shown that liquidity can be enhanced when the number of market participants increases. When a market is limited only to commercial participants in the instruments being traded (e.g., farmers and grain elevators in the case of wheat futures, or regulated emitters in the case of emission allowances), trading can become difficult and infrequent because there may not be willing buyers at the same time there are willing sellers. Permitting other participants – variously called "liquidity providers," "market makers" and "speculators" – into the trading market can smooth out trading activities and thus provide a more liquid market. Thus, a careful

balance needs to be struck between having tough rules that will deter market abuses versus overly strict rules that will discourage legitimate trading activities.

Finally, the market should be designed to ensure that the rules of the carbon market are easily and readily enforced, and that there are significant sanctions for those that violate these rules. There are four essential elements to successful enforcement of the rules of the carbon market. First and foremost, federal regulators must have the commitment and resources to actively and vigorously oversee the market. Congress must also do its part by providing adequate funding for regulatory agencies, and in conducting oversight over carbon market regulators on behalf of the public. Second, market participants should be required to keep sufficient and satisfactory records to enable federal regulators to assemble information about trading activity. This recordkeeping by traders would be in addition to any reporting and monitoring requirements that would be required to be collected by the exchange. Third, regulators need the legal tools and resources to effectively investigate and audit market participants to ensure that all activity is legal. These tools and resources include adequate budget and personnel to conduct investigations, and legal authorities such as subpoena power for records or for witness testimony. Lastly, civil and criminal penalties for violating trading rules in carbon markets need to be sufficiently severe to deter illegal activity. That means that the federal regulator must both zealously investigate and prosecute rules violations, and that the penalties are tough enough to be an effective deterrent.

Thank you for the opportunity to present my views to the committee.

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Mr. MARKEY. Thank you, Mr. Royal, very much.

Our next witness, Jon Anda, is a visiting fellow of the Nicholas Institute for Environmental Policy Solutions at Duke University. Mr. Anda was previously president of the Environmental Markets Network at the Environmental Defense Fund. He has worked to create a framework for the U.S. carbon market that is fair, efficient and responsive to lessons learned in the financial crisis. And that is very important because we have many people who are saying well, how can we create a new market here, and won't that be dangerous, you know, mentioning Bernie Madoff or mentioning Ken Lay or mentioning credit default swaps or other machinations of the marketplace that have occurred. The truth is that what Bernie Madoff did was illegal and there were clues actually to track him down 10 years ago that just were not followed up on, and in credit default swaps there were many warnings over the years as well as there are in many of these other areas that ultimately came to hurt confidence in the marketplace. But at the same time we are not going to abandon the New York Stock Exchange or the NASDAQ or the Chicago Mercantile Exchange and say trading just can't occur because that would bring capitalism to its knees. And so that is why we have Mr. Royal and Mr. Anda here today to help us to frame the way in which we can create a marketplace that will work, be transparent, honest, and if manipulation does occur, lead to the apprehension of and ultimate imprisonment of someone who abuses the system.

So we welcome you, Mr. Anda, and whenever you are ready, please begin.

STATEMENT OF JON ANDA

Mr. ANDA. Thank you, Mr. Chairman. I think we obviously have a risk with creating a new financial market for carbon but we also have a great opportunity. Carbon actually could set a standard that could be used in other markets, and Carl referred to that and I certainly support that point.

Let me just write down some comments about the work the committee has done. I think you did two things really right in establishing fairness efficiency but also taking some lessons from the recent financial crisis. The first one was in allowances. The discussion draft sets a best execution standard for allowances. That means that anyone who buys an allowance is assured of getting the best price available in the market. That is something we do in our equity markets under something called the national market system and that was a great thing for the committee to do.

Secondly, the committee made a very important decision in derivatives. In derivates, the discussion draft says that derivates will basically be traded on listed regulated markets, the kind that Carl described, rather than in the OTC market which is very common for commodities. Sometimes people put carbon the commodities world. I think those were bold decisions and set the right tone for the bill. So I will talk maybe a little bit more about those later but I want to add some context to these decisions. I know it is late on a Friday afternoon but I think just a few numbers are instructive.

Over the life of the bill, you are going to be issuing 131 billion allowances but initially we might have as little as 5 billion out-

standing of we just do an auction for 1 year. So in the financial world we call this a really small float, 131 billion over the life and 5 years out in the first year. Now, another way to think about that is that you are telling emitters that they have to abate carbon over 38 years, that they want to manage that risk, they only have 1 year of allowances worth to trade to manage their risk. So what will that lead to? That is going to lead to huge demand for derivatives, absolutely huge demand, and I don't think that is a problem. I just think it is a good idea if you are going to have huge demand for derivatives recognize it and have those derivatives traded transparently and in a way that the system doesn't get out of control.

As an aside, I would encourage you to think about increasing the flow. You can do that as you have already provided in the discussion draft. You can auction an extra 4 years worth upfront. But if you think about using that provision, if you did it you have maybe 25 billion tons to auction in the first 5 years. If that was $20 a ton, you would hosting a half a trillion dollar auction. That is a little too big. So that is a tough way to do it. But to the extent that you do have free allocations, either for all the topics we have talked about the last few days, leakage or giving them to LDCs, do it up front so that we have more allowances and a less derivatives-dependent market.

Lastly, I would encourage you to think about something like rights. The government auctions rights to emitters to buy allowances in, say, 5 years' time at a fixed price, say $20. That would be a way of sort of pre-selling the rights and providing some financing to emitters and clearly I won't discuss that late on a Friday afternoon in my 5 minutes.

Let me just go back to the best execution point and make one little comment. I love the national market system. In my 20 years at Morgan Stanley, I came mostly out of the equity business and we certainly are—our markets have benefited from that rule. But carbon isn't, you know, thousands of stocks, it is basically one instrument, and I think certainly one option for the allowance market would be to have a central marketplace, one electronic, what I call a CLOB for carbon, a central limit order book where all the trades occur, everybody can see the bids and offers. I think that is something that might be a good idea and might even be embraced by the market participants.

In the derivatives area, I just want to make one important comment, what goes hand in hand with requiring listed exchange trading of derivatives. You have to have rationale accounting so that emitters can use these instruments. So if an emitter, one of your local utilities, wants to buy a future and their intention is to exercise that future in a few years and turn it in for compliance, don't make them market to market. They are just locking in an expense and deferring it. If you do market to market, one of the main reasons people do OTC highly structured derivatives is to avoid market to market so get the accounting right. U.S. CAP mentions rational accounting in their blueprint and I think what we want to do, we want these derivative markets to be kind of like farmers use derivatives all the time. It is part of their normal course of business and I hope it can be for emitters too.

So just to conclude, I apologize for this being a bit technical but if you want to go a little further you can read my written testimony and also included in my testimony as an appendix is a primer on carbon markets that we at the Nicholas Institute wrote just a couple months ago and it gives a lot of background on this important topic, but again, I congratulate the committee on setting the tone for a fair and efficient U.S. carbon market that does take lessons form the financial crisis. Thank you.

[The prepared statement of Mr. Anda follows:]

Testimony of Jon A. Anda

April 24, 2009

Thank you for the opportunity to testify before this Committee today. My name is Jon Anda and I am a Visiting Fellow of the Nicholas Institute for Environmental Policy Solutions at Duke University. I was previously President of the Environmental Markets Network at the Environmental Defense Fund. Prior to that time, from 1986 through 2006, I was with Morgan Stanley where I served in a variety of roles including Vice Chairman, Global Head of Capital Markets, Head of Corporate Finance, and Head of both the Institutional Equity and Investment Banking Divisions for the Asia Region.

During the past 2 and ½ years, at both Duke and Environmental Defense, I have worked to create a framework for the U.S. carbon market that is fair, efficient, and responsive to lessons learned in the financial crisis. The Bill's carbon market section sets the right tone to accomplish these same objectives - with key decisions like best execution and listed derivatives trading - being made correctly by the Committee.

Let me begin with a few points about the potentially small initial "float" of allowances – which is essential to framing this discussion:

1. The Bill provides for 131 billion allowances over the life of the policy, although as few as 5 billion may be outstanding initially . Thus, the so-called "float" of allowances in circulation is small relative to the total. Put another way, we are asking emitters to take on 38 years of abatement with as little as 1 year of allowances available to manage their risk. This will drive huge demand for derivatives – making them the "tail wagging the dog" in the U.S. carbon market. This highlights the correctness of the Bill's provision to keep derivatives trading on so-called designated contract markets (or DCM's) – which are essentially regulated and transparent exchanges . Obviously, offsets should pick up quite a bit of the slack on float - but not enough to fundamentally alter these initial market dynamics.

2. Let me mention one potentially important technical issue – linkage of listed derivatives to the physical supply of allowances. You all remember, I'm sure, that the notional value of credit default swaps got to over $70 trillion - far larger than the value of the underlying credit instruments. The Government may need to explicitly guarantee that enough unsold future allowances will ultimately get distributed in time for the expiration of listed derivative contracts.

3. Now let me point out a few ways to make the initial float bigger. The first is to use the Bill's provision to auction as many as 4 future vintage-years' worth of allowances upfront. But this will tend to create auction sizes too large to be executed efficiently - remember that at about $20 per ton, we would already have a $100 billion first year auction if we do 100% . The second alternative would be to front-end load any free allocations to ensure a liquid carbon market that is less

derivatives-dependant. This rationale alone, beyond leakage and other issues raised to the Committee, might be a reason to consider some degree of free allocation. The third alternative is to boost the float synthetically – which could be done by adding Allowance Purchase Rights (or APR's) to the regular allowance auctions. APR's could, for example, allow the holder to purchase allowances in 4 years time at $15 per ton. The APR's could be a useful listed hedging tool - as well as effectively providing emitter financing (since the $15 isn't paid for 4 years). APR's don't have to change the cap – they can just be a means of pre-selling Government-held allowances.

Now, with that context, I'll go back to best execution, listed trading of derivatives on DCM's, and early opposition to the Bill's market provisions:

1. First - best execution means that when you buy or sell an allowance you are assured of getting the best price available across all potential trading venues. This is critically important for two reasons – first, because carbon prices flow quickly through to consumer's prices – and, second, because not all emitters have the capability to arbitrage across non-linked markets. The question is this: at what point is the Bill's National Market System linking competing exchanges too cumbersome relative to a single marketplace? The Commission might consider the alternative of having the Regulator outsource operation of a central limit order book for carbon allowances - what I call a "CLOB for carbon" (though the Bill as written is fine as well). A "CLOB for carbon" is something I'll leave for Q&A.

2. Second – listed derivatives trading is arguably the most critical provision in the carbon markets section. I want to suggest a quid pro quo, though, for mandating derivative trading on exchanges – which is rational accounting treatment for the emitters and project developers who use them. Let me explain this a bit further. Sometimes corporations use structured OTC instruments to avoid mark-to-market accounting of listed futures or options. They do this is because mark-to-market makes their earnings less predictable. It seems that emitters should be able to hold futures and options with physical delivery (as well as banked or borrowed allowances) and treat them as a deferred expense *provided their intention is to submit the underlying allowance for compliance.* Rational accounting (which is even highlighted in the USCAP blueprint) goes hand-in-hand with the Committee's DCM mandate.

3. Third, I think opposition to the Committee's carbon markets provisions merit a few comments. First, we all recognize that unrestricted markets are theoretically the most efficient – yet if we expose a new market to systemic risk then the risk might overwhelm the efficiency benefit. We certainly saw this in markets like sub-prime mortgages and credit default swaps. In the case of climate policy, systemic risk in the carbon market might necessitate easing emissions targets – and what happens then? Well, we go back to systemic risk in the atmosphere - negating the Bill's

raison d'être . Secondly, the point has been raised that long-term derivative trades (say 7 to 10 years) are best negotiated between 2 parties – but there is no reason such trades can't be arranged off-exchange by two parties, and then "printed and cleared" on an exchange (as happens in the normal course on most exchanges). Third, while the Bill as written may constrain certain highly customized bi-lateral arrangements, the Commission can consider the degree to which such arrangements, if at least partially cleared on a registered exchange, can have an acceptable degree of residual bi-lateral risk and still be transacted. Lastly, opponents complain about the Bill restricting OTC trading of "pre-approval" offset credits – yet the Bill doesn't specifically restrict these – and final regulations may, in fact, confirm that OTC trading is appropriate for these types of transactions.

In conclusion, we recognize the concerns of many about carbon market structure – if it is done wrong it would bring a host of difficulties. But it could also be done well – with carbon being a transparent and well-overseen market that sets an example for other markets.

I realize my 5 minutes have been a bit technical – but more basic information can be found in the Nicholas Institute's primer on carbon markets (which is an appendix to my testimony). Thank you for allowing me, with the support of my colleagues from the Nicholas Institute, to provide input to this Committee.

I look forward to answering any questions you might have.

Mr. MARKEY. Thank you, Mr. Anda, very much. Just for your information, the regulation of the securities marketplace was proposed here in this committee until the year 2000 when the Republican majority moved it over to the Banking Committee and so I was the chairman of the subcommittee with jurisdiction over the financial marketplace so I find this a fascinatingly exciting subject that you are talking about, and I would only note to you that in 1994, the last year I was chairman, I had introduced a bill to regulate derivates. Alan Greenspan sat where you are sitting and his testimony was that counterparties have a stake in the stability of the system so we did not need any kind of regulatory system in the derivatives marketplace. I think we have now learned that derivatives in and of themselves are not good or bad but unregulated derivatives in a non-transparent marketplace is like a hydrogen bomb aimed at the economy, and so by learning these lessons, putting in place a well-structured regulatory marketplace, I think we have a chance to incorporate each one of these instruments in a rational financial system.

Our next witness, David Doniger, is the policy director of NRDC's Climate Center. Mr. Doniger works on policies to cut global warming pollution from power plants, motor vehicles and other major industries and leads NRDC's work to complete the phase-out of chemicals that deplete the earth's protective ozone layer. David also served for 8 years in the Clinton Administration where he was director of climate policy at the Environmental Protection Agency. We welcome you here, sir. Whenever you are ready, please begin.

STATEMENT OF DAVID DONIGER

Mr. DONIGER. Thank you very much, Mr. Chairman.

I want to focus today on the relationship between your new bill and the current Clean Air Act. The Supreme Court found in Massachusetts versus EPA that EPA already has the authority and responsibility to control carbon dioxide and other heat-trapping pollutants under the Clean Air Act. NRDC salutes Administrator Lisa Jackson and the Obama Administration for issuing the endangerment determination a week ago, officially recognizing what she called the compelling and overwhelming evidence that global warming is dangerous to our health and well-being. We can take a big bite out of global warming pollution using the Clean Air Act we have today but we cannot do all that is needed under the current law. We need the legislation before this committee to cap and cut carbon emissions, to raise energy efficiency and energy standards and to rebuild the economy and create millions of new jobs on a foundation of clean energy.

The ACES bill wisely proposes to keep and in most instances strengthen provisions of the current Clean Air Act. Despite the Supreme Court decision, there are some who claim that no part of the existing law should ever be used because if EPA ever starts using the Clean Air Act to address big sources like cars and power plants, it will not be able to stop itself from regulating every donut shop and barbecue in the land. But EPA has the tools to focus on the big sources, not the tiny ones. Donut lovers and barbecue fans can sleep soundly at night.

NRDC supports the ACES provisions reaffirming the Clean Air Act authority to set performance standards for vehicles. We support the goal of coordinating the Clean Air Act and CAFE standards and setting new ones that meet or exceed California's pioneering levels. This is a plan that retains California's critical leadership while also giving the auto industry the benefits of practical national uniformity. For power plants and major industries, EPA also had authority under section 111 of the current Clean Air Act. Indeed, Administrator Jackson is required to act soon on power plants in another case, a companion case to the Massachusetts case. The ACES bill tailors the current Clean Air Act provisions for power plants. We support those provisions.

The bill does contain a number of proposed exemptions from the Clean Air Act. Two of the changes NRDC believes make sense, that is, not to regulate greenhouse gases under the ambient standards or hazardous air pollutant programs. We support the bill's provisions to set new source standards for sources outside the cap but we disagree with exempting sources covered by the cap from those same new source standards. And we also disagree with the complete elimination of the case-by-case new source review for large, new and expanded carbon emission sources to meet the donut shop concern. It is sufficient to limit new source review to sources of more than 10,000 tons of CO_2 equivalent.

Let me say a word about the role of the States. During the long period of federal abdication, States have led the way, and if the federal program should come off the rails at some future point, it is critical that States be able to pick up the slack once again. States have capabilities to curb emissions and deliver energy efficiency and renewable energy that the federal government can't match, and for these reasons NRDC strongly supports the many provisions of the ACES bill that would harness State capabilities and protect their role. There is one very troubling exception though, a 6-year suspension of State authority to implement or enforce cap-and-trade-type programs. NRDC doesn't believe a real case has been made for why any such suspension is needed. We suggested in the written testimony a possible way forward that would keep States in the game and keep a strong state program.

One last word about equal access to justice. The ACES bill expresses an entirely commonsense intent that persons with either environmental or economic injuries should have equal access to the courts when EPA's compliance with the new is in question. These provisions are fair and balanced and they should be retained.

So I covered carbon market regulation issues in my written testimony. I would be happy to comment on those too in Q&A. But thank you very much for the opportunity to testify.

[The prepared statement of Mr. Doniger follows:]

Testimony of David Doniger
Climate Center Policy Director
Natural Resources Defense Council

Before the
Subcommittee on Energy and Environment,
Committee on Energy and Commerce
U.S. House of Representatives

Hearing On
"The American Clean Energy and Security Act of 2009"
April 24, 2009

Mr. Chairman and members of the subcommittee, thank you for the opportunity to testify today on behalf of the Natural Resources Defense Council (NRDC) on the American Clean Energy and Security Act of 2009. My name is David Doniger. I am policy director of the Climate Center at the Natural Resources Defense Council (NRDC), and I have been NRDC's senior lawyer in a number of global warming cases, including *Massachusetts v. EPA*. NRDC is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.2 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles and San Francisco, Chicago and Beijing.

My testimony will cover three somewhat far-ranging topics which this panel has been asked to address: (1) coordinating the existing Clean Air Act and comprehensive new climate legislation, and in particular, defining the role of states; (2) assuring sound regulation of carbon markets; and (3) addressing our domestic and international adaptation needs.

I. The Current Clean Air Act and New Climate Legislation

Two years ago, the Supreme Court issued its landmark ruling in *Massachusetts v. EPA*, holding the carbon dioxide and other greenhouse gases are "air pollutants" subject to regulation under the Clean Air Act if the Administrator of the Environmental Protection Agency (EPA) determines that they contribute to air pollution that may reasonably be anticipated to endanger public health or welfare. The High Court directed EPA to decide whether the scientific evidence demonstrated endangerment, and if so, to establish standards to curb the emissions and reduce the danger.

One week ago, Administrator Lisa Jackson took the long-overdue step of officially recognizing that global warming pollutants are indeed dangerous to public health and to the many components of the natural and man-made world encompassed in the definition of welfare. Scientifically, the Administrator's conclusions broke no new ground. She based her determinations on the solid foundation of the Nobel prize-winning Intergovernmental Panel on Climate Change (IPCC) and numerous peer-reviewed national scientific assessments. The EPA's summary of these reports speaks with chilling clarity about the increase in deaths, illnesses, and environmental impacts that are occurring now and that will steadily worsen unless we act to curb these emissions. Let me quote just one paragraph (from pages 99-100 of the notice):

> The Administrator concludes that, in the circumstances presented here, the case for finding that greenhouse gases in the atmosphere endanger public health and welfare is compelling and, indeed, overwhelming. The scientific evidence described here is the product of decades of research by thousands of scientists from the U.S. and around the world. The evidence points ineluctably to the conclusion that climate change is upon us as a result of greenhouse gas emissions, that climatic changes are already occurring that harm our health and welfare, and that the effects will only worsen over time in the absence of regulatory action. The

> effects of climate change on public health include sickness and death. It is hard to imagine any understanding of public health that would exclude these consequences. The effects on welfare embrace every category of effect described in the Clean Air Act's definition of "welfare" and, more broadly, virtually every facet of the living world around us. And, according to the scientific evidence relied upon in making this finding, the probability of the consequences is shown to range from likely to virtually certain to occur. This is not a close case in which the magnitude of the harm is small and the probability great, or the magnitude large and the probability small. In both magnitude and probability, climate change is an enormous problem. The greenhouse gases that are responsible for it endanger public health and welfare within the meaning of the Clean Air Act.

Though the EPA's action broke no new scientific ground, its legal consequences are momentous. For after long delay, the endangerment determination commits the federal government to using the legal authority that Congress has already provided to begin curbing global warming pollution.

NRDC salutes Administrator Jackson and President Obama for taking this rapid action to begin tackling global warming. We intend to work with them to carry out the existing Clean Air Act to achieve the substantial emission reductions possible under the law as it is today. At the same time, we join with them, and with you, in the effort to enact comprehensive new climate legislation to make the broader, deeper reductions needed over the long term.

The American Clean Energy and Security Act proposes to build upon today's Clean Air Act to create the Clean Air Act of tomorrow. The ACES bill recognizes that most relevant provisions in the current Act can be implemented in harmony with new Clean Air Act amendments to cap and reduce emissions and can provide important additional benefits. So the new bill wisely proposes to keep, in a number of instances to strengthen, most of the current Clean Air Act.

At the same time, however, the bill proposes a number of exemptions from programs under the current Clean Air Act. Several of these exemptions raise concerns. We understand that they are offered to be responsive to claims that certain provisions of the current Clean Air Act would be unnecessary when a comprehensive cap law is enacted. We think that many of those claims are not well-founded, however, and that legitimate concerns can be addressed with more surgical changes to programs that have worked well to date.

There are some who claim that no part of the existing law should ever be used. Their broadest argument – that the Clean Air Act was not intended to be used to curb global warming pollution – was rejected by the Supreme Court in *Massachusetts*. Some now argue that if EPA ever starts using the Clean Air Act, it will never be able to stop: that using the Clean Air Act to address big sources – like cars, power plants, refineries, and cement plants – will inevitably will lead to regulating every donut shop and barbeque in the land. We believe EPA has the tools to focus on the big sources, not the tiny ones, and that donut lovers and barbeque fans can sleep soundly at night.

Let us look at the some of the relevant provisions in turn.

Motor vehicles. I will start where EPA has started, with mobile sources. Section 221 of the ACES bill provides specific instructions and deadlines for EPA to use existing Clean Air Act authorities to set technologically and economically feasible standards for global warming pollutants from cars, light trucks, heavy-duty vehicles and engines, and non-road engines. These are essential and very welcome provisions. It is essential to set strong greenhouse gas performance standards to complement the overall cap on emissions of global warming pollutants. Administrator Jackson has rightly found that

vehicle emissions of these pollutants contribute to the mix of greenhouse gas air pollution in the atmosphere. Now EPA's task is to set standards under the technology-based criteria of the existing law. For cars and light trucks, Section 202(a)(2) provides that: "Any regulation prescribed under paragraph (1) of this subsection (and any revision thereof) shall take effect after such period as the Administrator finds necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period." For heavy-duty engines, Section 202(a)(3)(A) provides that standards shall "reflect the greatest degree of emission reduction achievable through the application of technology which the Administrator determines will be available for the model year to which such standards apply, giving appropriate consideration to cost, energy, and safety factors associated with the application of such technology." Section 202(a)(4) also gives EPA authority to assure that the means used to comply with emission standards do not create "an unreasonable risk to public health, welfare, or safety in its operation or function." Similar, completely practical standard-setting criteria are found in the other provisions of Title II of the existing law related to heavy-duty, non-road, and aircraft engines.

Power plants. Under Section 111 law of the existing Clean Air Act, EPA will soon have to determine whether the emissions from power plants significantly contribute to the mix of dangerous greenhouse gas pollution. That responsibility comes from a second case, *New York v. EPA,* which challenged EPA's determination in 2004 that it lacked authority under the Clean Air Act to limit CO_2 emissions from power plants under Section 111. Since the EPA decision rested on the same faulty arguments rejected in *Massachusetts v. EPA,* the Court of Appeals sent the *New York* case back to EPA for a

new decision on power plants. Since power plant CO_2 emissions are roughly double those from cars and light trucks, it is hard to see how EPA could reach a negative decision. Between the *Massachusetts* and *New York* cases, then, EPA can address the sources of more than 60 percent of this country's CO_2 emissions.

Section 116 of the ACES bill would create a new Section 812 of the Clean Air Act containing specific performance standards for new coal-fired and petroleum coke-fired electric generating units. While styled as a separate section, Section 812 essentially adapts the provisions of Section 111 to establish greenhouse gas performance standards tailored to coal-fired and petroleum coke-fired electric generating units. We support those provisions for the reasons explained by my colleague David Hawkins in testimony earlier this week. We think it is important, however, to retain the provisions of Section 111(d) that apply to existing power plants and other sources, a subject I will address below.

Other Clean Air Act Provisions. The ACES bill contains a number proposed exemptions for sources of greenhouse gases from programs under the current Clean Air Act. Two changes do not, in our judgment, raise significant concerns. Sections 831 and 832 of the ACES bill exclude greenhouse gases from coverage under the ambient standards and hazardous air pollutant programs. NRDC believes these changes are sensible as these programs are not well suited to managing emissions of greenhouse gases.

In addition, since as mentioned Section 812 of the ACES bill proposes specific emission standards for coal- and petroleum coke-based electric generating units permitted after the start of 2009, NRDC believes it is appropriate to clarify that the sources subject

to section 812 would not be subject to the more general authority of the current Act's section 111 New Source Performance Standard provision. NRDC also supports a change to the current law's New Source Review (NSR) provisions to establish an applicability threshold for greenhouse gases of 10,000 tons per year carbon dioxide-equivalent, a move that would remove the much trumpeted possibility of subjecting small sources to NSR.

NRDC disagrees, however, with sections 811 and 833 of the ACES bill as written. Section 811 would entirely repeal current Section 111's New Source Performance Standards for sources covered by the ACES bill's cap. Section 833 would exempt consideration of greenhouse gases under the current Act's New Source Review (NSR) provisions for all sources, capped or not. NRDC believes these provisions are too sweeping and would inappropriately eliminate the government's ability to establish reasonable and affordable performance requirements that would complement the cap and contribute to achieving the goals of the ACES bill in an efficient and cost-effective manner.

Since the first comprehensive federal clean air law enacted in 1970, Congress has recognized the value of providing complementary approaches to achieving our air quality and emissions objectives, rather than relying exclusively on a single instrument. Thus, in the Clean Air Act of 1970, Congress included both an air quality management program focused on ambient air concentrations of pollutants (sections 108 and 109) and programs to establish continuously improving emission performance standards for motor vehicles (section 202) and for large stationary air pollution sources (section 111). Congress created this dual management approach because it recognized that assuring reductions from major emitting sectors like vehicles, power plants, and major industrial sources,

based on evolving technological capability, would provide a foundation for assured emission reductions – reductions that would relieve the strain placed on the ambient management approach if it were the exclusive means of producing emission reductions. In the 1977 amendments to the Act, Congress established a case-by-case process for evaluating readily achievable emission performance under the NSR Program in order to assure a more rapid updating of improvements in pollution control technology.

The argument has been made that with an overall cap or budget on greenhouse gas emissions, we should simply not care about the amount of emissions from individual sources or even entire sectors. But Congress rejected that approach in the 1990 amendments when it enacted a cap on sulfur dioxide emissions from the electric power sector to combat acid rain. Congress retained the NSPS and NSR programs for the sources covered under the acid rain program, and those programs have continued to function well to minimize emissions from new sources, thereby reducing pressure on the sulfur dioxide cap and demonstrating improved and less expensive means of emission reduction that can be used to reduce emissions from existing sources as well.

In this case, the cap on total emissions of greenhouse gases (rather than an ambient standard) is a core element of an effective greenhouse gas reduction strategy. It creates a market for the many innovations that will be required to achieve the deep reductions we need to protect the climate. Theoretical arguments that other programs are not needed once we have a cap are misplaced because they ignore the reality that the cap enacted by Congress will involve compromises. The initial cap set in this legislation is not likely to reduce emissions as fast as may be environmentally and economically prudent. The inclusion of cost-containment provisions for reasons of economic prudence

may also mean that cap-driven reductions fall short of those that can be implemented cost-effectively in some key sectors.

The ACES bill recognizes the value of the dual structure I have outlined, and includes or retains a number of complementary policies to help supplement the cap program; for example, provisions for emission standard for new coal-based power plants, low carbon fuel standards, and vehicle emission standards, as well as the renewables and efficiency standards contained in Titles I and II of the bill.

NRDC believes it is important to preserve EPA's ability to set reasonable emission standards under Section 111 for major source categories of greenhouse gas emissions even if they are subject to the cap. We also recommend retention of the Act's NSR provisions for truly large sources of greenhouse gas emissions. This technology-forcing authority will help avoid what happened in the RECLAIM program in Southern California, where exclusive reliance on a cap program led to pervasive delays in reducing emissions from covered sources, and to a totally avoidable compliance crisis when the deadline arrived.

Critics have complained that strict application of the current Clean Air Act provisions for NSR would result in burdensome coverage of many small emission sources. That concern is easily addressed by raising the NSR threshold to a level that would cover only truly large industrial sources, such as 10,000 tons per year of CO_2-equivalent emissions, and we recommend that change be made. With this change to NSR, the adoption of new Section 812, and the exemption from ambient and hazardous emission standards, the current Act can be fully harmonized with the new cap on greenhouse gas emissions without eliminating the government's ability to establish

reasonable performance standards for important sources to complement the operation of the cap.

The Role of States. States have played, and will continue to play, a key role in controlling the pollution that drives climate change. During the long period of federal abdication, states have led the way. States have pioneered control of greenhouse gas emissions from vehicles, and they run effective programs to deploy energy efficiency and renewable energy resources. States, and entities that states regulate (such as local distribution companies) have program delivery capabilities that the federal government cannot match. If the federal program should come off the rails at some point in the future, it is extremely important that states be able to pick up the slack once again. In short, both the federal and state levels of government have key roles to play. For these reasons, NRDC is strongly supportive of many provisions of the ACES bill that would harness the capabilities of the states and protect their role.

With one exception, the ACES bill expressly protects the authority of state governments to adopt and enforce limits on GHG emissions, to adopt and enforce energy efficiency and renewable energy measures, and to take other regulatory actions to contribute to solving global warming. The one exception is the authority of state governments to implement or enforce cap-and-trade type programs, which would be suspended for six years under section 861.

Even temporary preemption of state authority to impose a cap on greenhouse gas emissions is very troubling. NRDC does not believe a real case has been made why any suspension of state authority is warranted. Instead, recognizing the potential value of integrating state programs into a suitable national program, NRDC recommends a

means through which states can *voluntarily* suspend the adoption or enforcement of state caps so long as the national program provides a strong national cap (as the ACES bill now proposes), retains other state authorities (again, as proposed) and includes certain additional provisions:

- *Adequately supporting state energy efficiency, renewable energy, and transportation efficiency programs.* The draft bill authorizes action taken directly by states, and through state-regulated entities such as local distribution companies, for example to accomplish aggressive deployment of energy efficiency resources, which are critical to achieving emissions goals at the lowest cost and to creating green jobs and a sustainable energy and economic future. As the committee determines the distribution of the valuable emissions allowances, it is essential to provide sufficient resources for these state-run and state-regulated energy efficiency, renewable energy, and transportation efficiency programs.

- *EPA authority to realize the benefits of superior state programs.* A number of states are implementing non-cap programs – such as energy efficiency standards and renewable energy deployment programs – that will achieve greater reductions of greenhouse gas emissions within their boundaries than the national program would achieve. The bill should include a provision to make sure the emissions benefits of these programs are achieved. This can be done without imposing higher cost burdens on businesses and residents in other states. Thus, the bill require EPA to reduce the national cap by an amount commensurate with additional program efforts that a state undertakes – if EPA determines that these programs produce emission reductions that would not have occurred without those efforts, if EPA determines they can be achieved without increasing allowance prices in other states.

We also urge the committee to clarify that the six-year "time-out" under Section 335 applies only to caps implemented with requirements to surrender non-federal allowances, and not to other state policies. This can be accomplished by using the same language in Section 335 that is used in section 334. We can provide specific language suggestions to you.

Let me close on this topic with a word about provisions in the ACES bill intended to clarify that citizens should have the same rights of access to the courts as industries. It

is well accepted that an industry that bears any tangible costs as a result of an EPA regulation has standing to go to court to contest whether the regulation complies with the statute. With regard to conventional air pollution, it is equally well accepted that an individual who breathes pollutants or otherwise suffers tangible harm personal or property damage from those pollutants also has standing to go to court to challenge whether the regulation complies with the statute. The access that all affected parties have to the courts helps ensure faithful execution of the law. This is common sense and long-established law.

Strange as it may seem, however, the previous administration contended that global warming was different – that though industry could go to court to argue that government action was too severe, persons suffering the impacts of global warming, and persons exposed to irrevocably increased risks of future impacts of global warming, did not have the same rights to go to court to argue that government action was too lax. In *Massachusetts v. EPA*, the Supreme Court determined that states have standing, holding that Massachusetts' loss of state-owned coastal property from sea level rise caused in part by vehicle emissions gave the state standing to challenge EPA's illegal behavior. The Court did not address in that case whether similar loss of coastal property owned by a private citizen would confer the same standing, nor did the Court address whether increased risk of health effects – death or illness due to enhanced heat waves or smog episodes due to global warming – would confer standing.

Through Congressional findings and purposes, the ACES bill expresses the entirely common-sense concept and intent that these kinds of present and future injuries suffered by private citizens – including both health effects and damages to property and

natural resources enjoyed by such persons – are as tangible and important as economic injuries suffered by industries. The bill says nothing more than that individuals who show these kinds of injuries should have the same access to the courts as industries, and that equal judicial consideration of both environmental and economic injuries will contribute to faithful execution of this law. These provisions are fair and balanced and should be retained.

II. Sound Regulation of Carbon Markets

The ACES bill includes important provisions to transparently and effectively regulate the market for trading greenhouse gas allowances, as well as futures and other instruments that may be created. Given recent experience on some other trading markets, the American people have a right to demand that rules for regulating carbon trading be clear, transparent and faithful to the fundamental *non*-financial objective of a cap and trade program: curbing carbon pollution. This means that the rules must facilitate achievement of the bill's long-term environmental objectives and not the short-term financial objectives of speculative traders.

The ACES bill already contains important market safeguards. For example, the bill gives the Federal Energy Regulatory Commission responsibilities to protect against market manipulation. Key requirements include limiting any emitting company from purchasing more than 20 percent of the allowances sold in any one auction, fining companies involved in market manipulation up to $25 million, and preventing any single participant from owning more than 10% of any class of derivatives. NRDC recommends including three additional safeguards in the bill:

Exchange Trading. In addition to the market in actual allowances, a market will develop in futures – contracts to deliver an actual allowance at a set date in the future. The future delivery date may be in the near-term (such as the end of the current year) or some years ahead. In some markets, such as oil, contracts for delivery are mostly for delivery less than two years into the future. For carbon allowances, futures may well develop looking forward as much as a decade.

Congress should consider requiring all trading in allowances and in futures to take place on regulated exchanges. This would effectively prohibit "over-the-counter" (OTC) trades where the amounts traded and the prices paid are essentially invisible to other participants and to market overseers. Given the size of these markets, there is no reason why both actual allowances and futures for cannot be effectively bought or sold on regulated exchanges, giving the greatest possible transparency to trading activity and prices.

Trading on exchanges dramatically reduces so-called counter-party risk – the risk that one of the contract participants will fail to perform when the contract is due. The counter-party risk problem is inherent in OTC trading and became major concern in the markets following the collapse of Lehman Brothers. This risk would not be significant if trading is limited to well-run exchanges with margin requirements and other features to assure contracts are performed upon.

At a minimum, if Congress determines not to entirely eliminate OTC trading, the bill should require the reporting to regulators of all non-standardized trades with a nominal value – for example, above $10 million. This would actively discourage speculative trades in the OTC market, as these trades would still be under the purview of

the regulator. It also would allow the regulator to keep track of large trades and outstanding counterparty risks in the marketplace.

Position Limits. As a further safeguard against manipulation, Congress should set tighter "position limits" on the fraction of allowance futures that any one participant can hold in the carbon market. We recommend that no one be allowed to have more than a *five* percent (not 10 percent, as the bill proposes) position in each futures market – for example, the market for contracts to deliver allowances at the end of 2013, or the market to deliver them at the end of 2017, etc. By establishing a position limit of five percent, no single market participant will have the market power needed to meaningfully influence prices. Furthermore, this five percent position limit will prevent individual players from disrupting the markets due to the need to liquidate positions for unrelated reasons such business failures, bankruptcy, or other unanticipated need to raise cash.

Contract limits are generally not required in the cash market for actual allowances of the current year's or a prior year's vintage during the course of any given year. However, strict position limits should take effect as the end-of-the-year compliance deadline approaches (and in the "true up" period allowed after the end of the year) to prevent participants from manipulating prices as the deadline draws near for delivering on futures relevant to that compliance period. In order to ensure a smooth delivery process from the futures into the cash market, positions in actual allowances should be limited to no more than 20 percent more than the compliance obligation of the largest emitter in the previous year. This limit will prevent arbitrage players from having the market power to charge high rates of interest to market participants at the end of

compliance period. It will help prevent volatility and lower the overall cost of the program.

Overseas Trading. The carbon market is expected to attract interest from overseas exchanges looking to facilitate trades during the hours when U.S. markets are closed. These foreign exchanges will tend to have their own reporting rules that may or may not make trading data transparent and accessible to U.S. market participants and regulators. This leaves open the risk that market players could side-step position limits by holding some or all of their allowances or futures offshore. In an effort to address this carbon leakage issue, Congress should direct the administration to work with other nations to establish comparable exchange trading safeguards as a condition of linkage to the U.S. carbon market. .

III. Domestic and International Adaptation

As Administrator Jackson found last Friday, global warming pollution is already causing serious impacts on our health and on our environment and natural resources, and these impacts are projected to worsen over time. We have to reduce emissions as soon as possible to avoid the worst impacts of global warming. It is plain, however, that adverse impacts are already occurring and will continue even if we accomplish these reductions. So at the same time we reduce emissions, we must prepare to manage the impacts of global warming that we cannot avoid, by acting now to protect our communities and natural systems.

The ACES bill contains important adaptation provisions in Title IV, Subtitle E, to promote federal, state, and international efforts to prepare for and mitigate the impacts of global warming that are predicted to occur even with strong emission reduction standards

in place. The draft legislation provides the following key measures for creating and implementing an effective adaption strategy:

- vulnerability assessments, including anticipated impacts to water, agriculture, forests and coastal resources;
- requirements for federal agency adaption plans that address recognized vulnerabilities, including a timeline for implementation;
- a resource center to ensure adaption plans are based on the best science available;
- financial and scientific resources to encourage state planning for climate change;
- recognition that ocean acidification due to the uptake of carbon emissions from the atmosphere is one of the most serious environmental consequences we face, which must be addressed in adaption planning;
- requirements for the Secretary of HHS to promulgate a national strategy for addressing the impacts of climate change on public health in the U.S.;
- US assistance to develop and implement climate change adaptation programs and projects that can reduce the vulnerability and increase the resilience of the most vulnerable developing countries;
- creation of an International Climate Change Adaptation Program within USAID to provide U.S. assistance to the most vulnerable developing countries for adaptation to climate change.

NRDC supports these provisions but urges they be strengthened by including the following:

First, the ACES bill should require adaptation plans to be fully consistent with conservation and environmental protection mandates contained in other federal laws. Adaptation plans must prevent further degradation of already stressed ocean, estuarine, freshwater and terrestrial ecosystems.

Second, the bill should require that federal adaptation plans developed under Subpart A (which calls for general adaptation planning) reflect and be fully consistent

with the natural resource adaptation plans developed under Subpart C. Currently there is no mechanism for coordinating these important planning efforts.

Third, the bill should provide additional guidance on the national public health strategy, including:

- Provisions to improve and integrate disease surveillance systems and environmental monitoring capacity to enable early detection of climate change impacts on public health;
- Requirements to develop tools for modeling and forecasting the public health effects of climate change on various geographic scales (city, county, state), and to provide technical support to assist in their implementation;
- Requirements to identify communities and populations vulnerable to the effects of climate change, and determine actions that should be taken to protect them, building on the vulnerability assessments called for in Subpart A.

* * *

Thank you for the opportunity to testify on this far-ranging set of issues. I look forward to answering your questions.

Mr. MARKEY. Thank you so very much for being here, Mr. Doniger.

Our next witness, Patricia Mulroy, is the general manager of the Las Vegas Valley Water District and Southern Nevada Water Authority. Ms. Mulroy oversees the operations of the Las Vegas Valley Water District and the Southern Nevada Water Authority, which is responsible for acquiring, treating and delivering water to southern Nevada. We welcome you.

STATEMENT OF PATRICIA MULROY

Ms. MULROY. Thank you, Mr. Chairman. I am also here today on behalf as a member of the board of the Association of Metropolitan Water Agencies and on the board of the Water Research Foundation, and on behalf of America's water utilities, I want to congratulate you and thank you for your ship on a bill that many of us have been awaiting anxiously for some time.

While the primary focus of the bill is energy, water and energy are inextricably linked and must be considered together. The Department of Energy estimates that 4 percent of our country's energy is consumed by the treatment, transmission and delivery of water while conversely the generation of energy consumes vast amounts of water resources. We in the water utility business are on the frontline of climate change and for us it is happening right now. Water utilities are learning to adapt to this reality and we have to if we are going to provide safe, reliable water supply to our Nation. My experience reflects the challenges facing the American Southwest where the flows of the Colorado River support nearly 30 million people and irrigate 15 percent of the Nation's crops. During this decade the seven States that share this river had witnessed cumulative flows drop 11.8 trillion gallons below average. If this drought continues, in 3 years Hoover Dam will cease generating electricity. Other regions are also beginning to see the effects, whether it is floods in the Midwest or groundwater aquifers beginning to see saltwater intrusion, and you know only too well the drought that has been ravaging the Southeast.

My agency's first adaptation strategy was to adopt one of the Nation's most aggressive water conservation programs, having paid our customers $110 million to remove grass and replace it with desert vegetation. This has resulted in reducing our water use by 22 billion gallons over the same time period where our population swelled by 400,000 inhabitants. We are also racing to build a new intake that goes deeper within Lake Meade. In California, officials are grapping with not only worsening Colorado River conditions but a drought in the Sierra and restricted use of in-State supplies. My purpose today is not to induce alarm but rather to convey the magnitude of the situation and offer water industry perspective on adaptation strategies.

One of our most immediate needs is research, not just more research but more focus applied research. There are nearly two dozen climate change models but none of them adequately predict effects on a watershed-specific scale. The development of these strategies requires actionable research that explores the full range of impacts. To that end, we recommend that the federal government partner with the Water Research Foundation to optimize the value of these

research investments. I encourage you to incorporate into your legislation the Climate Change Drinking Water Adaptation Research Act, which was sponsored last year by Representative Diana DeGette and Senate Majority Leader Harry Reid, which provides funding for climate change-related research from a small percentage of the cap-and-trade proceeds. This applied research will help provide information water managers need to make sound policy decisions. But even the best-studied strategies won't work if they cannot be implemented. Climate change adaptation also means new water infrastructure. Our new Lake Meade intake will cost $1 billion and this is only one project in one community. Considering all the water agencies that will likely be affected, the financial implications are staggering.

To help communities capitalize the necessary investments, we propose your legislation also include a concept similar to the proposed green bank for energy investments. A blue bank for water infrastructure would provide municipal water agencies the necessary capital to enact adaptation strategies utilizing a portion of the proceeds from a cap-and-trade system. Providing access to low-cost loans for climate change-qualified projects would enable us to proactively adapt. To be clear, I feel strongly that water agencies should be financially self-sufficient. These funds would be subject to repayment by the water agencies which are historically among the country's most secure borrowers.

Again, on behalf of the water industry, I would like to thank you very much for including us in this historic conversation and respectfully ask that you support our efforts to adapt and surmount the challenges of our changing climate. Thank you.

[The prepared statement of Ms. Mulroy follows:]

Statement
of

Patricia Mulroy, General Manager
Southern Nevada Water Authority

before the

House Energy and Commerce
Subcommittee on Energy and the Environment

on
Implications of Climate Change for Water Utilities:
Developing and Enacting Adaptation Strategies

April 24, 2009

Introduction

Good afternoon. My name is Patricia Mulroy, and I am the General Manager of the Southern Nevada Water Authority, a regional agency that manages water resources for 2 million residents and nearly 40 million annual visitors. I am here today on behalf of water utilities throughout the United States. In addition to my role with the Water Authority, I serve on the Board of Directors for the Association of Metropolitan Water Agencies and the Water Research Foundation. I am also an active member of the American Water Works Association and a founding member of the Water Utility Climate Alliance.

Water utilities are on the front line of climate change for us it's happening now. Water utilities must learn to adapt to this reality if we are going to provide a safe, reliable water supply for our nation. Ours is not an abstract discussion of future impacts from melting ice caps.

My experience reflects the challenges facing the American Southwest where the flows of the Colorado River support nearly 30 million people and irrigate 15 percent of the nation's crops. During this decade, the seven states that share the Colorado have witnessed cumulative flows drop 11.8 trillion gallons below average. Other regions are also seeing effects. These changes manifest in different ways—for instance, the Midwest can anticipate increased flooding and associated water quality issues, while groundwater aquifers in coastal areas will likely see salt-water intrusion due to rising sea levels. The Southeast is experiencing drought.

Research and Adaptation

We have to learn how to adapt. My agency has adopted one of the nation's most aggressive water conservation programs, having paid our customers $110 million to remove grass and replace it with desert vegetation. This has resulted in reducing our use by 22 billion gallons over

the same time period our population swelled by 400,000 inhabitants. Additionally, we are racing to build a new intake that goes deeper within Lake Mead and to develop a water supply that is hydrologically independent of the Colorado River. In California, officials are grappling not only with worsening Colorado River conditions, but a drought in the Sierra Nevada and restricted use of in-state supplies. My purpose today is not to induce alarm, but rather to convey the magnitude of this situation and offer a water industry perspective on adaptation strategies.

First, I would like to express my appreciation for the foresight of Representatives Waxman and Markey in drafting the American Clean Energy and Security Act of 2009. The principles encompassed in this legislation represent pragmatic solutions to a complex problem. While the primary focus of this bill is energy, water and energy are inextricably linked and must be considered together. The Department of Energy estimates that 4 percent of our country's energy is consumed by the treatment, transmission and delivery of water while conversely the generation of energy consumes significant water resources.

One of our most immediate needs is research—not just more research, but more focused, applied research. There are nearly two dozen climate change models, but none of them can predict effects on a watershed-specific scale. The development of adaptation strategies requires actionable research that explores the full range of impacts to water utilities. To that end, we recommend the federal government partner with the Water Research Foundation to optimize the value of research investments. To this end I encourage you to incorporate into your legislation the Climate Change Drinking Water Adaptation Research Act sponsored by Representative Diana DeGette and Senate Majority Leader Harry Reid, which provides funding for climate change related research from a small percentage of cap-and-trade proceeds. This applied research will help provide information that water managers need to make sound policy decisions. This legislation was included in S. 3036, the Lieberman-Warner Climate Security Act of 2008, during last year's Senate consideration of this issue.

Blue Bank

Even the best studied strategies won't work if they cannot be implemented. Climate change adaptation also means new water infrastructure. Our new Lake Mead intake, which cost almost $1 billion, is only one project in one community. Considering all of the water agencies that will likely be affected, the financial implications are staggering.

To help communities capitalize the necessary investments, we propose your legislation also include a concept similar to the proposed "Green Bank" for energy investments. A "Blue Bank" for water infrastructure would provide municipal water agencies the necessary capital to enact adaptation strategies, utilizing a portion of the proceeds from a cap-and-trade system. A similar funding structure, the Transportation Infrastructure Bank, has already been proposed in the Obama Administration's FY 2010 Budget. Providing access to low-cost loans for climate change qualified projects would enable water utilities to proactively adapt while creating significant job growth. To be clear, I feel strongly that water agencies should be financially self-sufficient. These funds would be subject to repayment by municipal water agencies, which historically are among the country's most secure borrowers.

Americans have a remarkable ability to overcome adversity. We in the water industry respectfully ask that you support our efforts to adapt to and surmount the challenge of our changing climate. Thank you for your time.

ASSOCIATION OF
WATER AGENCIES

Global Climate Change Research and Adaptation

"[Climate change legislation] must assist states, localities, and tribes to respond and adapt to the effects of global warming. A portion of auction revenues should be provided to states, localities, and tribes to respond to harm from global warming and adapt their infrastructure to its effects, such as more severe wildfires, ***intensified droughts, increased water scarcity, sea level rise, floods, hurricanes,*** *melting permafrost, and agricultural and public health impacts."*

– Reps. Henry Waxman and Ed Markey
Letter to Speaker Pelosi
October 2, 2008

As Congress establishes the framework for a comprehensive federal response to climate change, AMWA strongly encourages members of the House and Senate to set aside a portion of cap-and-trade auction revenues for targeted assistance to help communities prepare for and adapt to the unavoidable consequences of global warming.

The nation's existing drinking water infrastructure is already in need of billions of dollars of investments to maintain current levels of service over the coming decades, and climate change will only exacerbate the need for additional resources in the years ahead. These impacts will be felt particularly hard in the water sector because many of the earliest and most critical impacts of climate change will manifest themselves through the hydrologic system.

To respond to this challenge, AMWA believes that a federal adaptation program must pay particular attention to water resources and help local water managers identify and take the steps needed to maintain clean and plentiful water supplies across the nation. In addition, at this point it remains unknown what the exact effects of climate change on the water resources of different regions of the United States will be. As a result, detailed national, regional, and local research is needed to identify these likely impacts and help communities plan for future water quality and quantity issues.

AMWA and its member utilities support including several water-focused components within a comprehensive climate adaptation program. These elements include:

- Reserving a portion of cap-and-trade auction revenues for research and adaptation programs, with a special focus on the water sector;
- Comprehensive assessments of the vulnerability to climate change of regional water resources;
- Federally-sponsored research programs to downscale global climate modeling data, identify regional water quality and quantity risks, and develop enhanced water management practices;
- A program through which water systems can compete for funding to implement climate change adaptation measures. Necessary measures will vary from region to region but may include projects to increase water efficiency and conservation, energy efficiency initiatives that help water utilities reduce their own greenhouse gas emissions, the development of alternative water

sources (such as through reuse, recycling, and desalination), and improvements to critical infrastructure; and

- Provision of financial incentives for drinking water systems that voluntarily document and reduce greenhouse gas emissions that are related to their operations.

In addition to supporting water research and adaptation programs as part of a comprehensive cap-and-trade proposal, AMWA also encourages Congress to approve stand-alone legislation that supports research into the impacts of climate change on water supplies. In the 110th Congress, Senate Majority Leader Harry Reid and California Senator Dianne Feinstein introduced legislation (S. 2910) to authorize climate change adaptation research for drinking water utilities. Congresswoman Diana DeGette introduced a companion bill (H.R. 6297) in the House of Representatives. We ask you to support this legislation when it is reintroduced this year.

WATER RESEARCH FOUNDATION

ADVANCING THE SCIENCE OF WATER

The Need for Climate Change Adaptation Research for Drinking Water

April 24, 2009

The Water Research Foundation (Foundation) is the leading international non-profit research institution on water. The Foundation has assembled other water utility research institutions from Europe, Asia and Australia to develop a comprehensive research agenda to help drinking water utilities adapt to Climate Change. Beginning in 2003, the Foundation began to sponsor Climate Change research to assess and plan responses to the impacts of climate change. Using subscriber funding, the first study was published in 2006 as *Climate Change and Water Resources: A Primer for Municipal Water Providers*. This volume summarizes the best available scientific evidence on climate change, identifies the implications of climate change for the water cycle and the availability and quality of water resources, and provides general guidance on planning and adaptation strategies for water utilities.

The first impact of climate change is on water. The consensus among climate scientists is overwhelming that climate shift is occurring more rapidly than can be attributed to natural causes and that significant impact to the environment will be felt in this century. Among the first and most critical impacts will be changes to patterns of precipitation around the world. This will affect water availability not just for agriculture and food production, but also for the most basic drinking water and domestic water needs of populations in many areas.

Climate change impacts on water supply are seen globally. Water utilities throughout the United States as well as Europe, Australia, and Asia are concerned that extended changes in precipitation will lead (and have already led) to extended droughts. Changes will also include greater intensity of rainfall, which will increase both erosion and the difficulty of capturing the water for storage. The timing of precipitation will also affect the reliability of water supplies if too much falls in too short a time and storage capacity is inadequate for quantities that will be needed for use over longer periods than in the past.

The Water Research Foundation sponsors applied research related to climate change. As of 2009, the Foundation has sponsored ten completed and ongoing projects and still has $17.7 million in pending research projects waiting to be funded. Because the Foundation's water industry membership represents 80 % of the drinking water supplied in the United States, the Foundation's applied research goal is to help water utility managers adapt and implement the best water management strategies. For example, a project sponsored by the Foundation includes *"Incorporating Climate Change Information in Water Utilities: A Collaborative, Decision-Analytic Approach."* This uses large climate models to develop climate modules for small-scale, long-range water supply planning software used by water utilities. A particular focus of this research is to help utilities prepare for a *range* of likely possibilities given uncertainties about specific climate changes in a given area.

At this time, the current federal research agenda does not fully address the needs of drinking water utilities. The Water Research Foundation working in conjunction with the federal agencies can help to provide a more focused research related to climate change impacts on drinking water supplies. Last year, the Congress introduced and passed climate change research legislation that focused research into carbon capture and sequestration and the impacts of climate change on nature, ecosystems, habitat, fish and wildlife resources. Research is needed to assess the impact on drinking water supplies for people.

In the 110th Congress, Senate Majority Leader Harry Reid and Senator Dianne Feinstein introduced legislation to authorize climate change adaptation research for drinking water utilities (S.2970), which was placed on the Senate Calendar; companion legislation was introduced by Congresswoman Diana DeGette (HR 6297) in the House of

Representatives. This legislation will be re-introduced this year. The bill authorizes $25 million annually over ten years for climate change research and develops a coordinated research agenda between the federal agencies and the water industry. Funding is provided through the U.S. Environmental Protection Agency (EPA) who will work with the other cabinet secretaries depending upon the area of research involved.

The Water Research Foundation has implemented a research agenda for climate change to help drinking water utilities adapt to changes brought about by climate change in the following areas:

(1) Water quality impacts and solutions
(2) Water quantity impacts and solutions
(3) Impacts on groundwater supplies from carbon sequestration
(4) Infrastructure impacts and solutions for water treatment facilities and underground pipelines
(5) Desalination, reuse and alternative supply technologies
(6) Energy efficiency and greenhouse gas minimization
(7) Regional and Hydrologic Basin Cooperative Water Management Solutions
(8) Utility Management and Decision Support Systems and Water Management Models
(9) Reducing Greenhouse Gas Emissions and Energy Demand Management
(10) Water Conservation and Demand Management- Communications, education and public acceptance-
(11) Research into improved strategies and approaches for communicating with customers, decision-makers and other stakeholders about the implications of climate change on water supply.
(12) Research to develop effective communication approaches to gain public acceptance of alternative water supplies, of new policies and practices including conservation and demand management, and recognition and acceptance of increased costs.

WATER RESEARCH FOUNDATION
ADVANCING THE SCIENCE OF WATER

Water Research Foundation
Current and Recent Research on Climate Change
April 2009

Evaluating Effects of Climate Change on Water Quality Planning Criteria and Design Standards #4154

Will evaluate current water utility planning criteria and design standards for their effectiveness in equipping utility facilities with the features needed to adapt effectively to future climate conditions, with the purpose of assisting water utilities in the engineering of new facilities. Will build on the previous Water Research Foundation study, Climate Change and Water Resources: A Primer for Municipal Water Providers (Order 91120), and will focus on the western U.S. coastal climate variations and how utilities can modify existing planning criteria and design standards to provide the flexibility to deal effectively with the wide range of climate uncertainty predicted. Tailored collaboration partners: Contra Costa Water District, Seattle Public Utilities Commission, Los Angeles Department of Water and Power, and San Diego County Water Authority.

Funded: 2007 Completion Date: 11/15/2009 Funding: $125,000

Incorporating Climate Change Information in Water Utility Planning: A Collaborative, Decision Analytic Approach #3132

Will identify vulnerabilities of drinking water utilities to changing climate conditions and the adaptations drinking water utilities will need to make to manage risk, given unavoidable uncertainties regarding the specific nature of future changes in local hydrologic conditions. Will also develop flexible and responsive short- and long-term management strategies to help utilities deal effectively with this new source of uncertainty when planning for and implementing changes in response to climate change. Research partner: NCAR.

Funded: 2005 Completion Date: 4/30/2010 Funding: $265,000

Climate Change and Water Resources: A Primer for Municipal Water Providers #2973

Summarizes the best available scientific evidence on climate change, including both natural changes and changes that may be caused by human activities. Focuses on what is known about the implications of climate change for the water cycle and the availability and quality of water resources. Also provides guidance on planning and adaptation strategies. Includes a CD-ROM. Research partner: NCAR. Published in 2006.

Funded: 2003 Completion Date: 5/8/2006 Funding Amount: $148,298

A Buyers' Guide to climate risk information for water utilities #4204

Will identify, evaluate and organize currently available information sources in the global knowledge base -- including public domain tools, guidance, and data sets that might usefully comprise a water utilities tool kit for a *Buyers' Guide*. By developing the information base for the larger *Buyer's Guide* project, the work here proposed would highlight data needs and gaps, and facilitate completion of the larger project. Ultimately, the tool kit and *Buyer's Guide* could inform companion projects to develop harmonised *high resolution, regional climate change data for water and wastewater utilities*. The tool kit could also provide a valuable annex to any refresh or expansion of the *Primer for Municipal Water Providers*.

Funded: 2008 Completion Date: 10/15/2008 Funding: $28,000

Joint Front Range Climate Change Vulnerability Study #4205

Will assess changes in the timing and volume of hydrological runoff that might be expected from selected climate change scenarios for the years 2040 and 2070. Two hydrological models will be calibrated and implemented in the study including the WEAP Model and the linked Sacramento Soil Moisture model.

Funded: 2008 Completion Date: 12/1/2009 Funding: $379,900

Greenhouse Gas Emission Inventory Guidance, Specialty Protocol Development and Management Strategies for Water Utilities #4156

The project will present a protocol and develop a guidance document for water utilities that will provide a common framework or platform for water utilities to inventory and report their greenhouse gas (GHG) emissions. It will assist users in understanding issues and terminologies and present a step-by-step approach to perform a water utility-specific GHG emissions inventory. The protocol and guidance will focus on Scope 1 (direct) and Scope 2 (indirect) emissions, and will not address Scope 3 (optional indirect) emissions of upstream or downstream operations.

The project will also identify GHG emission management strategies that can potentially assist water utilities in reducing their carbon footprint, and to lay out a general framework for benchmarking between utilities given differences in water conveyance distance and elevation and scope of operations within the utility boundaries. The task will identify any incidental benefits in the value chain (i.e., downstream or upstream "Scope 3" emission reductions at an entity serving or being served by the water utility) associated with each management strategy.

Funded: 2007 Completion date: 10/01/2009 Funding: $107,658

Mitigating Impacts of Changes in Watershed Vegetation on Source Water Quality and Quantity #4009

Will investigate and report impacts of short-term, catastrophic or longer-term natural and human-caused changes to vegetative cover on the quality and quantity of source waters. Will describe and evaluate the prevention and mitigation response strategies undertaken by utilities. Will also use examination of the impacts of actual shorter term changes or differences in land cover to evaluate the potential impacts of longer term climate change induced effects. Collaborative Partner: USEPA.

Funded: 2006 Completion Date: 4/15/2009 Funding Amount: $309,757

Performance evaluation toolbox to assist urban water utilities in managing energy use and greenhouse gas emissions: state of the science review #4224

The objective of the project is to review the state of the science of process models, performance indicators, and assessment methods used by urban water utilities (drinking water, wastewater, reuse, and storm water) to manage energy use and greenhouse gas emissions. It will include a review of process-specific models, performance indicators, and impact and risk assessment methods used by urban water utilities; synthesis of the methods and models generally used and accepted for evaluation of energy consumption and greenhouse gas emissions; description of how the methods and models are used for risk evaluation, decision support and performance assessment; identification of gaps and research needs for refinement and harmonization, or development of more robust models and methods; provision of a framework for proceeding with research projects to meet the research needs. Collaborative Partner: GWRC.

Funded: 2008 Completion date: 1/1/2010 Funding Amount: $200,000

Energy Efficiency in the Water Industry: A Compendium of Tools, Best Practices and Case Studies #4223

The objective of this project is to develop a Compendium of best practice (worldwide) in the energy efficient design and operation of water industry assets. The expectation is that the output of the project will be a 'benchmarking tool' that will be of value to GWRC's members to guide them towards improving their own ways of working from an energy efficiency perspective. The scope of work will be wide, to cover the principal activities of water and wastewater businesses[1], and will focus on the identification of current best practice, tools and technologies.

In addition to an overview of current best practice, the study is expected to identify the promising developments and future opportunities to help deliver:

1. Incremental improvements in energy efficiency through optimisation of existing assets and operations
2. More substantial improvements in energy efficiency from a 'paradigm shift' in the way that the industry meets its obligations. Collaborative Partner: GWRC.

Funded: 2008 Completion date: 1/1/2010 Funding Amount: $200,000

1182

Identifying and Developing Climate Change Resources for Water Utilities: Content for Central Knowledge Repository Website #4208

Will identify and develop content for a central knowledge repository website to assist water utilities in assessing and managing the impacts of climate change.

Funded: 2008 Completion date: 6/1/2010 Funding Amount: $430,838

WATER RESEARCH FOUNDATION
ADVANCING THE SCIENCE OF WATER®

Water Research Foundation
Research on Desalination and Energy

Desalination

Completed

1995 [#290] Major Ion Toxicity in Membrane Concentrates

Mickley & Associates

The general research objective was to develop an understanding of major ion toxicity as it applies to membrane concentrate and the mysid shrimp test organism so as to anticipate toxicity occurrence, to allow for its determination, and to allow for its cost-effective regulation. Published in 2000.

1997 [#413] Nonthermal Technologies for Salinity Removal

Metropolitan Water District of Southern California (Los Angeles)

Determines if nonthermal desalination technologies such as carbon aerogel CDI (innovative capacitive deionization) and ultra-low pressure reverse osmosis can be used to cost effectively treat river waters and reclaimed water. Research partners: Southern California Edison and EPRI CEC. Published in 2001.

1990 [#607] Membrane Concentrate Disposal

Mickley & Associates

Presents existing chemical characterization and cost data on membrane process waste concentrates from a worldwide literature review. Includes both the characterization and minimization of membrane process concentrates. Also provides a state-by-state regulatory review related to concentrate disposal options. Published in 1993.

2001 [#2744] Characterizing and Managing Salinity Loadings in Reclaimed Water Systems

CH2M HILL

Develops and tests a protocol for characterizing commercial, industrial, and residential salinity contributions in both sewer collection and reclaimed water distribution systems. Also provides guidelines for identifying economic impacts of implementing salinity management practices to customer requirements and regulatory standards. Tailored Collaboration partner: Irvine Ranch Water District. *Includes a CD-ROM.* Published in 2006.

2003 [#2934] Water Treatment Residuals Engineering

Environmental Engineering & Technology, Inc.

The objective of the project was to develop a comprehensive manual on water treatment residuals, including their characteristics and treatment, disposal, and beneficial use options. The manual contains information on how a utility can characterize their own residuals to select appropriate technologies, and also provides information on the design and implementation of residuals management systems. Published in 2006.

2003 [#2971] Beneficial and Nontraditional Uses of Concentrate

CH2M HILL

This project focused on the beneficial reuse of concentrate or concentrate by-products. The objectives of the project were to (1) provide a comprehensive review and comparison of the full range of alternate uses of concentrate, and to assess the feasibility of implementation, economic considerations, and environmental safety; and (2) evaluate both direct uses of concentrate and the potential for recovery and marketing of individual salts separated from concentrate. (Available to subscribers)

2003 [#3005] A Novel Approach to Seawater Desalination Using Dual-Staged Nanofiltration

Environmental Engineering & Technology, Inc., Long Beach (Calif.) Water Dept., and University of Nevada at Reno

Develops a selection protocol to assess the suitability of nanofiltration membranes for a dual-staged system as an alternative to traditional reverse osmosis membranes. Also develops practical guidelines for operational optimization and finished water blending strategies as well as a possible basis for minimizing or avoiding disinfectant usage based on the viral removal capability. Tailored Collaboration partner: Long Beach (Calif.) Water Dept. Published in 2006.

2003 [#4071] Impacts of Membrane Process Residuals on Wastewater Treatment

Black & Veatch

Will provide practical guidance to utilities concerning the effects of membrane process residuals on wastewater treatment, including treatment processes, effluent quality, and water reuse and residuals management options. Research partners: WRF, U.S. Bureau of Reclamation, and WERF.

2003 [#4072] Investigation of Regional Solutions for Disposing of Concentrate

Carollo Engineers

Will survey concentrate disposal and management practices and develop a decision methodology for manager, regulators and stakeholders to use in assessing the viability of concentrate disposal options on a regional and local basis. Research partners: WRF, U.S. Bureau of Reclamation, and WERF.

2003 [#4073] Zero Liquid Discharge and Volume Minimization for Water Utility Applications

Mickley & Associates

Will gather, analyze, and synthesize information concerning technologies appropriate for volume reduction, zero liquid discharge, and zero discharge of membrane concentrate. Research partners: WRF, U.S. Bureau of Reclamation, and WERF.

2005 [#3144] International Symposium and WHO Expert Decision Meeting to Develop Guidance on Magnesium and Calcium, and Their Contributions to Public Health From Diet and Drinking Water

Reports on a symposium and meeting of a WHO Expert Group to review the benefits of consumption of magnesium and calcium from diet and drinking water on public health, with emphasis on the incidence of cardiovascular disease and other health effects in populations with deficient consumption of these minerals. Research partners: WHO, ILSI, USEPA, Center for Human Nutrition at the University of Nebraska Medical Center, and Health Canada.

2006 [#4049] World Health Organization Guidance on Desalination for Safe Water Supply: Health and Environmental Aspects Applicable to Desalination

Will produce WHO Guidance on health and environmental aspects applicable to desalinated water production, distribution, and water quality.

Current

2002 [#2841 and #2917] Water Quality Implications of Large-Scale Application of Seawater Desalination

McGuire Environmental Consultants, Inc.

Will develop water quality and design information for desalination systems. Will test and monitor membrane performance, analyze finished water quality, and assess operating costs. Will also examine the impact of desalination on blended water quality and the disposal
options for reject streams. Tailored Collaboration partner: West Basin Municipal Water District. ***To be completed in 2007.***

2003 [#3010] Zero Liquid Discharge for Inland Desalination

Black & Veatch

Will advance or develop zero liquid discharge (ZLD) technologies that may include volume minimization processes, which are less energy-intensive for desalination of impaired water sources in inland regions. Research partner: CEC. ***To be completed in 2007.***

2004 [#3030] Desalination Product Water Recovery and Concentrate Volume Minimization

Carollo Engineers

Will develop an innovative approach to advance desalination technologies for product water recovery and concentrate volume minimization. ***To be completed in 2008.***

2004 [#3043] Potential and Pitfalls for Sustainable Underground Storage of Recoverable Water

The National Academies

Will provide an overview of some of the research needs and priorities concerning sustainable underground storage technology and implementation. Will also assess geological, geochemical, biological, engineering, and institutional factors that may contribute to good or poor performance of such projects. Research partner: NRC. ***To be completed in 2008.***

2004 [#3056] Evaluation of the Dynamic Energy Consumption of Advanced Water and Wastewater Treatment Technologies

HDR Engineering, Inc.

Will document the energy use, cost, and efficiency of water and wastewater unit operations. Will include a comparison with theoretical efficiencies and an identification of the largest energy usages. Will conduct a comparison of 12 different plants to include a range of advanced water and wastewater treatment processes including desalination. Research partner: CEC. ***To be completed in 2008.***

2004 [#3096] Membrane Concentrate Treatment Strategies for Inland Water Reclamation Systems

Arizona State University

Will identify and develop methods to manage brine streams from water reclamation systems (including agricultural drainage) so that the water may be recovered for potable or industrial purposes while the salts are converted into solid by-products. Will also determine the optimum combination of membrane, thermal, and solid-liquid separation processes for different brine solutions, and develop a computer model for optimizing unit processes for different water qualities. Will provide a bench-scale testing protocol for simulating different brine concentration strategies. Tailored Collaboration partner: City of Phoenix. ***To be completed in 2007.***

2005 [#3149 and #4049] World Health Organization Guidance on Desalination for Safe Water Supply: Health and Environmental Aspects Applicable to Desalination

Will develop analyses and guidance on health and environmental aspects applicable to desalinated water production, distribution, and water quality. Research partners: WHO, U.S. Bureau of Reclamation, USEPA, and the European Union. WHO will publish a final guidance document that AwwaRF will make available only to its subscribers. ***To be completed in TBD.***

2006 [#4006] Critical Assessment of Implementing Desalination Technology

Colorado School of Mines

Will examine the full range of water quality, environmental, economic, and social considerations regarding the implementation of desalination technology, based on a review of literature, survey of existing facilities, and case study analysis. Research partner: UKDWI. ***To be completed in 2009.***

2006 [#4038] Desalination Facility Design and Operation for Maximum Energy Efficiency

Black & Veatch

Will compile and analyze data from operating brackish (ground and surface), seawater, and wastewater membrane desalination facilities to result in recommendations for the design and operation of desalination facilities to maximize energy efficiency and reduce energy use and costs. Will also investigate the relationships between plant location, design, operation and maintenance, and energy use and cost. Research partner: CEC. ***To be completed in 2009.***

2006 [#4061] Enhanced Reverse Osmosis Systems: Intermediate Treatment to Improve Recovery

University of Texas at Austin

Will design and develop two inter-stage treatment systems to increase recovery in reverse osmosis preparation of drinking water and thus reduce disposal costs in particular for inland facilities. Will compare recovery using advanced oxidation of anti-scaling compounds and subsequent solid precipitation with that of electrodialysis. ***To be completed in 2009.***

2007 [#3055] Review of International Desalination Research (CEC partnership). ***To be completed in 2009.***

2007 [#4078] Guidelines for Desalination (task force project)

2007 [#4079] Post Treatment Stabilization of Desalinated Water (task force project)

2007 [#4080] Seawater Intakes for Desalination Plants (task force project)

2007 [#4148] Investigation of Vibratory RO to Achieve >99% Water Recovery or Treat RO Brines (task force unsolicited project)

2007 [#4149] Polypropylene Hollow Fiber-Based Low Pressure Reverse Osmosis and Nanofiltration Membranes for Desalination (task force unsolicited project)

2007 [#4150] A Novel Hybrid Forward Osmosis Process for Drinking Water Augmentation Using Impaired Water and Saline Water Sources

Colorado School of Mines

Will investigate a novel hybrid process that will simultaneously enhance water reclamation and desalination using a forward osmosis membrane process combined with reverse osmosis desalination of saline water. Will demonstrate the advantages of the hybrid system, including reduced chemical use, enhanced water recovery, lower energy use, and multiple barriers to biological and organic contaminants. Research partner: U.S. Department of Energy. ***To be completed in 2008.***

2007 [#4151] Method of Producing Commercially Viable Ceramic Bipolar Bilayer Membranes (task force unsolicited project)

Energy/Water Nexus

Completed

1991 [#736] Energy Management for Water and Wastewater Utilities

HDR Engineering, Inc.

Provides a detailed look at electricity consumption for several generic processes used in water and wastewater plants. Describes energy usage patterns for water and wastewater. Also identifies opportunities for a variety of energy management options. Includes energy management approaches and case study applications. Research partner: EPRI CEC. Published in 1994.

1994 [#167] Ozone System Energy Optimization Handbook

Process Applications, Inc.

Provides an energy efficiency protocol for ozone systems used in drinking water plants. Documents a series of one-week plant audits focused on the ozone system. Quantifies the improvements that were implemented. Research partner: EPRI CEC. Published in 1996.

1995 [#284] Ozone Facility Optimization Research Results and Case Studies

Process Applications Inc.

Identifies occurring and recurring factors that limit a facility from achieving optimized ozone system operation. Expands the database for project #167 by conducting additional ozone system evaluations at plants across North America. Documents the results of the evaluations, including the results of the ozone facility technical assistance efforts from Phase I (project #167), which focused on the implementation of optimization strategies. Research partner: EPRI CEC. Published in 1998

1995 [#298] Quality Energy Efficiency Retrofits for Water Systems

HDR Engineering, Inc.

Provides pragmatic information to increase the likelihood of high quality, reliable, and persistent energy management retrofits. Includes information on how to avoid common pitfalls and problems, suggestions for selecting contractors, and how to evaluate completed projects. Research partners: CEC and EPRI CEC. Published in 1997.

1995 [#299] Energy and Water Quality Management System

EMA Services, Inc., and East Bay Municipal Utility District (Oakland, Calif.)

Based on a pilot project, provides a methodology and guidelines for evaluating various designs for energy management systems that will be part of a utility SCADA system. Determines the benefits of a water-quality-constrained energy management system. Bases benefits on a variety of alternative future scenarios for energy management, including electric utility deregulation. Research partner: EPRI CEC. Published in 1997.

1997 [#458] A Total Energy and Water Quality Management System

Westin Engineering, Inc.

Presents a generic model for an energy and water quality management software system for the water community. Based on the generic model, develops standard specifications for the software applications required to minimize energy costs within the constraints of water quality and operations goals. Research partner: EPRI CEC. Published in 1999.

1997 [#475] Advancing Ozone Optimization During Pre-Design, Design and Operation

Process Applications Inc.

Provides feedback to the design community from lessons learned during the ozone plant evaluations conducted during Phases I and II of the project (projects #167 and #284, respectively). Includes two additional tasks for optimizing on-line ozone residual measurements and pre-design considerations for ozone demand and decay. Research partner: EPRI CEC. Published in 2000.

1999 [#2621] Best Practices for Energy Management

EMA Services, Inc., Rose Enterprises, Inc., and Demarche Consulting Group

Develops a documented consortium benchmarking process for water utility application. Reports on applying the process in an energy management benchmarking study. Tailored Collaboration partner: Irvine Ranch Water District. Phase 1 was published in 2003 as *Consortium Benchmarking Methodology Guide.*. Phase 2 was also published in 2003.

1999 [#2624] Implementing a Prototype Energy and Water Quality Management System

EMA Services, Inc.

Quantifies the projected benefits of an Energy and Water Quality Management System (EWQMS) at a major water utility. Reports on designing, modeling, implementing, measuring results from, and documenting the Operations Planner and Scheduler (OPS) function modeled in previous EWQMS phases. Develops site-specific specifications of OPS software, with a requirement that the system could be operational within six months and yield positive return on investment within one year. Documents performance of OPS software following installation and start-up. Tailored Collaboration partner: Colorado Springs Utilities. Published in 2003.

2002 [#2923] Water and Wastewater Industry Energy Efficiency: A Research Roadmap

McGuire Environmental Consultants, Inc.

Identifies and prioritizes research areas and/or projects that would advance emerging technologies and best practices to improve the energy efficiency, reliability, and costs for water and wastewater treatment facilities. Research partner: CEC. Published in 2004.

2003 [#2935] Water Efficiency Programs for Integrated Water Management

A & N Technical Services, Inc., and Michigan State University

Identifies direct and indirect costs and benefits of water efficiency incentives and measures in a format that is useful for capital and strategic planning efforts. Provides a framework to evaluate demand-side management options with supply-side options. Also establishes the role of water efficiency programs as a component of an integrated water resources management strategy. *Includes a CD-ROM.* Research partner: USEPA. Published in 2007.

2003 [#3001] Optimizing Operations at JEA's Water System

EMA, Inc.

Expands a previously developed software for optimized system controls of aquifer resources (OSCAR) that was developed to minimize cost while improving water quality and better managing water resources. Describes benefits of optimizing operations and includes functional software specifications. Also documents experience and lessons learned in the implementation, calibration, and operation of the OSCAR software. *Includes a CD-ROM.* Tailored Collaboration partner: JEA Utilities (Florida). Published in 2005.

Current

2003 [#3009] Development of a Utility Energy Index to Assist in Benchmarking of Energy Management for Water and Wastewater Utilities

CDH Energy Corp.

Will provide a useful index or indices to measure the results of a water or wastewater utility's energy management strategy to use for internal and external comparisons. Research partner: CEC. ***To be completed in 2007.***

2004 [#3056] Evaluation of the Dynamic Energy Consumption of Advanced Water and Wastewater Treatment Technologies

HDR Engineering, Inc.

Will document the energy use, cost, and efficiency of water and wastewater unit operations. Will include a comparison with theoretical efficiencies and an identification of the largest energy usages. Will conduct a comparison of 12 different plants to include a range of advanced water and wastewater treatment processes including desalination. Research partner: CEC. ***To be completed in 2008.***

2004 [#3058] Assessing Risks and Benefits of Drinking Water Utility Energy Management Practices

Stratus Consulting Inc.

Will identify risks associated with energy management or energy conservation practices used by drinking water utilities that may impact storage of source waters, the efficacy of drinking water treatment, or the quality of treated water. Will also identify risk mitigation approaches. Research partner: CEC. ***To be completed in 2007.***

2004 [#3066] Water Consumption Forecasting to Improve Energy Efficiency of Pumping Operations

EMA, Inc.

Will identify, test, and evaluate available methods and tools for making short-term water consumption forecasts, necessary for optimizing pumping schedules and energy use, to support the implementation of an Energy and Water Quality Management System (EWQMS). Research partner: CEC. ***To be completed in 2007.***

2006 [#4038] Desalination Facility Design and Operation for Maximum Energy Efficiency

Black & Veatch

Will compile and analyze data from operating brackish (ground and surface), seawater, and wastewater membrane desalination facilities to result in recommendations for the design and operation of desalination facilities to maximize energy efficiency and reduce energy use and costs. Will also investigate the relationships between plant location, design, operation and maintenance, and energy use and cost. Research partner: CEC. ***To be completed in 2009.***

2007 [#4090] Decision Support System for Sustainable Energy Management

Mr. MARKEY. Thank you so much.

Our next witness is Anne Smith, who is vice president of and practice leader of climate and sustainability for CRA International. At CRA, Ms. Smith specializes in environmental policy and corporate compliance strategy. Before joining CRA, Ms. Smith was a vice president at Decision Focus Incorporated, leading that company's policy analysis. We welcome you here, Dr. Smith. Whenever you are ready, please begin.

STATEMENT OF ANNE E. SMITH

Ms. SMITH. Mr. Chairman, members of the committee, thank you for inviting me. My testimony today is my own and does not represent my company, CRA, or any of its clients.

Let us be honest here. Reducing global greenhouse gas emissions in order to actually substantially reduce the risks of climate change will be a costly undertaking no matter how it is done. Therefore, a successful emissions policy that is both credible and enduring is going to have to have a laser-like focus on cost minimization. The ACES bill lacks this focus right now. Even though it does contain a cap-and-trade program, which is often thought of as a cost-minimizing approach, achieving cost-effectiveness will be elusive with this bill for two reasons, first, its other non-market regulatory schemes, and second, uncertainty in the allowance prices in the cap and trade.

First, the bill piles on excessive and redundant regulatory schemes on top of the cap and trade that reflect the command control mentality of yesteryear such as a renewable electricity standard, a low-carbon fuel standard, energy efficiency resource standard and many more including even a Jacuzzi-specific that we have been hearing about today. These prescriptive provisions will undercut the transparency and predictability of the carbon prices under the cap and that will only increase the costs of meeting the greenhouse gas objectives or the target for greenhouse gases in the bill. To minimize costs, Congress needs to remove those mandates, but even without those redundant programs, the bill's cap-and-trade program has its own barriers to cost minimization and this is allowance price uncertainty and volatility. These will hinder business planning and disrupt a company's credit worthiness.

The U.S. experience with SO_2 and NO_X caps tells us that emission prices will be very unstable. SO_2 prices varied between $100 and $1,500 per ton in just the past 4 years, and that was despite a large bank of allowances. Europe's carbon cap has seen prices cycling up and down by a factor of four in the space of a few years. And despite assurances early on that Europe's carbon price volatility was only a feature of that cap's so-called learning phase, now we can see that those price swings are actually a feature of the cap's mature phase as well. In the E.U., this carbon price uncertainty has inhibited companies from investing in the low-carbon technologies that are desired, and that same problem will occur under U.S. CAP that allows that same price uncertainty to occur here too.

Carbon price volatility introduces another concern that has not been discussed widely, credit risk. Companies will need to buy and hold allowances whose total value may be very large compared to

their current cash flows and balance sheets. Allowance price variations can create cash-flow crunches and balance sheet variations that in turn will translate into credit ratings being reduced and increased difficulty in raising funding for new investments.

The ACES bill has no provisions for providing the necessary price certainty and price stability to avoid these problems. Banking does not eliminate volatility. We have seen that in the U.S. and European experiences. Offsets do not either. The experience with the clean development mechanism says they may actually increase price uncertainty. And the bill's strategic reserve of allowances also does not. This provision would let prices vary by at least a factor of two before it would even come into effect and it doesn't ensure any actual price ceiling when the prices do spike.

The bill needs to directly and transparently establish allowance price ceilings and price floors in order to remove these financial uncertainties which are only going to serve to exacerbate the policy's costs. Some fear that price ceilings will take away the certainty of adequate reductions in emissions. However, the certainty that is needed for emissions is their long-term reduction to nearly zero globally, not any specific reduction in a specific year in the United States. Achieving that long-term zero-emissions goal will require sustained investment over a very, very long period of time in utterly new directions and this is more likely to happen under a policy that establishes a carbon price signal that is predictable and credible for decades to come.

And finally, we need a full accounting of the cost of this bill. EPA's analysis of the cost of the cap doesn't consider the command and control aspects of the bill nor the costs that are created by the allowance price uncertainty that we can expect. So it is misleading to present EPA's analysis as even a preliminary estimate of the impacts of this particular bill. Thank you.

[The prepared statement of Ms. Smith follows:]

Prepared Statement of
Anne E. Smith, Ph.D.
for
"Legislative Hearing Regarding the American Clean Energy and Security Act"
before the
Committee on Energy and Commerce,
and the
Subcommittee on Energy and Environment
United States House of Representatives
Washington, DC
April 24, 2009

Mr. Chairman and Members of the Committee:

Thank you for your invitation to participate in today's hearing. I am Anne E. Smith, a Vice President of CRA International and leader of its Climate and Sustainability Group. Starting with my Ph.D. thesis in economics at Stanford University, I have spent the past thirty years assessing the most cost-effective ways to design policies for managing environmental risks, including cap-and-trade systems. For the past twenty years I have focused my attention on the design of policies to address climate change risks, with a particular interest in the implications of different ways of implementing greenhouse gas (GHG) emissions trading programs. I have analyzed and commented on the merits and issues with all the major climate legislation proposals that the U.S. Congress has proposed and deliberated over that period. I thank you for the opportunity to share my findings and climate policy design insights with you. My written and oral testimonies reflect my own research and opinions, and do not represent any positions of my company, CRA International.

The topic of today's hearing is the American Clean Energy and Security Act (ACESA), which is also referred to as the "Waxman-Markey Bill". The provisions in this Bill are extensive, and would remold US energy choices, energy infrastructure, individual lifestyles, distribution of wealth, size of government, international relations, and more. I will focus my testimony on the cost and functioning of the carbon market that is a core element of ACESA.

The Need to Focus on Cost Minimization in a GHG Policy

Achieving the degree of global greenhouse gas (GHG) emissions control that is necessary to significantly reduce the risks of climate change will be costly, no matter how it is done. To make such changes viable as a political and social matter demands a laser-like focus in climate policy on minimizing the costs of making a transition to a low-carbon economy. Policy practice and theory have demonstrated that market-based approaches offer the best

prospects for minimizing cost of achieving regulatory goals.[1] Assurance of a transparent and efficient carbon market therefore should be a central concern in a climate policy. Focus on this concern should not be undermined or lost in the vast array of other climate policy needs such as international engagement, promotion of more effective energy research and development (R&D) design, and adaptation enhancement.

Mandates Provisions Undermine Cost Minimization

ACESA lacks this essential focus on assurance of a well-functioning and transparent market-based approach for the central task of promoting cost-effective private sector and consumer actions to transition to a much lower-carbon way of doing business and living. It contains the *de rigueur* provisions for a cap-and-trade system (in Titles III and VII). However, ACESA also layers on so many additional regulatory schemes that reflect the command-and-control mentality of yesteryear that no one can possibly expect the Bill as a whole to provide the kind of transparent and cost-effective regulatory environment that is ascribed to market-based policies.

Provisions in ACESA that are intended to force private sector GHG emissions reductions *separately* from the efficient, market-based incentives under the cap include:

- A renewable electricity standard for utilities (Title I, subtitle A)
- A low carbon fuel standard for transportation fuels (Title I, subtitle C)
- An energy efficiency resource standard for natural gas and electricity utilities (Title II, subtitle D)
- Building energy efficiency programs (Title II, subtitle A)
- Lighting and appliance energy efficiency programs (Title II, subtitle B)
- Transportation efficiency programs (Title II, subtitle C)
- Industrial energy efficiency programs (Title II, subtitle E)

By imposing the above set of mandates programs, ACESA would undermine the functioning of its own cap. Mandates *assume* that certain control actions are cost-effective; however, if these actions *are* cost-effective as a carbon reduction measure, they would occur under the cap-and-trade program anyway, unless there are extensive additional market failures. Inclusion of such mandates (and so many of them) in the Bill can thus be interpreted in one of two ways:

1. For those who believe that business and consumers are better able to identify what is good for themselves than is the government, the above provisions would only serve to increase costs of meeting a GHG target. At best, they would only force the private sector to do what it would choose to do anyway under the new carbon-pricing scheme, but with redundant oversight by the government that would entail substantial additional private sector and government administrative burdens to

[1]The theoretical basis dates back at least to Coase, Ronald (1960). "The Problem of Social Cost." *Journal of Law and Economics* 3(1): 1-44, while evidence from policy practice began to emerge from flexible, incentive-driven regulatory programs first initiated under the Clean Air Act during the 1970s such as the "Bubble Policy."

prove compliance. From the perspective of carbon market assurance, however, these mandates programs will increase the difficulty for businesses of predicting carbon prices for planning their GHG reduction strategies. Carbon price outcomes will become very difficult to interpret also. It will be difficult to know whether they reflect the economy's marginal cost of meeting the cap, or are being held low due to an excess of inefficient carbon reductions being forced into the economy through the mandates. In short, the carbon market will become less predictable and far less transparent.

2. The presence of so many mandates provisions in ACESA can alternatively be interpreted as an outright rejection of the belief that consumers and businesses respond rationally to price incentives. If this view is the justification for the many mandates provisions of ACESA, then one must ask what purpose there is for also having the cap-and-trade program in ACESA. A part of the answer may lie in the cap program's ability to generate large quantities of government revenues that can be used to divert private sector wealth towards the slew of additional projects, activities, and side payments that are ancillary to the task of reducing GHG emissions to ACESA's targets. In other words, the cap-and-trade provisions in ACESA exist primarily as a new form of tax, while the command-and-control provisions are intended as the primary means for driving emissions down.

Personally, and as an economist, I interpret the past thirty-some years of US experience with emissions trading for a variety of types of emissions as strong evidence that market-based approaches are the best way to achieve challenging environmental targets in the most affordable manner. Thus, I would recommend that each of the mandates provisions listed above be eliminated from the Bill, except if a strong case can be made that it serves some additional objective other than reducing carbon emissions. This will allow the power of market-based incentives to take the lead in guiding our nation down a cost-effective path towards a low-carbon economy.

Allowance Price Uncertainty and Price Volatility Undermine Cost Minimization

Even if the ACESA mandates provisions are removed, there remain some important concerns for how well the cap-and-trade provisions of Title III might function in this role. A primary concern for cap-and-trade for GHGs is the carbon price uncertainty and volatility. An important aspect of carbon market design would be assuring as much price stability and long-term credibility as possible.

While the price signals in cap-and-trade policies do help elicit a cost-effective and often innovative set of actions to meeting an emissions target, they do not offer any price certainty. Prices in all previous and existing allowance trading programs have exhibited substantial volatility, and this can be expected of GHGs as well.[2] Price volatility, however,

[2] Some have argued that banking reduces price volatility. While it may reduce it, it certainly does not eliminate it. For example, the Title IV SO_2 market has experienced high volatility over the past two years, even though it has a large bank already in place. During 2005, SO_2 permit prices rose from about $600/ton to above $1600/ton, then plummeted to below $400/ton by the beginning of 2007. They dropped below $100/ton in mid-2008 when the court remanded CAIR. Additionally, banking offers little price stability at

is likely to have much greater generalized economic impacts with a CO_2 cap than for caps on SO_2 and NO_x. CO_2 is a chemical that is an essential product during the extraction of energy from any fossil fuel. As long as fossil fuels are a key element of our energy system (which they are now, and will remain for many years even under very stringent caps), any change in the price placed on GHG emissions will alter the cost of doing business throughout the economy. This is because all parts of the economy require use of energy to one degree or another.

In contrast, under the Title IV SO_2 cap, a fluctuating SO_2 permit price would only affect emissions from coal-fired electricity generation. In deregulated electricity markets, coal-fired electricity does not always affect the wholesale price of electricity, and even significant fluctuations in SO_2 permit prices might have almost no effect on electricity prices. Even in regulated electricity markets, the impact of the SO_2 price on the cost of all electricity generation would be diluted by the unaffected costs of all other sources of generation before it reached customers. Also in contrast to an economy-wide GHG cap, no other sources of energy in the economy are affected at all by SO_2 price changes. Finally, under the Title IV SO_2 cap, price variations experienced during the past four years from $100/ton to $1500/ton have a modest effect on the majority of coal-fired units that are already either scrubbed or burning low-sulfur coal. Such units might see the cost adder due to its SO_2 emissions vary between 1% and 26% of its base operating cost,[3] and (as noted) the impact on consumer's cost of electricity would be much smaller, if anything.

Variation of CO_2 prices have also been observed in the EU's Emissions Trading Scheme (ETS) market since its inception, as shown in Figure 1. Prices were notoriously wide-ranging during the initial learning period called "Phase I," between €0/ton and about €30/ton (about $35/ton at the time). The ultimate decline of Phase I prices to $0/ton was caused by the fact that Phase I allowances could not be banked into later phases, which had tighter caps under which those allowances could have retained positive value. Nevertheless, the range from €7/ton to €30/ton would probably have been experienced even if the Phase I allowances had been bankable. Indeed, the price range for Phase II allowances has also experienced that degree of variation, with recent lows of €8/ton compared to highs nearing €35/ton, occurring in two distinct cycles over the past four years. This continued volatility has occurred despite Phase II allowances being fully bankable. This range has caused coal-fired units to experience carbon cost adders that alternate from 50% to 230% of their base operating cost. This variability in EU ETS allowance prices has also caused gas-fired units to experience operating cost increases in the range of 5% to 30%.[4] Since gas-fired units frequently set the wholesale market price of

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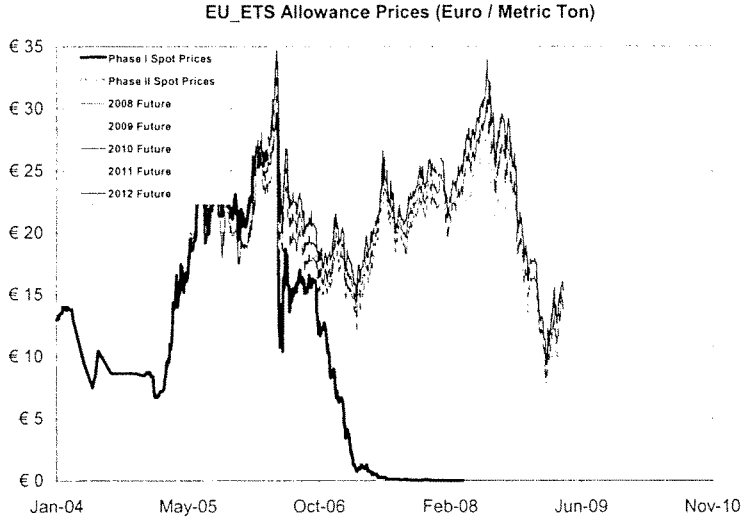
all during the start up of a new cap, simply because no bank yet exists, and this initial-period volatility can be very large if the first-period cap requires a substantial amount of reduction and/or has a relatively brief regulatory lead time. The experience of the first year in the NO_x cap of the Ozone Transport Region of the northeastern U.S. is a classic example.

[3] By "base" operating cost, I mean the cost of generating a unit of electricity before accounting for the emissions price. The majority of this cost is the cost of the fuel.

[4] The absolute cost adder of a gas plant is about half of the absolute cost increase for a coal plant, but the percentage increase in the base operating cost of gas plants is much smaller because natural gas is so much more expensive than coal to start with. These calculations assume that coal generation costs about €15/MWh, and gas generation about €60/MWh.

electricity, the pressure on retail electricity prices would also fluctuate with carbon price variations such as this.

Figure 1. Prices Experienced in the EU ETS's Phase I and II.



These are not just theoretical calculations. The EU's statistics bureau, Eurostat, reports that electricity prices rose significantly throughout the EU after the EU ETS started in 2005. Between 2004 (before the EU ETS prices were in effect) and 2007 (when Phase II was in place), household rates rose by 16% on average over all 25 EU countries, and industrial rates rose by 32% on average.[5] The high prices of GHG permits under the EU ETS during that period is widely viewed as having contributed to this price increase, and indeed, wholesale electricity prices have fluctuated in step with the wide swings in ETS permit prices. It is not clear yet how or whether the wide variations in permit prices may begin to contribute to variation in macroeconomic activity. Resolving that question will probably be rendered difficult by the disruptions of the global downturn in 2008-2009, which no one would suggest has any link to the EU ETS.

The EU ETS experience has also demonstrated that even very high carbon prices do not necessarily translate into a willingness of the private sector to make investments in new, lower-carbon technologies. Despite the fairly high average prices in the EU ETS, there has

[5] Eurostat data for medium households and medium-sized industry, downloaded on April 22, 2009 from: http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996,39140985&_dad=portal&_schema=PORTAL&screen=detailref&language=en&product=REF_TB_energy&root=REF_TB_energy/t_nrg/t_nrg_price/tsier040.

been no serious degree of private sector investments in cleaner technologies.[6] The usual explanation for the failure of the EU ETS to motivate investments in clean energy technologies is the uncertainty its carbon price levels, and potential impermanence of the scheme. Even if investments in some clean technologies might be justifiable for the average carbon prices of about €20/ton that have been experienced over the past four years, they have not been forthcoming. Uncertainty on what the carbon price level will be – not just for the next few years but for 10 to 20 years into the future -- appears to be inhibiting private sector investments in low-carbon technologies.

The EU's response to this outcome of low investment has been to focus on further government involvement and project subsidization. A simpler approach would be to devise a carbon emissions pricing scheme that would provide much greater certainty for businesses about carbon prices now and in the future. This could be done under a carbon cap through provisions to directly and transparently establish allowance price ceilings and price floors (e.g., a price "collar"). An even simpler and more certain approach within the toolkit of market-based measures would be to establish a carbon fee or price rather than through a carbon cap.[7]

Businesses clearly prefer having reliable allowance price expectations, but even governments would probably prefer some stability in the year to year revenue streams from an auction. For example, would large variability and uncertainty in allowance auction revenues be of any use if those revenues are intended to fund important technology-related projects that have long-term funding needs? Even if the revenues would simply be rebated to citizens, would either the government or the citizens find any value in such uncertainty in the size of the rebate checks?

Another potentially serious concern with volatility in carbon prices should also be mentioned here. When companies need to buy allowances to cover their emissions, as with a full auction, their new cash flow may be large compared to their current net revenue. For example, the cash needed by an electricity generating company that has a diversified mix of coal, gas and zero-carbon generation similar to the US average would face new outlays for allowance purchases of $35/ton allowances that are approximately 20% of its gross revenues, and perhaps 200% of its net revenues. Any delays in the pass-though of such costs to customers could seriously disrupt their financial position. Volatility exacerbates this situation by causing continual variations in the cash flow needs. For example, fluctuation in the allowance price between $15/ton and $50/ton would mean that the cash flow requirements might vary from 85% and 350% of pre-policy cash flows, thus even after price pass-through has occurred, delays in adjustments of the retail rates could

[6] The fairly high rate of investment in renewables such as wind and solar in Germany is traceable to the very high guaranteed returns known as "feed in tariffs" for such generation, and is not attributed to carbon prices.
[7] In fact, a cap-and-trade system with a well-defined, narrow price collar and a full auction will function just like a carbon fee, except that there remains some residual uncertainty about the ability of the market manager to defend the price collar, and there is substantially more complexity to the compliance requirements for covered businesses. While both of these market-based approaches would offer much greater planning certainty and hence potential investment in costly low-carbon technologies, neither would be popular with the financial community, which would face diminished prospects for selling their carbon market management services to the affected businesses.

translate into see-sawing profitability. Similarly, if a company has any substantial bank of allowances, it could face large swings in its balance sheet situation. Conditions such as these could translate into reduced credit ratings and companies facing more difficulties in raising capital for their investment needs. This possibility has not been studied at all yet, but certainly requires some careful study, including gaining an understanding of whether any potential financial impacts could be exacerbated by the greater use of allocations rather than free allocations of allowances. But the better solution is simply to eliminate the carbon price volatility, which is not in any way essential to the functionality of a market-based carbon reduction policy.

To sum up, price uncertainty and price volatility will impose impacts in the case of GHG emissions limits that are completely different in scale and scope from those under previous emissions trading programs. The US experience with other emissions caps and the EU ETS experience with carbon caps provide good reason to expect high volatility under a US carbon cap. Their potential to increase variability in overall economic activity thus should be viewed as a core concern in designing a GHG cap-and-trade program. At the same time, the nature of climate change risks associated with GHG emissions is such that it is possible to design price-stability into a GHG cap-and-trade program without undermining its environmental effectiveness. In the case of a stock pollutant such as greenhouse gases, there is no need to absorb high costs in return for great specificity in achieving each year's emissions cap.[8] Thus, the cost to businesses of managing the price uncertainty of a hard cap is not worth the greater certainty on what greenhouse gas emissions will be from year to year. The emissions certainty that is needed is the long-term reduction to a near carbon-free economy. That objective will have greater certainty under a cost-effective, affordable and non-disruptive policy that establishes a carbon price signal that is predictable and credible for decades to come.

ACESA Does Not Have Effective Provisions to Assure Price Certainty and Stability

ACESA does not contain any mechanism to assure price certainty or price stability. It contains provisions that are called as "cost containment" measures, but these measures do not provide any degree of price certainty and only minimal potential to diminish the degree of price volatility. For example:

- The provision for banking and constrained borrowing cannot eliminate volatility. For example, the SO_2 prices under Title IV of the Clean Air Act (described above) occurred despite the existence of a very substantial bank of allowances. The volatility in the EU ETS Phase II has also occurred despite the ability to bank Phase II allowances into future compliance periods.
- The provision for use of domestic and international offsets may reduce the overall level of allowance prices for the given cap stringency. However, they do not provide any kind of price certainty. Indeed, in the early years of the cap, a strong reliance on offsets to keep costs low could exacerbate price uncertainty and

[8] Richard G. Newell and William A. Pizer 2003, "Regulating Stock Externalities Under Uncertainty," *Journal of Environmental Economics and Management*, Vol. 45, pp. 416-432.

volatility. This is because offsets validation rules will probably remain uncertain for a period of time after enactment, and hamper the formation of a ready supply of verified allowances in time for the initial compliance periods. Thus early-year allowance prices may be relatively high, as if the policy had not allowed offsets at all, then a year or two later, once a flow of verified offsets is established, a glut of allowances may emerge, with allowance prices falling very low. This supply and attending offset pricing pattern was observed in the early years of the Clean Development Mechanism (CDM).

- The "strategic reserve" of allowances under the ACESA cap comes the closest to an attempt at diminishing allowance price volatility, but it will be insufficient to provide any expectation of a price ceiling. First, sales from the strategic reserve will have a floor price that is not established in advance of legislation. An *a priori* path of reserve prices would provide much greater certainty for planning purposes than one that is established on the basis of future, unknown, price outcomes. Second, the provision, by design, allows price increases of at least 100% before the reserve can even be used.[9] Thus, if prices have averaged about $35/ton during a three year period, they would have to suddenly increase to above $70/ton before the strategic reserve would even have a role to play. Further, prices might rise well above the 100% mark even in the presence of the reserve auction. The existence of a minimum price at which those allowances can be had does not offer any guarantee of where the prices will peak. If there is a severe shortage of allowances needed for compliance in a particular year, prices could be bid above the minimum price. Only if the quantity available for auction is very large relative to any potential compliance needs will the potential for prices to be bid higher than the reserve price be eliminated. Even if there were no bidding above the reserve prices, there is no good reason why price variations of up to 100% over a three-year period should have to occur at all, and such variations are quite substantial in their potential effects on prices of energy and other goods and services that embody energy.

Avoidance of Cap-and-Trade Is Not an Antidote for Price Volatility Concerns

The challenges of designing a GHG cap-and-trade system that has the promise of being efficient and fair have been daunting. Unfortunately, many in the policy community who have been facing this daunting task are now rejecting market-based approaches altogether. ACESA reflects this kind of reaction, with its emphasis on a large set of highly prescriptive regulatory programs, which leaves the market-based part of the Bill almost like window-dressing to mask the intrusive spirit of the overall bill. Each non-market provision will usurp some of the flexibility of decisions that are offered by market-based approaches like cap-and-trade. Once the flexibility is removed, it cannot be entirely regained if the mandate is found to have been an inefficient one – too many compliance-related investments will have become sunk costs in the interim. Further, each of these mandates provisions will result in not just higher, but hidden costs, as regulatory approaches are good

[9] That is, the minimum price (the "reserve price") in an auction of strategic reserve allowances is *double* the average price of allowances for that vintage in the preceding 36 months.

at doing. The costs to our economy and the losses in incremental innovations that are associated with market-based approaches will be large.

Modeled Cost Estimates of ACESA Will Unreliable If They Do Not Address the Bill's Many Barriers to Cost Minimization

Many model-based cost analyses, such as EPA's analysis of the costs of the policy released this week,[10] are poorly suited to estimating the costs of policies that are not predominantly market-based in nature. The EPA analysis is widely touted as predicting that ACESA will be very low-cost to meet, yet EPA's analysis has considered only the cap-and-trade provision, which by its nature is intended to deliver minimum costs. EPA explains that it has made no attempt to assess the costs of the mandates provisions listed above, even though such provisions can only cause increases from a *minimum* cost. This might not be a bad cost analysis for the GHG limits in the ACESA *if the cap provision were the primary regulatory requirement in the Bill*. But given that so much of ACESA is tied to command-and-control approaches, it is misleading to present EPA's analysis of just the cap provision in ACESA as even a "preliminary" estimate of the impacts of the GHG control requirements in the Bill.

It is also important to note that the EPA analysis makes no attempt at all to estimate the ways in which the volatility and price uncertainty of the cap will deviate from its estimated idealized *minimum* cost. EPA states that its analysis has not modeled the strategic reserve allowances, which some may interpret as meaning that EPA has not captured a provision that would reduce costs further than its estimate. The correct understanding of this omission, however, is that EPA's analysis has failed to address the costs of volatility,[11] and thus it *understates* costs. Even if the strategic reserve allowances provision would provide some degree of mitigation of volatility, the true costs when considering volatility would remain higher than EPA's current cost estimate that does not include any consideration of price volatility.

These may appear to be criticisms of EPA's analysis, but most of the available models for assessing policy costs of ACESA will face similar challenges. The current commonly-used models were designed to understand the relative costs of alternative market-based emissions policies. None are well-equipped to estimate the costs of policies that are predominantly command-and-control in nature, nor to address the costs of volatility. As additional analyses of the costs and impacts of ACESA are released, the realism of their estimates should be assessed by examining how well each analysis addresses the deviations from the least cost solution due to:

(a) mandates that are fixed by government planners who have less information about true costs than do individual business decision makers and consumers, and

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[10] U. S. Environmental Protection Agency, *EPA Preliminary Analysis of the Waxman-Markey Discussion Draft, The American Clean Energy and Security Act of 2009 in the 111th Congress*, April 20, 2009, available at http://www.epa.gov/climatechange/economics/economicanalyses.html.

[11] "The models used in this analysis do not include price volatility…for this reason the strategic reserve allowance has not been included in this analysis." (USEPA, *op. cit.*, Appendix, p. 4.

(b) the ways in which price uncertainty and price volatility degrade the ability businesses decision makers and consumers to always make the optimal investments.

ACESA Lacks Any Provisions for the Kind of Transformational R&D That Is Essential to Making a Low-Carbon Global Economy Affordable

My testimony has been focused on carbon market efficiency. However, even a highly effective and efficient market-based approach for GHGs will still have a serious limitation that ACESA should address, but does not. Stabilization of climate change risks will require that global GHGs be reduced to nearly zero levels. Although this goal may be possible to achieve at some point in the later part of this century, it can only be done through truly revolutionary technological progress and the resulting changes in the structure of how our energy systems.

Hoffert *et al.* report that "the most effective way to reduce CO_2 emissions with economic growth and equity is to develop revolutionary changes in the technology of energy production, distribution, storage and conversion."[12] They identify an entire portfolio of technologies requiring intensive R&D, suggesting that the solution will lie in achieving advances in many categories of research. They conclude that developing a sufficient supply of technologies to enable near-zero carbon intensity on a global scale will require basic science and fundamental breakthroughs in multiple disciplines. Therefore, Herculean technological improvements beyond those that are already projected and accounted for in cost models appear to be the only hope for achieving meaningful reduction of climate change risks. By inference, no cap-and-trade system should be placed into law that does not simultaneously incorporate specific provisions that directly support a substantially enhanced focus on energy technology R&D.

Placing a price on carbon emissions, as a cap-and-trade program would do, would affect the pattern of private sector R&D. However, this so-called "induced-innovation effect" would be small. Economic analysis shows that market forces produce a less than socially optimal quantity of R&D. Once a private sector innovator demonstrates the feasibility and profitability of a new technology, competitors are likely to imitate it. Copycats can escape the high fixed costs required to make the original discovery. Therefore, they may gain market share by undercutting the innovator's prices. In that case, the initial developer may fail to realize much financial gain. Foreseeing this competitive outcome, firms avoid investment in many R&D projects that, at the level of society as a whole, would yield net benefits.[13]

The task of developing new carbon-free energy sources is likely to be especially incompatible with the private sector's incentives. With no large emissions-free energy sources lying just over the technological horizon, successful innovation in this area will

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[12] M. I. Hoffert *et al.*, "Advanced Technology Paths to Global Climate Stability: Energy for a Greenhouse Planet" *Science*, Vol. 298, Nov.1, 2002, p. 981.

[13] These points are developed in a more rigorous fashion in W. D. Montgomery and Anne E. Smith "Price, Quantity and Technology Strategies for Climate Change Policy," in M. Schlesinger *et al* (eds.) *Human-Induced Climate Change: An Interdisciplinary Assessment*, Cambridge University Press, forthcoming 2007.

require unusually high risks and long lead times. As Hoffert *et al.* pointed out, developing the needed technologies will entail breakthroughs in basic science, placing much of the most essential R&D results beyond the boundaries of patent protection. These are precisely the conditions under which for-profit firms are least likely to rely on R&D as an approach to problem-solving. Thus, greenhouse gas caps on their own would insufficiently increase private sector R&D directed toward technological solutions to abatement.

Market-based policies can very effectively stimulate incremental innovation and deployment into the market place of emerging new technologies. They cannot, however, stimulate the kinds of technological progress necessary to enable meaningful emissions reductions later on. Realistically, then, government must play an important role in creating the correct private sector incentives for climate-related R&D, as well as in providing direct funding to support such activity. This role must be built into any cap-and-trade policy, in order to avoid establishing an emissions policy that cannot fulfill expectations, and to avoid wasteful diversion of key resources for the requisite forms of R&D.

Merely establishing cap and trade cannot meet the crucially important need for enhanced emphasis on basic research rather than additional subsidies for specific technologies that are already far along in the development process. It also does not clearly define government's role or an appropriate division of labor or risk between the public and private sectors in the development of new technologies, whether as commercialization and incremental improvement of existing low-carbon technologies, or R&D for new, breakthrough technologies. Creating an effective R&D program will not be easy, but it ultimately has to happen if climate risks are to be reduced. The difficult decisions are how much to spend now, and how to design programs to stimulate R&D that avoid mistakes of the past.[14]

In conclusion, the current policy debate about how to impose near-term controls through cap-and-trade programs is encouraging policy makers to neglect much more important, more urgently needed actions for reducing climate change risks. The top priority for climate change policy should be a greatly expanded government-funded research and development (R&D) program, along with concerted efforts to reduce barriers to technology transfer to key developing countries. Neither of these will be easy to accomplish effectively, yet they are receiving minimal attention by policy makers, and are not addressed at all in ACESA.

Summary

My testimony has been focused on the carbon reduction provisions of ACESA, and particularly on ways to ensure an effective carbon market that has the necessary emphasis on achieving GHG goals at lowest cost. In brief, I have identified ways that ACESA's regulatory provisions could be made more reasonable:

[14] Arrow, Kenneth J., Linda R. Cohen, Paul A. David, Robert W. Hahn, Charles D. Kolstad, Lee Lane, W. David Montgomery, Richard R. Nelson, Roger G. Noll, Anne E. Smith (2008). "A Statement on the Appropriate Role for Research and Development in Climate Policy." AEI Center for Regulatory and Market Studies, Working Paper 08-12.

(1) Eliminate the costly provisions for mandates that will only interfere with the efficiency and transparency of the market-based approach, while unnecessarily increasing administrative burdens and government intrusion on private sector choices.

(2) Add provisions that will provide a more effective reduction or outright elimination of price uncertainty and price volatility.

(3) Incorporate explicit consideration for promotion of transformational energy R&D.

I have also noted that cost estimates for ACESA that come from modeling exercises that only consider the market-based provision's costs, and do so without addressing the impact of volatility, will significantly understate the true impact of this highly prescriptive Bill.

Mr. MARKEY. Thank you very much, Dr. Smith.

Our next witness is William Kovacs, the vice president of environment technology and regulatory affairs for the United States Chamber of Commerce. In government service, Mr. Kovacs served as vice chairman and chairman of the Commonwealth of Virginia's hazardous waste facilities siting board and chief counsel and staff director of the House Subcommittee on Transportation and Commerce. Was that on this committee, sir?

Mr. KOVACS. Yes, sir. I am really that old.

Mr. MARKEY. And what years were those?

Mr. KOVACS. Nineteen seventy-four, 1975, through about 1978.

Mr. MARKEY. So when I was here?

Mr. KOVACS. Yes.

Mr. MARKEY. So you were the chief counsel for Brock Adams?

Mr. KOVACS. Fred Rooney.

Mr. MARKEY. For Fred Rooney. Yes, great. Good to see you again. Welcome back. Whenever you are ready, please begin.

STATEMENT OF WILLIAM KOVACS

Mr. KOVACS. Thank you for inviting us here today, and I have to tell you that when I was listening to you say this was your 66th year of hearings and I am your 60th witness, all I can say is what pressure. I have to say something really quick and something he has never heard, so that is quite a task.

Let me start off by saying, the Chamber really does support trying to find ways to reduce greenhouse gases, we have made that clear in all of your testimony, accelerate the use of energy efficiency and certainly find new ways to put green technologies into the marketplace, and with that I just want to add a few suggestions because I think that they would really help move your bill forward. The first is, as you consider how you are going to do this, probably the one part that troubles us the most is, you have very steep emission reductions over the course of the years but there is really no assurance in the bill that as you force fossil fuels out of the system, that there is a mechanism for bringing substitute technologies into the system, and I say that because, and I am just going to use one example. If you just take the 115,000-megawatt windows that you are going to need, that is going to take enough space that is literally going to equal going around the earth twice, and it is an enormous land mass, and the problem you are going to run into is not that price isn't going to drive technologies but many times NIMBYs are going to drive technologies out, and one of the things we have done with this project is we have tried to identify the fact that in the last 18 months there have been 65 renewable facilities that have not been able to get to the marketplace because of NIMBYs and 13 grid systems. So we think long term that is a very serious problem.

Second, in terms of the Clean Air Act, we just think it is inappropriate, and if you are going to set up a structure you ought to set up a structure for carbon because it is going to be more workable. I think this idea of capping the large businesses with cap and trade and then going into new source performance standards for the medium-sized businesses and then leaving it unclear and vague as to the small businesses what you run the risk of with the small busi-

ness is once an endangerment finding is made, there is going to be a lawsuit and you are going to have 26 million small businesses trapped in a new source performance standard. I don't think the agency can handle that.

In terms of citizen suits, this might be the most troubling. I mean, you really—the cause of action has expanded so far. It is not just against government but it is against government with some limited monetary damages so that is the beginning of waiver of sovereign immunity. You remove the article 3 type actual case and actual harm for thought of harm, and long term that is just going to be more citizen suits, more projects stopped. And then when you have unlimited attorneys' fees, you are giving an incentive to the lawyers to bring these lawsuits. That is just not going to help you get the technology into the marketplace that you need.

And then finally, on the preemption of State laws, again this is just going back to where we were before and that is you can't preempt it for 5 years and then let the States act. If the federal government is going to do it, you need one comprehensive unified law that makes sense, that the industry understands so that we can start developing the technologies as opposed to trying to fragment it to please a lot of different interests.

With that, thank you very much for having me here.

[The prepared statement of Mr. Kovacs follows:]

Statement of the U.S. Chamber of Commerce

ON: LEGISLATIVE HEARING ON "THE AMERICAN CLEAN ENERGY AND SECURITY ACT": CARBON MARKET ASSURANCE, STATE ROLES, CLEAN AIR ACT AND ADAPTATION

TO: U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON ENERGY AND COMMERCE AND SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT

BY: WILLIAM L. KOVACS, VICE PRESIDENT, ENVIRONMENT, TECHNOLOGY AND REGULATORY AFFAIRS

DATE: APRIL 24, 2009

The Chamber's mission is to advance human progress through an economic, political and social system based on individual freedom, incentive, initiative, opportunity and responsibility.

BEFORE THE COMMITTEE ON ENERGY AND COMMERCE AND SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT OF THE U.S. HOUSE OF REPRESENTATIVES

"LEGISLATIVE HEARING ON THE AMERICAN CLEAN ENERGY AND SECURITY ACT: CARBON MARKET ASSURANCE, STATE ROLES, CLEAN AIR ACT AND ADAPTATION"

Testimony of William L. Kovacs
Vice President, Environment, Technology and Regulatory Affairs
U.S. Chamber of Commerce

April 24, 2009

Good morning, Chairmen Waxman and Markey, Chairman Emeritus Dingell, Ranking Members Barton and Upton, and members of the Energy and Commerce Committee and the Subcommittee on Energy and the Environment. My name is William L. Kovacs and I am Vice President for Environment, Technology and Regulatory Affairs for the U.S. Chamber of Commerce. The Chamber is the world's largest business federation, representing more than three million businesses and organizations of every size, sector, and region. On behalf of the Chamber and its members, I thank you for the opportunity to testify here today and bring to a close a very informative week of hearings on energy and climate change legislation.

You have asked me to come before the Committee and Subcommittee today to discuss what can be best described as "other topics," essentially those parts of the American Clean Energy and Security Act of 2009 (ACES) that merit discussion but were not the focus of another of this week's hearings. Specifically, you have asked me to address (1) the Clean Air Act (CAA), (2) state roles, (3) carbon market assurance, and (4) adaptation.

Before getting into the details of my testimony, I want to thank the Committee and Subcommittee, and its leadership on both sides of the aisle, for the careful and considered analysis it has done on the issue of global climate change over the past several years. It is clear that a great deal of thought went into the drafting of the ACES bill and its predecessors, such as the Dingell-Boucher "discussion draft" from 2008. While we might ultimately disagree on the final product, the Chamber is grateful for the care and attention that has been given to this very complex and challenging issue.

I. Overview of the Chamber's Position on Global Climate Change

The Chamber supports the goals of the Committee to lower concentrations of greenhouse gases in the atmosphere, become more energy efficient, and incentivize "green" energy technologies. The Chamber does not categorically support or oppose approaches such as cap and trade or carbon tax, but rather measures all climate legislation

on a bill-by-bill basis against five core principles: any legislation or regulation introduced must (1) preserve American jobs and competitiveness of U.S. industry; (2) provide an international solution that includes developing nations; (3) promote accelerated development and deployment of greenhouse gas reduction technology; (4) reduce barriers to the development of climate-friendly energy sources; and (5) promote energy conservation and efficiency.

The Chamber opposed the main vehicle for addressing global climate change in the 110th Congress, the "Lieberman-Warner Climate Security Act." Lieberman-Warner fell short of virtually every one of the Chamber's five core principles. By any estimation it would have resulted in a staggering new set of costs and regulations for American taxpayers while making very little actual progress in reducing overall global greenhouse gas concentrations.

The Chamber's policies are set by its members through a transparent democratic process. On complex issues like global climate change and greenhouse gas regulation, we solicit direction from our members on a rolling basis. In fact, just this morning we convened our own Environment and Energy policy committee on this very topic. I therefore urge you to view my testimony today as a valuable resource. Although the Chamber did not support Lieberman-Warner, over the years we have supported legislation that funds research, development and deployment of technology, and that promotes energy efficiency.

The agenda set by President Obama and the leadership of this Congress calls for the United States to enact a domestic climate policy irrespective of the Administration's ability to negotiate an international treaty with other nations. The Chamber believes this strategy could ultimately place our nation at a significant economic disadvantage to these other nations as worldwide greenhouse gas emissions into our atmosphere continue to increase. However, it is against this backdrop that we must analyze the ACES bill here today.

II. Analysis of the American Clean Energy and Security Act of 2009 (ACES)

The ACES bill, at present, is incomplete. The "discussion draft" released to the public is missing perhaps its two most important sections: allocations and spending. It is therefore difficult to take an official "position" on the bill, as this would require weighing a half-finished product against the Chamber's five core principles (which, by design, require completeness).

However, while analyzing the various subject areas that are part of my testimony today, the Chamber came to the conclusion that, no matter what is accomplished on allocations or spending, the bill contains significant flaws that, if enacted, would not operate to the economic and energy security of the United States.

Quite simply, the bill's aggressive emissions reduction mandate limits the amount of energy available to run our economy, yet the bill fails to provide any mechanism to

ensure that substitute "green" energy will be available to meet the nation's energy needs. A lack of available green energy in equal or larger amounts than the fossil energy removed from the economy will result in energy shortages and high energy prices, which in turn means higher prices for just about everything else. An American workforce barely able to afford their homes will then be forced by this legislation to substantially lower its standard of living. While supporters of this legislation want to send a strong price signal to the American people to change their behavior and reduce their use of fossil fuels, the unintended consequences of not having sufficient substitute fuels available may trigger a downward spiral that simply undercuts our role in the world. Finally, to add insult to injury, by itself ACES will not affect global greenhouse gas concentrations in any meaningful way.

Moreover, implementation of ACES will result in the devastating combination of (a) cap and trade, (b) regulation to implement the cap and trade system, (c) litigation to enforce or question the regulation, and (d) market manipulation in the face of what appears to be very a vulnerable oversight structure.

The Chamber believes there is a better first step than ACES: focus our efforts on an international treaty that sets real, enforceable targets for all nations, while allowing each nation the flexibility to meet these targets through whichever policy device it chooses. In the meantime, we should implement a single, national fuel economy program (the existing Corporate Average Fuel Economy standards), a robust investment in research, development and deployment of clean energy and energy efficiency technologies, and the continued implementation of the fuels and efficiency laws already on the books, such as the Energy Policy Act of 2005 (EPAct) and Energy Independence and Security Act of 2007 (EISA). After the ratification of an international climate agreement Congress should pass legislation to implement the treaty domestically.

A. ACES will not meaningfully affect global CO2 concentrations.

Although ACES makes very aggressive cuts, like any domestic legislation it will do little to reduce the overall amount of CO_2 in the atmosphere. The U.S. Energy Information Administration (EIA) estimates that in 2005, the U.S. emitted 5,982 metric tons of CO_2, representing approximately 21.3 percent of the global CO_2 emissions.[1] By 2030, however, EIA projects that U.S emissions (absent legislation like ACES) will climb to 6,851 metric tons—but that amount will represent only 16.2 percent of total global CO_2 emissions. In fact, EIA projects that OECD nations will increase their total CO2 emissions by 13.8 percent over the next 20 years, while *everyone else will increase their CO_2 emissions by 86.2 percent over that same time period*, with total emissions in 2030 almost double that of OECD nations.[2]

Perhaps we are focusing on the wrong group of people here?

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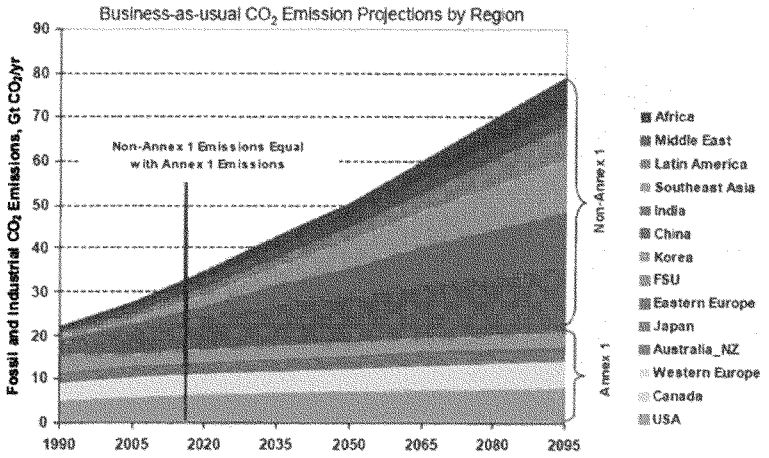
[1] Energy Information Administration, *Emissions of Greenhouse Gases Report*, December 3, 2008, available at http://www.eia.doe.gov/oiaf/1605/ggrpt/.
[2] *Id.*

Even if the U.S. were to eliminate all of its greenhouse gas emissions today, our CO_2 levels would not be zero, and CO_2 concentrations in the atmosphere would still increase.[3] The primary reason: although the U.S. would constrict its CO_2 emissions, very few other countries would be compelled (absent a binding international treaty) to do the same. The following chart, from the Battelle Memorial Institute, illustrates this point very well:



Data derived from *Global Energy Technology Strategy, Addressing Climate Change Phase 2 Findings from an International Public-Private Sponsored Research Program*, Battelle Memorial Institute, 2007

As this chart shows, business-as-usual CO_2 emissions from fossil and industrial sources in the United States remain relatively flat through the end of the century. Global business-as-usual CO_2 emissions increase roughly 2.7 times their present levels. If U.S. emissions were whittled down to zero by 2100, global emissions would *still* be about 2.5 times their present levels. Moreover, if the entire set of Kyoto Annex I "developed" countries eliminated their CO_2 emissions by the end of the century, developing nations' emissions would still be twice the size of the entire world's current emissions.

In terms of skyrocketing global greenhouse gas emissions, the United States will be a smaller and smaller contributor over the rest of the century. A domestic-only bill like ACES will undoubtedly make life more difficult on businesses and consumers in the United States, but will have little real impact on global CO_2 levels when all is said and done.

[3] *See, e.g.*, presentation entitled "CO_2 Stabilization in a Heterogeneous World," Leon Clarke, et al. (July 13, 2007), available at http://www.uschamber.com/issues/index/environment/climate_change.htm.

B. ACES pulls energy out of the economy, but fails to provide a suitable replacement.

At its core, the fundamental problem with ACES is that it removes a significant amount of fossil-based energy from the economy without assuring that this energy void will be filled with enough renewable or alternative energy to keep America functioning. We know today that technologies that limit, sequester or otherwise eliminate CO_2 emissions from fossil fuels are neither affordable nor widely available (if even commercially deployable). However, we also know that fossil fuels are responsible for over 72 percent of our electricity.[4] Our only choice, then, if we are to seriously achieve what are the very aggressive emissions cuts required by this bill—20 percent below 2005 levels by 2020, 83 percent below 2005 levels by 2050—is to move away from fossil fuels and onto "something else."

The problem is, replacing 20, or 30, or 50 percent of America's fossil-based energy with this "something else" will be extremely difficult, if not impossible. Of the remaining 28 percent of our electricity, 25 percent of this comes from existing nuclear and hydropower. Wind energy represents 0.44 percent of our electricity mix, geothermal energy represents 0.36 percent, and solar represents 0.01 percent.

To address this dilemma, Title I of ACES proposes a federal renewable electricity standard (RPS) of 25 percent by 2025. It is at this point that the wheels truly begin to fall off the ACES bill. "Renewables," as defined by the bill, do not include nuclear energy. They also do not include electricity generated from municipal solid waste. They include hydropower, but only new capacity. In essence, the RPS will require us to take the 2 percent of electricity currently generated from renewables and turn it into 25 percent in the course of 15 years—*an increase of over 700 percent.*

Consider for a moment what this means. Less than two years ago, in a response to the Energy and Commerce Committee, the Chamber calculated what it would take to generate 10 percent of our electricity using wind, or solar, or biomass alone by 2020. A copy of this letter, described in further detail below, is attached to this testimony.

The Chamber concluded that if 10 percent of our electricity were to be met with wind alone by 2020, we would need to construct about 115,000 new 1-megawatt (MW) wind turbines. The total capital cost of constructing these 115,000 turbines would amount to roughly $138 billion, a figure that does not include operation and maintenance costs, which constitute 1.5 to 2 percent of the initial investment annually. 115,000 turbines of this size would occupy an area of about 18,000 square miles. In comparison, the combined area of Albemarle Sound, Delaware Bay, Pamlico Sound, Long Island Sound, Cape Cod Bay, Chesapeake Bay, Puget Sound, San Francisco Bay, Biscayne Bay, and Buzzards Bay is only 8,500 square miles. If the 115,000 1-MW wind turbines were placed in a straight line about 2,000 feet apart in the water, they would have a total length

[4] http://www.epa.gov/cleanenergy/images/pie_chart_fuel_mix.gif.

of about 43,000 miles from end to end. This is nearly four times the length of the U.S. shoreline, and almost double the entire circumference of the earth![5]

Similarly, if 10 percent of our electricity were to be met with solar photovoltaics (PV) alone by 2020, we would need to put in place approximately 7.3 million 25 kilowatt (kW) PV units. The total capital cost of this investment would amount to almost $260 billion—a figure that does not include operation and maintenance costs, which constitute 1 percent of the initial investment annually.[6] However, technology constraints will again limit our deployment of 25 kW PV units, as most PV units placed on the rooftops of houses have a typical capacity of less than 10 kW. In this case, we would actually need 180 million 10 kW PV units (taking into account a 30 percent capacity factor) to generate 10 percent of our electricity from this resource alone.

Finally, if we were to generate 10 percent of our electricity from biomass alone by 2020, we would need to place either 918 100-MW biomass energy conversion units or 1,836 50-MW biomass energy conversion units nationwide.

Hopefully, this exercise has brought into focus the tremendous amount of new electricity that will have to be brought online at a minimum to comply with the ACES bill. The equivalent of two to three of the aforementioned renewables options will have to be chosen by 2020, and the entire suite described above could be required by 2025. Even worse, the declining carbon cap in the ACES bill could require even more emissions-free energy than simply the 700 percent increase in renewables. Compounding the problem is the fact that wind and solar energy are intermittent technologies that must be supported by a baseload technology. If the nation is to truly reduce our use of fossil fuels, we need to rely upon nuclear energy as our baseload energy technology, since it produces zero greenhouse gas emissions.

Logistically speaking, siting even a fraction of these new energy sources will be an almost impossible task. Beyond mandating that the technologies be deployed, the ACES bill does virtually nothing to ensure that any new, clean energy sources actually be brought online. What happens if we cannot meet these markers?

The U.S. Chamber recently launched *Project No Project*, an interactive website that serves as a repository for key energy infrastructure projects that are being thwarted at a time when our economy needs them most. The website can be viewed at http://www.projectnoproject.com. Of the 300 projects on the site that have been delayed or outright killed over the past few years, 65 of them are renewables. We have all heard the horror stories about Cape Wind—the Nantucket Bay offshore wind project could power 420,000 homes, but has been embroiled in 8 years of permitting delay—but you may not have heard about the Cascade Wind Project killed in Oregon, or the Tallahassee Renewable Energy Center biomass plant killed in Florida, or even small projects like

[5] Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service; *available at* http://www.teachervision.com/lesson-plans/lesson-725.html.

[6] California Energy Commission, "Economics of Owning and Operating DER Technologies", *available at* http://www.energy.ca.gov/distgen/economics/operation.html.

Akeena Solar in California, who was sued when trying to install solar panels on its own roof.

The ACES bill mandates the removal of fossil fuels from our economy, but there is no process in ACES to ensure there are replacement fuels to run our businesses, our cars and our homes. To replace these fuels, it only imposes more mandates. Until and unless the bill provides a reasonable mechanism for replacing the energy lost from its carbon caps with replacement energy—nuclear or clean coal or renewables or something else—the bill will remain fundamentally flawed.

C. ACES wisely preempts several Clean Air Act programs, but expands others.

The leadership of the Committee and Subcommittee have for years understood the dangers posed by regulation of greenhouse gases under the existing Clean Air Act (CAA), and has repeatedly taken strong steps to preempt application of the Act's programs to greenhouse gases—most recently by inserting a savings clause in the renewable fuels title of the EISA in 2007 that prevented greenhouse gases from becoming "subject to regulation" under the Act. ACES, for the most part, continues that positive trend. Several of the CAA's most rigid and economically devastating programs, such as National Ambient Air Quality Standards (NAAQS), New Source Review (NSR), Hazardous Air Pollutants (HAPs), and Title V are preempted for greenhouse gases. However, the ACES bill needs to go a step farther and remove greenhouse gases from every title of the Clean Air Act except the new title created by the bill.

i. New Source Performance Standards

For instance, ACES does not completely preempt the New Source Performance Standards (NSPS) program under Section 111 of the CAA. Section 111 requires EPA to publish regulations establishing federal standards of performance for new sources within certain categories determined by EPA. Currently, NSPS categories include boilers, landfills, petroleum refineries and turbines; there are 70 categories and sub-categories in all. A "standard of performance" is defined in pertinent part as "a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction." This standard is better known as "best demonstrated technology."

Once EPA has established standards of performance, states are required to submit to the agency a procedure for implementing and enforcing such standards for new or modified sources located in the state. In addition, EPA must promulgate regulations setting forth procedures for state establishment of standards for *existing* sources.

ACES cuts out all "capped" emitters that emit over 25,000 tons of greenhouse gases, other than coal-fired power plants, from NSPS. (Coal-fired power plants have to cope with a specific new set of NSPS involving carbon capture and sequestration technology, as set forth in ACES.) However, all new and existing sources that emit between 10,000 and 25,000 tons of greenhouse gases per year *will* be covered by ACES,

and will have to comply with NSPS. This means EPA will be required to issue plant-by-plant standards of performance for CO_2, and all the entities in the 10,000 to 25,000 ton range will have to install best demonstrated technologies as determined by EPA. This is a significant expense that appears to have become lost during the public debate on ACES.

Even more troubling, however, is the fact that ACES does not explicitly prohibit the development of NSPS for sources that emit *less* than 10,000 tons per year of greenhouse gases. This hands-off approach could result in the imposition, through something as simple as a lawsuit, of NSPS to a limitless number of source categories. Moreover, because EPA has now signaled its intent to find "endangerment" for greenhouse gases under the Clean Air Act, an environmental group intent on forcing NSPS for all stationary sources not explicitly preempted by ACES (i.e., anything and everything that emits less than 25,000 tons per year of CO_2) would have a much easier time doing so in the courts than in the past, as endangerment triggers NSPS. A lawsuit of this nature is a virtual certainty; for instance, the Center for Biological Diversity wrote in its 2008 comments on EPA's Advance Notice of Proposed Rulemaking that EPA must create NSPS for all source categories that are "major sources," meaning those that emit more than 250 tons of CO_2 per year.[7]

ii. Citizen Suits

The most troublesome part of the CAA-related provisions is the creation of a private right of action for all citizens for virtually any claim based on climate change, even if the effect or risk is "not widely shared."

Section 336, entitled "Enforcement," expands the universe of potential plaintiffs who can sue under the Act by eviscerating existing constitutional standing requirements. Over the years, the U.S. Supreme Court has developed a three-part test for standing to sue: (a) the plaintiff must have suffered an "injury in fact" - an invasion of a legally protected interest which is 1) concrete and particularized and 2) actual or imminent, not just hypothetical; (b) the challenged action of the defendant must have caused the injury; and (c) it must be likely that the injury will be redressed by the requested relief. ACES, by contrast, authorizes an action by "any person who has suffered, or reasonably expects to suffer" a "harm." "Harm" is defined as "any effect of air pollution (including climate change), currently occurring or at risk of occurring, and the incremental exacerbation of any such effect or risk that is associated with a small incremental emission of any air pollutant (including any greenhouse gas as defined in [ACES], whether or not the effect or risk is widely shared)." In other words, the "reasonable expectation" (who knows what that means) of a "harm" (basically any "risk" or "exacerbation" of risk of any sort, no matter how minute or speculative) opens the courthouse doors.

[7] Comments of the Center for Biological Diversity on EPA's Advance Notice of Proposed Rulemaking, Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44354 (July 30, 2008), Docket ID No. EPA-HQ-OAR-2008-0318, at 32.

ACES then expands the potential universe of defendants far beyond those that will be subject to the EPA permit regime. ACES authorizes suits against any person for "harm," which, as noted above, is defined as even "small incremental emission of any air pollutant (including any greenhouse gas...) whether or not the effect or risk is widely shared," that are attributable in whole or in part "to a violation or failure to act referred to in subsection (a) [of 42 U.S.C. § 7604]." Remarkably, ACES then provides: "an effect or risk...shall be considered attributable to the violation or failure to act [and hence actionable] if the violation or failure to act slows the pace of implementation of this Act or compliance with this Act or results in any emission of greenhouse gas or other air pollutant at a higher level than would have been emitted in the absence of violation or failure to act."

Such provisions result in interpretative absurdities when integrated into the CAA's existing citizen suit section. For example, 42 U.S.C § 7604 authorizes citizen suits against any person "alleged to have violated....or to be in violation of (A) an emission standard or limitation under this chapter..." 42 U.S.C. § 7604(a)(1). "Emission standard or limitation" means "a schedule or timetable of compliance, emission limitation, standard of performance or emission standard." 42 USC § 7604(f)(1). Recall that the Act sets specific emissions schedules, timetables, and economy-wide performance standards in the form of a national "hard cap" on GHG emissions. This national "hard cap" on GHG emissions means that Sec. 363 effectively authorizes plaintiffs to sue *anyone* who does *anything* that could be construed as "slowing the pace of implementation...or compliance" with the hard cap. Every subdivision or shopping center developer, every new manufacturing facility, every car dealer, every pizza restaurant owner, every SUV owner, and every homeowner with a gas grill is at risk because each and every one of these persons is responsible for "small incremental emissions" that arguably slow the pace of compliance. In fact, as bizarre as it sounds, a family having more than 2 children arguably violates the Act, for increasing the population has been demonstrated to cause increased GHG emissions, thus "slowing the pace of implementation...or compliance" with the economy-wide hard cap.

As if this all were not bad enough, ACES then provides a remedy of injunctive relief (i.e., enforcing compliance with ACES against the defendant) and/or $75,000 per lawsuit (up to $1.5 million per year) payable from the U.S. Treasury for successful plaintiffs, *plus unlimited attorney's fees*. $1.5 million annually is presumably not a tremendous sum when compared to the billions (or trillions) of dollars in potential CO_2 credits being distributed by the rest of the ACES bill, but unlimited attorney's fees is extraordinarily troubling. The breadth of the citizen suit provision more or less ensures that the first 20 plaintiffs to race to the courthouse on January 1st of each year and complain of potential injury from climate change will receive a check from the federal government. However, there appears to be no limitation whatsoever on the number of lawsuits for injunctive relief (such as compliance with a provision in ACES), which would also be entitled to "uncapped" attorney's fees. Moreover, because the citizen suit provision amends existing CAA citizen suit language, it is not at all clear whether the injury eligible for relief is limited only to failure to comply with ACES or if it extends to the rest of the CAA.

In all, the ACES citizen suit provision opens the door—wider than it has ever been opened—to a potentially unlimited number of lawsuits based on injury that does not even need to happen. It waives sovereign immunity and allows private citizens to receive compensatory damages from the federal government. And it appears to give by far the greatest incentive to litigate to the lawyers themselves.

D. Carbon Market "Assurance."

ACES designates the Federal Energy Regulatory Commission (FERC) as official regulator of the emissions allowance and offset markets created by the bill. FERC also is granted with oversight of the trading markets for federal renewable energy credits in the RPS title of the bill. Regulation of strategic carbon reserves is given to EPA. Finally, ACES "punts" authority over the much larger derivatives market to the Obama administration, in conjunction with an interagency working group.

In light of what has happened to our nation's financial markets in recent years—in particular, the same or similar oversight mistakes being made again and again—the Chamber is extremely skeptical of giving FERC and EPA oversight authority for markets they have little expertise over. In fact, it appears FERC itself does not even want the job. In a *National Journal* article dated April 4, 2009, FERC Chairman John Wellinghoff stated:

> I think a lot of people are looking for the appropriate agency to oversee this process. One of my concerns is that FERC has a lot of other things on its plate. There's this extra-high-voltage transmission system that's been proposed. The legislation for implementing that system is likely to pass. In addition, we currently have significant responsibilities with regard to reliability of the electric grid. We do market oversight now—electric and gas markets. But a cap-and-trade system with trading carbon, that would be something that we'd have to start from the ground up to do.[8]

Wellinghoff also stated that regulating a cap and trade market would require a 20 to 30 percent increase in FERC's workforce, or 300 to 400 more employees.

If FERC does not want the job, and neither FERC nor EPA have any real market oversight expertise or experience, why is ACES forcing them to take on the regulation of a brand new, several-trillion-dollar commodities market?

Perhaps even more troubling than FERC's and EPA's oversight roles, however, is the fact that ACES leaves wide open the question of which agency will control the larger, multi-trillion-dollar derivatives market. Cap-and-trade is a market-based emissions control system, and the authors of ACES have devoted little if any ink to the structure or oversight of the market. As the world recovers from the bursting of our latest "bubble,"

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[8] *Available at* http://www.ferc.gov/news/statements-speeches/wellinghoff/2009/04-03-09-wellinghoff-nationaljournalinterview.pdf.

the Chamber believes Congress should proceed with extreme caution before it creates a "carbon bubble" it can hardly control.

E. ACES provides no certainty whatsoever that state and regional programs will be preempted.

ACES addresses state and regional programs in two ways. First, it allows holders of emission allowances from the Regional Greenhouse Gas Initiative (RGGI) or the State of California to exchange these allowances for an equivalent set of allowances in the federal program. Second, it delays the implementation of any state or regional program for five years, until 2017. After that, the bill does not preempt state or regional programs.

Former Energy and Commerce Committee Chairman John Dingell and Subcommittee on Energy and Air Quality Chairman Rick Boucher performed a great deal of analysis last year on the impact of federal cap and trade legislation on state and regional programs such as RGGI, and vice-versa. In a white paper entitled "Appropriate Roles for Different Levels of Government," they warned of the danger of allowing stricter state standards than the federal program:

> Under most environmental programs, a more stringent State program provides additional environmental or public health protection. With a national cap-and-trade program, though, a more stringent State program may just shift the location of, rather than decrease, national emissions because the sources subject to the more stringent State program will need fewer allowances (thus freeing up allowances for sources in other States). Unlike most air pollutants, local greenhouse gas reductions alone will not help the local area given that climate change is caused by global, rather than local, concentrations of greenhouse gases. Consideration also needs to be given to how State programs would affect the cost of reducing greenhouse gas emissions and on who would bear that cost.

Later in the white paper, in addressing the massive scope of such an expansive federal cap and trade program as would be required for greenhouse gases, Dingell and Boucher wrote:

> On the other hand, once a national, economy-wide cap-and-trade program is adopted, State or regional cap-and-trade programs may interfere with the efficient functioning of the Federal cap-and-trade program and increase demands on both governmental and non-governmental resources. If there are multiple programs, multiple government agencies will be expending resources on those cap-and-trade programs without necessarily achieving more greenhouse gas reductions than a single national program. With a national, economy-wide cap on emissions, a more stringent State or regional cap might shift emissions from the more stringent State to other States, without reducing national greenhouse gas emissions. In this scenario, requiring regulated entities to comply with multiple cap-and-

trade programs (which would likely require different compliance strategies) would likely increase the expenditure of non-governmental resources (as compared to having just one national program) without reducing greenhouse gas emissions. For example, a regulated entity might have to buy both State and Federal allowances to cover the same ton of greenhouse gas emissions. Different points of regulation or allocation methodologies between State and Federal programs would also cause complications and increase resources necessary for compliance.

ACES does very little to fix the problems identified by former Chairmen Dingell and Boucher. Allowing a free exchange of allowances from existing state or regional programs to the federal program creates its own unique set of problems, particularly considering that the cost of RGGI credits have been in the range of $3 to $3.50 while credits in a federal program could range from $11 to $15 to $60 or even higher. Depending on the exchange rate of credits from RGGI to the ACES program, a RGGI participant could easily become very rich or very poor.

The larger problem, however, is the failure to preempt permanently state or regional climate programs. ACES does very little to preempt state programs other than delay their implementation for five years. Compliance with the federal cap-and-trade program set by ACES will undoubtedly be extraordinarily complicated for businesses, who will be forced to comply with hundreds of new regulations and mandates, amounting to layer upon layer of red tape. To tack on a state program, or a regional program, or both, is to make an already-cumbersome cost of compliance tantamount to an incentive to relocate a business to another state, or, worse yet, another country.

F. Adaptation

ACES addresses both domestic and international adaptation. Domestically, the bill establishes an interagency council to ensure an integrated federal response to the effects of global warming. The National Oceanic and Atmospheric Administration (NOAA) is directed to conduct vulnerability assessments and establish a national "Climate Service." Each federal agency is directed to prepare an adaptation plan, review climate impacts on matters within its jurisdiction, and develop plans for addressing those impacts. ACES establishes a climate change adaptation fund to provide federal support for state, local, and tribal adaptation projects and a natural resources climate change adaptation panel to coordinate interagency actions on natural resources adaptation. Finally, ACES requires the Secretary of Health and Human Services to promulgate a national strategy for adapting to the public health effects of climate change. To address international adaptation issues, the draft creates an International Climate Change Adaptation program within USAID to provide U.S. assistance to the most vulnerable developing countries for adaptation to climate change.

The Chamber is very concerned that the concept of "adaptation" in ACES is treated independently of "mitigation." The two concepts are interdependent. The more we mitigate, the fewer resources we have to adapt, and in that circumstance, climate

change impacts may be higher.[9] For instance, suppose sea levels rise to the point that adaptation is necessary. Under ACES, we have spent a disproportionate amount of money over the years on mitigation, namely cutting CO_2 (unsuccessfully) out of the atmosphere. If we suddenly need to change course and begin building levees, bridges and other adaptation infrastructure, where will the money come from?

On the topic of ocean acidification, the Chamber is concerned that a desire to "do good" on adaptation in ACES could result in backdoor regulation of greenhouse gases under the Clean Water Act (CWA). As you may or may not know, activist groups are trying very hard to shoehorn greenhouse gases into the CWA much the same way they have sought to do so under the Clean Air Act, Endangered Species Act and National Environmental Policy Act. If the Committee is serious about making ACES the primary mechanism for greenhouse gas controls, it should strongly consider adding a provision to ACES that would prohibit regulation of greenhouse gases under any statute other than ACES.

III. Solution: Negotiate an International Treaty; Implement it and During the Interim be as Aggressive as Possible with Energy Efficiency; Implement a Single, National Fuel Economy Standard and Develop and Deploy as Much Green Energy as Possible, Which Includes Renewables, Nuclear and Clean Coal.

After a week of hearings and debate on international competitiveness, carbon leakage, tariffs and trade, and other complex issues without easy answers, one wonders whether Rube Goldberg is at the helm of America's climate change policy. Most, if not all, of the issues that remain unresolved at the conclusion of this week can be solved through an effective international agreement that includes all nations.

The Chamber believes Congress and the Obama administration should focus on negotiating an international treaty that sets real, enforceable targets for all nations, while allowing each nation the flexibility to meet these targets through whichever policy device it chooses. This way, the European Trading System can continue to exist, while Japan can proceed with its "sectoral approach." Some nations can meet their targets by growing trees or limiting deforestation. And the United States can figure out how it wants to address its own greenhouse gas emissions without concern for emissions leakage and trade wars, because the entire world will be making contributions to reducing greenhouse gases in the atmosphere.

In the meantime, the administration should proceed with a single, national fuel economy program (CAFE), a robust investment in research, development and deployment of clean energy and energy efficiency technologies—including not only renewables but also nuclear energy and clean coal—and the continued implementation of the fuels and efficiency laws already on the books, such as the Energy Policy Act of 2005 (EPAct) and Energy Independence and Security Act of 2007 (EISA). After ratification of a new international agreement, Congress should pass legislation that implements the

[9] This point has been made by several economists, most notably Nobel Prize winner Thomas Schelling.

treaty in a manner that it believes best addresses the goals of the treaty, which hopefully is an effective mechanism for reducing concentrations of greenhouse gases in the atmosphere.

Thank you for the opportunity to testify today. I look forward to answering any questions you may have.

Attachment: Letter from R. Bruce Josten to Chairmen John Dingell and Rick Boucher, June 15, 2007.

ATTACHMENT:

LETTER FROM R. BRUCE JOSTEN, U.S. CHAMBER OF COMMERCE, TO CHAIRMEN JOHN DINGELL AND RICK BOUCHER, JUNE 15, 2007

CHAMBER OF COMMERCE
OF THE
UNITED STATES OF AMERICA

R. BRUCE JOSTEN
EXECUTIVE VICE PRESIDENT
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June 15, 2007

The Honorable John D. Dingell
Chairman
Committee on Energy and Commerce
United States House of Representatives
Washington, DC 20515

The Honorable Rick Boucher
Chairman
Subcommittee on Energy and Air Quality
United States House of Representatives
Washington, DC 20515

Dear Chairmen Dingell and Boucher:

The U.S. Chamber of Commerce, the world's largest business federation representing more than three million businesses and organizations of every size, sector, and region, is pleased to provide you with its response to the "renewable portfolio standard" questions you raised in your May 24, 2007, letter. I am the Chamber's Executive Vice President for Government Affairs. Because I am responsible for legislative matters, the Chamber's President and Chief Executive Officer, Thomas J. Donohue, asked that I respond on the Chamber's behalf. Your questions are summarized below; they are addressed in the order set forth in your letter.

I. Purpose of Portfolio Standards Proposals: Should the federal government impose a mandatory renewable portfolio standard (RPS) on retail electricity sources, as well as generation-source requirements on load-serving utilities; would an RPS be necessary if Congress were to adopt an economy-wide greenhouse gas reduction policy; and what, if any, analysis has been done of an RPS that our organization would endorse.

The Chamber strongly opposes a federally-mandated RPS. A mandatory RPS could raise electricity prices for all consumers and result in a wealth transfer among states. Presently, the Senate is discussing a 15 percent standard for non-hydro renewables, and Senator Domenici recently introduced an alternate plan that includes a broader range of energy sources but boosts the RPS to 20 percent. All current legislation generally requires the standard to be met by 2020.

There are several reasons why a federally-mandated RPS is unnecessary. First, and foremost, renewable generation sufficient to meet the requirement is neither cost-effective nor achievable nationwide. The sheer magnitude of the electricity that would have to be produced using approved renewable energy technologies is just too great, too costly, and would produce a host of problems that have not been adequately thought out. It is simply not possible to put the required amount of renewable energy technology in place in this country by 2020.

Indeed, many states have chosen not to adopt an RPS because they lack the renewable resources to meet such a standard. For the 24 states that have imposed a statewide RPS, a mandatory federal standard would undercut or preempt those existing state renewable power programs. Individual states, given the discretion to carefully consider whether they can meet an RPS, have done so where appropriate; states that determined they cannot meet an RPS have not.

On a different note, the Chamber does not promote the adoption of a mandatory greenhouse gas reduction policy, whether it be cap-and-trade, carbon tax or another similar method. As detailed in the Chamber's March 19, 2007, letter to you regarding climate change, any global climate solution should be international and economy-wide in scope, and should preserve competitiveness and promote conservation and efficiency, and must promote technology research, development and demonstration. With that in mind, however, implementation of an economy-wide greenhouse gas reduction policy would certainly negate the usefulness of a federally-mandated RPS. The greenhouse gas reduction policy would act as an incentive to develop renewable fuels; due to carbon-constrictions, states and localities would have no choice. The Energy Information Administration (EIA) confirmed that the increased use of renewables as mandated by an RPS would lead to correspondingly lower coal and natural gas generation;[1] virtually the same result would occur if a greenhouse gas reduction regulatory scheme were in place. However, such an approach would be unadvisable, as the drawbacks of a mandatory greenhouse gas reduction policy seriously outweigh any potential benefits.

The Chamber does not endorse any specific RPS, and cannot accordingly provide an in-depth analysis of an RPS it would endorse.

II. Portfolio Inclusions and Exclusions: Which energy sources should be included in an RPS; should there be a "tiered" system for eligibility, and should there be a distinction between new and existing sources; should there be credits for useful thermal energy from eligible resources; and should energy efficiency be considered, and, if so, how.

One of the major drawbacks to current and RPS bills that have circulated through Congress is the definition of what energy sources are "renewable." Clean, safe, and reliable energy sources such as hydropower, nuclear power, and clean coal technology have typically been excluded from this definition. As a result, the RPS accomplishes precisely what energy legislation should not do: it picks winners and losers. Should Congress choose to bind all states to a baseline renewable portfolio standard—which, again, the Chamber does not consider necessary—then it must strive to be as inclusive as possible. If the true policy goal of an RPS is

[1] Energy Information Administration, *Impacts of a 15-Percent Renewable Portfolio Standard*; Report # SR/OIAF/2007-03 (June 2007), *available at* http://www.eia.doe.gov/oiaf/servicerpt/prps//pdf/sroiaf(2007)03.pdf.

to encourage energy production, there is no legitimate reason why certain clean, safe energy producers are left standing at the door while others benefit.

Further exacerbating the problem of which sources to include is the fact that almost half the states in this country already have an RPS. Complicated problems such as tiers, eligibility, and cut-offs arise due to the inherent conflict between existing state renewable portfolio schemes and the proposed federal RPS. Credits—whether for thermal energy, energy efficiency, or something else entirely—are a good illustration of this federal-state conflict. A federal RPS must give credit to resources the consumers in each state are already paying for; otherwise those consumers will be paying twice.

Put simply, this discussion about inclusion, eligibility, threshold dates and credits would be unnecessary if those programs were simply left alone and not preempted by federal legislation.

III. Percentage Requirement and Timing: What target percentages and years should be included in the RPS; how to accelerate to the target; and should there be any "off-ramps" or other safeguards for contingencies.

As previously stated, the Chamber opposes a federal RPS, so discussion of a target is not possible. However, the Chamber recently analyzed the attainability of a 10 percent RPS—a standard considerably lower than any currently being considered—and found: (1) it would be literally impossible to meet even that standard using a single energy solution (i.e., wind, photovoltaics, biomass) on its own; and (2) because an energy mix would be required to even attempt to meet the 10 percent baseline, inconsistent renewable source capabilities from state to state will likely result in failure.

A. Neither Wind, Photovoltaic, nor Biomass can Individually Meet a 10 Percent RPS.

In 2005, base sales of electricity from investor-owned utilities (IOUs) were about 3,553,139 gigawatt-hours (GWh),[2] and about 501,549 GWh[3] of total electricity generation was produced using "classically renewable" energy resources, i.e., solar, wind, biomass, and geothermal (and not hydroelectric, nuclear or so-called "clean" energy sources).

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[2] Per the Edison Electric Institute (EEI); actual IOU base sales are calculated from total IOU sales to ultimate customers. *See* http://www.eei.org/industry_issues/industry_overview_and_statistics/industry_statistics/index.htm.
[3] *Id.*

If IOU base sales of electricity grow at approximately 1.64% per year[4] relative to the year 2005 base production level, then IOU base electricity production in 2020 will be about 5,052,141 GWh. Requiring in 2020, for sake of argument, that 10 percent of this base electricity production must come from additional "classic renewables," then these sources must generate an 505,214 additional GWh of electricity above the 501,549 GWh produced from renewables in 2005.

Compared with conventional power generation, the current most cost competitive "classically renewable" technology is generation of electricity via the use of wind turbines, and the least cost competitive "classically renewable" option is solar power generation of electricity via the use of photovoltaic technology. Comparing the costs and demands of producing electricity from wind (~ 3+¢ to 6¢ per kWh)[5] versus photovoltaic (~ 20¢ per kWh)[6] versus conventional power generation (e.g., using natural gas, which costs ~3¢ to 4¢ per kWh)[7] can help frame an understanding of the impacts of the RPS.[8]

1. Wind

A typical large-scale wind-driven turbine has a capacity of approximately 1.5 megawatts (MW);[9] in 2007, installed electric power capacity from wind was approximately 11,700 MW.[10] In all, this results in electricity production of roughly 1,200 MWh of electricity production per MW of installed capacity. This equals maximum power generation 23 percent of the time over a period of one year, indicating that, overall, generation of electric power from wind is highly intermittent. Hence, there is a strong interest in developing wind power projects offshore, where the potential for generating electricity from wind is more substantial than at most onshore

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[4] Energy Information Administration, *Annual Energy Outlook with Projections to 2020*; Report # DOE/EIA-0383 (2002), Dec. 21, 2002.

[5] Dallas Burtraw, Resources For the Future, Testimony before the Senate Energy and Water Development Appropriations Subcommittee, September 14, 1999; J. McVeigh, et al., Resources For the Future, *Winner, Loser, or Innocent Victim? Has Renewable energy Performed as Expected?*, RFF 99-28, Washington, DC, 1999.

[6] *Id.*

[7] J. David, *Economic Evaluation of Leading Technology Options for Sequestration of Carbon Dioxide*, MS Thesis, Massachusetts Institute of Technology, May 2000.

[8] The costs in ¢ per kWh given above do not include transmission costs; they are "point of generation" costs.

[9] Energy Information Administration, *Cost and Performance Characteristics for Renewable Energy Generating Technologies, Assumptions to the Annual Energy Outlook 2002*, Dec. 21, 2002; P. Ferdinand, "Windmills on the Water Create Storm on Cape Cod", *Washington Post*, August 20, 2002, p. A3; Global Energy Technology Strategy, *Addressing Climate Change - Phase 2 Findings From An International Public-Private Sponsored Research Program*, p. 86 (2007), *available at* http://www.pnl.gov/gtsp/publications.

[10] Estimate provided by the American Wind Energy Association, *available at* http://www.awea.org.

locations. For purposes of the calculations presented below, the projected capacity factor is assumed to be 42 percent[11] rather than 23 percent, reflecting wind technology improvements.

For wind turbines to produce the additional 505,214 GWh necessary to meet a 10 percent standard in 2020 using 1-MW turbines that produce 4,500 MWh of electricity per MW of installed capacity[12], one would need to put in place more than 115,000 1-MW wind turbines.[13]

If the average capital cost for electricity generation is $1194/kW[14] for each 1-MW wind turbine[15], then the total capital cost of constructing about 115,000 of them would amount to **roughly $138 billion**. This figure does not include operation and maintenance costs, which constitute 1.5 to 2 percent of the initial investment annually.[16]

Perhaps even more disturbing than the lofty capital cost of 115,000 wind turbines is the placement: if the space allotted for each 1-MW wind turbine placed in the ocean comprises an area of roughly 0.16 square miles,[17] then 115,000 turbines of this size would occupy an area of about 18,000 square miles. In comparison, the combined area of Albermarle Sound, Delaware Bay, Pamlico Sound, Long Island Sound, Cape Cod Bay, Chesapeake Bay, Puget Sound, San Francisco Bay, Biscayne Bay, and Buzzards Bay is only 8,500 square miles. If the 115,000 1-MW wind turbines were placed in a straight line about 2,000 feet apart in the water, they would have a total length of about 43,000 miles from end to end. This is nearly four times the length of the U.S. shoreline, and almost double the entire circumference of the earth![18]

Moreover, because generation of electricity by wind power is intermittent, to provide power when it is needed (as opposed to when it is produced) one must have intermittent, multi-

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[11] Energy Information Administration, *Cost and Performance Characteristics for Renewable Energy Generating Technologies, Assumptions to the Annual Energy Outlook 2002* (Dec. 21, 2002).

[12] *Id.*

[13] If the wind blew all the time so that the turbines generated electricity at maximum capacity, about half this number of turbines would be required, however, the wind does not blow constantly in this manner.

[14] Energy Information Administration, *Cost and Performance Characteristics for Renewable Energy Generating Technologies, Assumptions to the Annual Energy Outlook 2002* (Dec. 21, 2002).

[15] A recent proposal to build a wind farm consisting of 130 one MW wind turbines off the coast of Massachusetts projected costs at $600 to $700 million. P. Ferdinand, "Windmills on the Water Create Storm on Cape Cod", *Washington Post*, August 20, 2002, p A3.

[16] If the wind blew all the time so that the turbines generated electricity at maximum capacity, total capital costs would be about one half this amount, as fewer turbines would be needed; however, the wind does not blow constantly in this manner, even off-shore.

[17] *See* P. Ferdinand, "Windmills on the Water Create Storm on Cape Cod", *Washington Post*, August 20, 2002, p A3 (The proposed Massachusetts project places 170 turbines in an off shore wind farm having an area of 28 square miles).

[18] Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service; *available at* http://www.teachervision.com/lesson-plans/lesson-725.html.

hour energy storage capacity in place. Although there are technologies that can store energy for hours, the sheer size of the storage capacity needed to hold the amount of required intermittent energy generated to meet a 10 percent RPS requirement simply does not exist. Creating such storage capacity remains a critical issue that requires much more attention. Moreover, at the scale needed to meet a 10 percent RPS, the use of batteries to store intermittent energy, which is a current common practice, could create a broad range of hazardous waste disposal problems in the future.

A recent projection[19] indicates installed wind capacity by 2020 will be less than 50,000 GWh, which is much less than the target amount of 505,214 GWh of required renewable electricity sales in 2020. This shortfall, combined with capital cost restrictions and siting limitations, leads to the inevitable conclusion that wind technology will not meet the RPS on its own, and can only fulfill a small fraction of a 10 percent RPS requirement when mixed with other renewables.

2. Photovoltaics

A one-kilowatt photovoltaic (PV) unit produces about 2 to 6 kilowatt-hours of electricity each day.[20] On this basis, a 100 kW PV unit can produce about 73 to 219 MWh of electricity annually, or an average of about 146 MWh per year. For the following calculations, assume a typical PV electricity generating unit that in 2020 has a capacity of 25kW, an average capacity factor of 30%, and in one year generates about .00007 billion kilowatt-hours of electricity.[21]

To produce the additional 505,214 GWh in 2020 to meet a 10 percent RPS using 25 kW PV units, one would need to put in place approximately 7.3 million PV units. If the average cost of each 25 kW unit is $2,200/kW[22], then the total capital cost of this investment would amount to almost **$260 billion**. This figure does not include operation and maintenance costs, which constitute 1 percent of the initial investment annually[23].

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[19] J. McVeigh et al., Resources For the Future, *Winner, Loser, or Innocent Victim? Has Renewable energy Performed as Expected?*, RFF 99-28, Washington, DC, 1999.

[20] BP Solar Corp., "Facts About Solar Power," *available at* http://www.bp.com; IEA Photovoltaic Power Systems Program, *available at* http://www.iea-pvps.org/.

[21] Energy Information Administration, *Cost and Performance Characteristics for Renewable Energy Generating Technologies, Assumptions to the Annual Energy Outlook 2002* (Dec. 21, 2002).

[22] *Id.*

[23] California Energy Commission, "Economics of Owning and Operating DER Technologies", *available at* http://www.energy.ca.gov/distgen/economics/operation.html.

Increasing PV output in order to meet a 10 percent RPS requirement in 2020 is highly unlikely. In the long-term (30 to 40 years), the European Commission projects[24] that PV costs could fall to between 6¢ and 10¢ per kWh, which would make PV competitive price-wise with conventional electric power generation. However, the 7.3 million PV sitings necessary to achieve the 10 percent renewables target by 2020 is relatively impossible to meet. For example, PV units placed on the rooftops of houses have a typical capacity of less than 10 kW. To produce 505,214 GWh in 2020 using 10 kW PV units having a 30% capacity factor, one would need to put in place almost **180 million units**. Even if there are efficiency improvements that cut the required number or cost of PV units in half by 2020, the intermittent nature of the power delivered and potential for damage by storms—hurricanes, tornados, hail, falling trees, etc.—remains, and is a concern in many parts of the country.

In addition, several siting problems occur due to required placement of PV units on the rooftops of houses, given the operation and maintenance demands and capital cost outlay, which all must be borne by the individual household. Even if PV were cost-competitive with conventional electricity generation, it is likely that, in an unfettered market, most consumers would opt to purchase electricity transmitted to their homes on power lines rather than deal with perceived maintenance requirements and capital startup costs, the latter of which can be a significant percentage of disposable household revenue.

Like wind power, because generation of electricity by solar power is intermittent, to provide power when it is needed (as opposed to when it is produced), one must have intermittent, multi-hour storage capacity in place. Although there are technologies that can store charge for hours, the sheer size of the capacity of storage needed to meet a 10 percent RPS simply does not exist. Moreover, at the scale that may be needed to meet the RPS, the use of batteries to store intermittent energy, which is a current common practice, could create a broad range of hazardous waste disposal problems in the future. Circumventing this latter problem may require utilization of high-technology energy storage devices, an industry that is currently small in comparison to the capacity for energy storage that would arise if large amounts of electricity are generated on an intermittent basis, as would be required by a 10 percent RPS.

A recent projection[25] indicates that total PV installed capacity by 2020 will be less than 5,000 GWh, which is much less than the target amount of 505,214 GWh of required renewable energy sales necessary to meet a 10 percent RPS by 2020. This shortcoming, combined with obvious cost and siting limitations, suggests that PV energy could only fulfill a small fraction of a 10 percent RPS.

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[24] P. Zegers, European Commission, "A Long Term RTD Strategy for a Sustainable Energy Supply" *The IPTS Report* May 2002, No. 64, pp. 18–27.

[25] J. McVeigh et al., Resources For the Future, *Winner, Loser, or Innocent Victim? Has Renewable energy Performed as Expected?*, RFF 99-28, Washington, DC, 1999.

3. Biomass

Similarly, energy from biomass is not the answer. It is certainly a compelling option, producing electricity at between 4¢ and 9¢ per kWh.[26] However, like wind and photovoltaic energy, siting and availability present serious roadblocks to meeting a 10 percent RPS requirement by 2020.

In 2005, electric power capacity from biomass was approximately 8,300 MW and electricity generation was approximately 45 million MWh.[27] This corresponds to roughly 5500 MWh of electricity production per MW of installed biomass energy capacity. Generation of the 505,214 GWh of electricity required to meet a 10 percent RPS by 2020 (using 100 MW biomass power plants having a capacity factor of 80 percent[28]) would require placement of 918 biomass energy conversion units, or placement of 1,836 biomass energy conversion units each having a capacity of 50 MW. Given NIMBY (Not In My BackYard) concerns, siting this number of units would be a major issue. Smaller units may not have as favorable an economy of scale, elevating capital costs.

Alternatively, it is possible to co-fire biomass with coal at existing coal-fired power plants. However, these would likely fall outside the RPS due to association with coal. The issue of potential pollutant emissions from such a large number of biomass-augmented power plants is also problematic, as air pollution control equipment designed and optimized for one fuel mix may not be suitable for optimal control of other fuel mix combinations. This issue must be examined on a case-by-case basis and can lead to delays while equipment performance is evaluated.

Even if biomass is available in the quantities necessary to achieve a 10 percent RPS (and this is not altogether assured), it may not be available in the right place at the right time. This complicates fuel supply planning for power generation units, making the process inefficient. In addition, as is currently the case with corn ethanol, competition and demand limitations could significantly raise the biomass fuel price and affect its price competitivity. Another complication can arise in terms of the material integrity of the power plant and power production if the fuel mix composition is constantly shifted owing to the availability or non-availability of the fuels that are to be consumed.

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[26] Footnotes 24 and 25, *Ibid.*

[27] Union of Concerned Scientists, *How Biomass Energy Works*, available at http://www.ucsusa.org/clean_energy/renewable_energy_basics/offmen-how-biomass-energy-works.html.

[28] Energy Information Administration, *Cost and Performance Characteristics for Renewable Energy Generating Technologies, Assumptions to the Annual Energy Outlook 2002* (Dec. 21, 2002).

B. Many States Cannot Support the Energy Mix Required to Satisfy an RPS

Ultimately, neither wind nor photovoltaic nor biomass is a "magic bullet" that will meet even a 10 percent RPS on its own. It is clear, therefore, that any RPS solution must rely on a mix of renewable energy sources. However, putting this theory into practice only serves to highlight many states' inabilities to satisfy such a requirement.

Recent studies have shown that no one renewable energy mechanism has the capacity to fulfill the needs of the RPS. As seen from the calculations above, it is impossible to rely on wind, solar or biomass solely to provide the additional 505,214 GWh of energy required to meet a 10 percent RPS by 2020. One main limitation is the geographical restraint of these sources of energy: determining the share of power generated from wind, solar and biomass sources is highly dependent on the geographical location of the plants. Setting up wind farms in landlocked areas with minimal wind movement will not produce the total amount of energy required from renewables. Placing photovoltaic cells in Northern areas with minimal sunlight will similarly fail. Because both wind and solar technologies require large upfront capital investment, these options are not viable for the country as a whole. Perhaps most importantly, with renewables such as wind and solar power, the conditions and amount of electricity can only be predicted, not controlled.[29]

The energy industry must be able to build reliable, dispatchable baseload and peaking capacity electricity-generating plants in order to meet consumers' electricity demands on a 24 hour per day, 7 day per week basis, not just when the wind blows or the sun shines. Many states tasked with adding renewable capacity to meet an RPS are simply not equipped to generate enough capital, clear enough space, institute enough pollution controls, or site enough solar panels to do so. Renewable energy facilities presently are not an adequate substitute for (rather than in addition to) investment in conventional electricity generating facilities.

In sum, meeting even a 10 percent RPS by 2020—significantly less than any option currently being considered by Congress—is unrealistic, because (1) the sheer magnitude of the electricity that would have to be produced using renewable energy technology is just too great, (2) the cost to produce that energy is too prohibitive, and (3) there is not enough uniformity from state to state to support any combination of wind, photovoltaic and/or biomass energy.

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[29] Global Energy Technology Strategy, *Addressing Climate Change - Phase 2 Findings From An International Public-Private Sponsored Research Program*, p. 86 (2007), *available at* http://www.pnl.gov/gtsp/publications.

IV. Relationship to State Portfolio Standards and Utility Regulation: How should the federal RPS be structured so as to interact efficiently with state standards; should agencies pass costs through to retail rates.

Because the Chamber is opposed to a federally mandated RPS, it is not possible to address how a federal RPS should interact with state renewable portfolio programs. Like the aforementioned discussion of tiers, eligibility and credits, there would be no need to parse between conflicting federal and state standards if there were no federal standard to consider.

With respect to rates, it is obvious that the very large costs of generating electricity using renewable energy technologies will be passed on to the consumer. The RPS would be, essentially, an indirect, regressive tax on the American public. Even if the required mix of renewable technology electricity generating capacity could be put in place—which is highly doubtful—the majority of electricity consumers, unless forced by law to chose otherwise, can be expected to opt for the lowest cost option in an unfettered market. And in 2020, the lowest-cost electricity generation option is still likely to be electricity generated by conventional means, as the price of energy generation by conventional means is low and is expected to lower further over the next 20 years. Considering the high costs of renewables and corresponding lack of demand, a mandatory RPS will force an additional tax on the consumer for an unnatural outcome not supported by the market.

V. Utility Coverage: Should any retail sellers be exempt from the RPS; should any standard apply to wholesale power markets or sales; should there be a basis for discretionary exemptions.

The question of exemption is a highly disturbing one, because it highlights the major flaw in an RPS: the choice of winners and losers. Regardless, the lack of federal involvement has essentially led to a very similar result as an exemption-based mandatory system: states with the capabilities to institute an RPS have taken it upon themselves to do so, while those incapable of supporting an RPS have not. The latter states, many of which suffer from impossibility of attainment, would be the same states seeking exemptions under a federal system.

VI. Administration and Enforcement: Should the RPS be federally enforced, and, if so, by whom; how would this enforcement interact with state portfolio requirement; what are recommended penalties for failure to meet the RPS.

Because the Chamber does not support a federally-mandated RPS, it is not possible to address whether an RPS should be federally enforced, and by whom. The Chamber categorically disapproves of penalties for failure to meet an RPS. Many states will not meet the RPS because

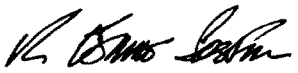
of impossibility; to penalize these states and their constituents would be wrong, and potentially even unconstitutional.

VII. Credits and Trading: Should tradable credits for qualifying generation be utilized; if so, should the system be national in scope; should there be a cap on credit values to limit costs; and, how should credits be initially allocated.

Tradable credits are a particularly bad idea in the RPS context. Because certain states will always have to purchase credits (due to inability to produce enough renewable energy annually), and others will never have to purchase credits (for the opposite reason), the net result is a wealth transfer among states. Again, these costs will be passed on to the consumer, so the RPS would amount to a direct tax on electricity used by businesses and other consumers, driving up costs and hurting economic growth. There is also the potential for consumers to be double-taxed: once from an increase in rates in the state's attempt to meet the RPS, and again from penalties the state must pay or credits it must buy in order to meet the minimum standard.

In conclusion, the Chamber urges Congress not to pursue a mandatory federal RPS. Renewable generation sufficient to meet either requirement is neither cost-effective nor achievable nationwide, and a mandatory RPS could raise electricity prices for all consumers, result in a wealth transfer among states, and impose significant new burdens on the reliability of the nation's electric grid. Please feel free to contact me if you have any questions concerning the Chamber's response to your query. Thank you again for your interest in the Chamber's views on this very important matter.

Sincerely,



R. Bruce Josten

Mr. MARKEY. Thank you, Mr. Kovacs, very much.

We will now recognize the gentlelady from Wisconsin, Ms. Baldwin, for a round of questions.

Ms. BALDWIN. Thank you, but before I begin, I would ask unanimous consent to submit for the record the testimony of Thomas Gibson from the American Iron and Steel Institute on the bill.

[The information follows:]

Statement of
Thomas J. Gibson
President and Chief Executive Officer
American Iron and Steel Institute
Washington, D.C.

Submitted for the Record
Committee on Energy and Commerce
U.S. House of Representatives
For its consideration of
American Clean Energy and Security Act
April 2009

Introduction

My name is Thomas J. Gibson and I am President and CEO of the American Iron and Steel Institute (AISI). AISI represents 24 member companies in North America, and our members make 75% of the steel produced in the United States. Prior to the current economic downturn, the industry directly employed approximately 165,000 persons in the United States, supported a total of 1.2 million jobs overall and contributed $350 billion to the economy annually.

First, let me thank committee members and staff for their willing interaction with AISI, its members and staff during this process. Because of this interaction, we feel that the steel industry's most important issue—competitiveness—is well understood. For example, we feel it is clear the committee understands:

- The domestic steel industry is the lowest CO2 emitter among world steelmaking nations as a result of billions of dollars of investment in process improvements;
- The steel industry has reduced energy per ton of steel produced by 33% since 1990, and as a result of this achievement, our processes are pushing against their energy limits as defined by the laws of physics;
- It is preferable, both economically and environmentally, to produce steel in the USA;
- Steel markets are global, which means that customers have the option to purchase steel from countries not adopting similar climate measures, so U.S. manufacturers cannot pass through increased energy costs.

The new green economy will require a major investment in our infrastructure. Steel will be a significant part of that investment. Despite the current downturn, the World Steel Association projects that world steel demand will double by

2050. Much of this steel will form the backbone of any green grid--- for example, generation sources like wind power are much more steel intensive than their fossil-fueled equivalents. The steel for these new energy alternatives should be built here in the United States, the best place to make steel in the world, from an environmental standpoint.

Our ability to stay competitive in the world economy means we need fair and strong trade laws that are rigorously enforced. *The same is true for climate – we need fair climate laws with global reach that can be enforced.* It goes without saying that in a market open to imports, such as ours, any legislation that undermines the competitiveness of U.S. mills will encourage steel production to leave this market in favor of markets with *lower* environmental standards. Such an outcome will necessarily result in *higher* volumes of greenhouse gas emissions worldwide. In other words, any climate change legislation that does not adequately account for competitiveness issues will have precisely the opposite effect from that intended by its supporters. To prevent this unintended consequence, we believe there are fundamental components that must be part of any climate policy to ensure fairness and global reach including:

1. Emission allowances stability: The steel industry has been concerned about energy use and CO2 emissions for two decades and thus the processes we operate today are very near their limits regarding these two parameters. Therefore, there is very little incremental CO2 emissions reduction possible until new technology is available. This means that a general pool of free allowances that all energy intensive sectors compete for and that declines in size over time does not work. Steel requires a sufficient and stable pool of free allowances while we work to develop these new technologies.

2. Energy Costs: Domestic climate policy will increase energy costs, a significant competitiveness issue for steel for the reasons noted. Our industry uses coal, electricity and natural gas in great quantities. The increased cost of each of these energy sources, beyond the price of allowances themselves, needs to be offset (e.g., through the direct grant of allowances) in order that our global competitiveness is not harmed.

3. Border adjustment: An effective WTO-legal border adjustment mechanism must be a significant part of any climate proposal to account for the cost burden of more stringent climate policies here vs. our international competition.

The discussion draft addresses these points to varying extents. We would like to bring three key components of the draft to your attention and offer suggestions for strengthening these provisions.

1. Grants of Allowances for Direct Emissions Energy Intensive Manufacturers

This important provision of the bill reflects the authors' understanding of the challenges facing energy intensive industry and we appreciate its inclusion in the bill. However, we believe several changes need to be made including: directly designating steel as a trade-affected industry; stabilizing the pool of allowances so that the overall size is sufficient to support all industries that qualify and ensuring that the size of the pool does not decline until new technologies are available commercially. The full measure of allowances needs to be granted to energy intensive industries, not 85% of the full amount. The energy efficiency of steelmakers today is such that a 15% reduction is not possible and would serve merely as a penalty and not an incentive. Finally, if additional sectors not envisioned by the drafters are included in this same pool of allowances, a 15% allotment will fall far short of providing the necessary assistance for industry.

Regarding availability of new technologies, I want you to be aware that the domestic steel industry is aggressively developing technologies that hold the promise of a dramatic step-change in performance. To that end, the industry is steadily investing in so-called breakthrough technologies. The resulting transformational processes being developed over the next 15 to 20 years could result in a steel industry that is largely carbon-free. Widespread adoption of new technology historically has proven to take from two to three decades in our industry. We are currently supporting breakthrough technology projects at the Massachusetts Institute of Technology and the University of Utah.

2. Energy Price Volatility and Increased Energy Costs

All forms of energy (coal, natural gas and electricity) have the potential to suffer a dramatic increase in cost as a result of climate policy. The bill does not presently address coal or natural gas cost increases and uses power plant emissions to grant allowances as a proxy for electricity cost increases.

Power plant emissions are a poor surrogate for electricity cost increases as they only reflect the component of electricity cost attributable to the price of carbon. Much of the future increased cost of electricity will come from the cost of capital equipment related to any or all of the following: fuel switching, deployment of waste gas capture/regeneration technology, deployment of carbon capture and sequestration technology and deployment of wind, nuclear and other clean energy technologies.

Energy costs are 20% or more of the cost of making steel. It is therefore unmistakably clear that a sharp increase in total energy cost will affect our competitive position in the global marketplace. The bill needs a comprehensive energy impact formula that considers coal, natural gas cost increases and electricity compensates for them for trade-exposed and energy-intensive industries.

We have been advised it is difficult to separate historical market forces for energy commodities from the influence of carbon policy. We believe that sufficient history of regional energy costs exists to readily establish historical averages and ranges to compare against costs after a new climate regime is in place.

3. Border Adjustability

As proposed, the bill has a significant lag before any assessment of comparable action by our trading partners is made. Years pass before any counterbalancing action is taken to adjust for competitive advantages gained in other countries that invest far less in climate policy than domestic manufacturers. Such evaluations of comparable action need to occur at the same time domestic manufacturers are subject to regulation because any time lag offers significant competitive advantage to our competitors. Steel is a very cyclical business and even one or two years of legislated advantage will be enough to damage US producers who are, as noted above, world leaders in reducing CO2 emissions.

Finally, we are concerned that the bill as written leaves sole discretion to the Executive Branch in determining the continued existence of competitiveness issues, developing country compatibility or job loss. Congress should have a defined role in this critical process before any competitiveness program is phased out.

Conclusion

It is very timely to talk about competitiveness issues as the Committee moves towards reporting out this bill. As recently as eight months ago, our industry was running near full capacity and annually producing more than 100 million tons of steel. Today, we are producing less than one half of that amount as demand for steel and the products that contain steel, such as automobiles and appliances, has crashed. But even as demand has plummeted, imports of finished steel have hardly changed at all in real terms. The result of this behavior by our trading partners is that as a percentage of steel consumed in the United States, imports' share of the domestic steel market has doubled versus a year ago

at this time. Finished steel import market share in March was estimated at close to 30%, with China providing the largest volume of finished imports from offshore. Directly relevant to your climate policy considerations, China's steel industry now accounts for 50 percent of the world's production of CO2 from steelmaking—approximately equal to all the other steel mills in the world combined. And according to a recent poll, only 18 percent of Chinese companies believe they could do well economically if they adopted sound environmental policies, as reported in a 2009 assessment of environmental regulation of the steel industry in China issued by the Alliance for American Manufacturing.

In light of these practices, legislation must address the anticipated time lag before other nations invest similarly in reducing carbon emissions.

Mr. Chairman, we appreciate the opportunity to comment on your discussion draft and hope that as this process moves along, you will avoid "one size fits all" solutions. What works in one sector of our economy may not work well in another. In a real sense, whether domestic energy-intensive manufacturers will survive is a "transition rule" issue. So long as everyone has to play by the same rules, the domestic steel industry will compete and thrive. But if our competitors are granted an advantage, steel production will move offshore. The new energy efficient economy will require a lot of steel, the most recycled material in the world. Mr. Chairman, let's keep making it here in the USA, the best and cleanest place in the world to make it.

Mr. MARKEY. Without objection, so ordered. Thank you.

Ms. BALDWIN. Tia, I appreciated your testimony and telling us a little bit about the real diversity among the stakeholders on Governor Doyle's task force on global warming and the fact that you were able to reach near consensus on a number of recommendations that you note are similar to the provisions contained in the draft discussion bill before us. We have also taken in this committee testimony from representatives of U.S. CAP that had a similarly diverse array of stakeholders and they were also able to reach substantial agreement around a blueprint for taking action on climate change, and I see similarities when I look across the Congress and this committee in terms of the diversity of interests and diversity of districts that we represent. So in many ways we have a similar task immediately before us in trying to gather support and gain a majority. While we would love to have a nearly unanimous vote in this committee on climate change legislation, I think we will be happy if we get a good majority vote on this. But I wonder if you can tell us about your yearlong experience leading the governor's task force on global warming with these diverse stakeholders, how they were able to come together to reach a set of goals and reduction targets that satisfied so many varied perspectives and if you could tell us particularly what were some of the key issues that you had to surmount and the perhaps significant points of contention that you were able to overcome.

Ms. NELSON. Yes. Thank you for your question. Part of our success was, I think we just fatigued everyone. We were at it for—and I see that Chairman Markey is pursuing the same strategy, so I wish him a lot of luck. We met for—we were originally set to meet for 9 months. We met for well over a year and it was a difficult process. I think everyone came to the table in good faith, which obviously helped quite a bit. Ultimately what we did, and I give enormous credit to my co-chair for this particular strategy, after listening to multiple stakeholders about multiple strategies, agreeing that we wanted strong targets, recognizing that we would need to dramatically increase investments in conservation and efficiency and renewables to meet those targets, and then realizing that we couldn't without a cap-and-trade program, it became clear to Roy and I that we were going to have to put in front of the group in essence a straw man proposal that we hoped was delicately balancing the tradeoffs between constituencies without compromising the environmental integrity of our product, our report which the governor accepted in its entirety, I failed to mention before, and which is going to be introduced hopefully in the legislature, we are drafting it now, in the fall.

For industry, manufacturing, utilities, the cost containment issue was huge so the way we kept them on board was a very frank, you know, recognition that Wisconsin will have challenges in competitiveness as a heavy coal dependent, heavy manufacturing, and our manufacturing sector tend to be more energy intensive. We have to be extremely sensitive to global competitiveness. And so by paying a lot of attention to the cost containment measure, we moved our RPS up, our existing RPS, and then increased it two and a half fold, the same as in the chairman's draft bill, 25 by 25. So really the compromise, for the environmentalists the cap and the integrity

of the cap was essential, and for industry it was essential to recognize that Wisconsin is in a very economically vulnerable position being so heavily dependent on coal, and this allocation proposal that we came up with that allows for a transition—this is just for a limited period of time—it allows us to transition. Really that allocation got us where we needed to go.

Ms. BALDWIN. Thank you.

I have a question. I will say that I have very limited knowledge on the market structure discussion but I find it incredibly important on this and so maybe you can help me understand it better. I will start with Mr. Anda and certainly Mr. Royal can comment on this. As I understand the futures market, you have hedgers and speculators. You have people who would want to possess futures on carbon that might actually use them some day because they are emitters, and then you have those just want to be a part of this market. Do we treat these two groups differently? Do you propose that we do? And how do we—especially with speculators, what sort of safeguards would you advise us to build into this market as we develop it?

Mr. ANDA. Well, I will let Carl perhaps handle the point about speculators but it is important that the market be open to all. The two points that I wanted to make are, number one, let us have that derivative trading in a place where we can see it, not over the counter but on listed, transparent exchanges, number one. Number two, market-to-market accounting is fine for financial institutions and hedge funds. They do that anyway. But let us create something for the covered entities where they can effectively cover their carbon risk using futures and options, because we might not give them any allowances to bank. Let us let them use those instruments, and if their intention is to submit for compliance, let us have accounting for them that in effect is special because they would treat this as a deferred expense whereas a speculator would market to market.

Mr. ROYAL. Just very briefly, you do need to have speculators in the market, otherwise called liquidity providers, because when somebody wants to buy you need somebody on the other side to be the seller or else you don't have a market. In terms of treating them differently, I think you can. I mean, for example, in the area of position limits, an emitter would need to have a larger quantity of allowances because, you know, it actually needs it for its business where as a speculator is doing it just to provide liquidity for the market and so wouldn't need to have such a large limit, and I think the regulatory agency could, you know, establish different standards for those different types of market participants.

Ms. BALDWIN. Do you have any early guidance for us on what sort of position limits we would be looking at?

Mr. ROYAL. I don't know the market well enough to how it is going to develop to be able to answer that. I think that is probably an area that might be delegated to the agency that is in charge of the market.

Mr. ANDA. I would just comment that the exchanges today do a pretty good job of setting limits because their members don't want to create excessive risk within the exchange, so where things get

onto exchanges, you know, things tend to avoid blowups. When they are off exchange, that is a different story.

Mr. DONIGER. My colleague, Andy Stevenson, who is in the same field as these gentlemen, in our written testimony we recommended 5 percent position limits in the futures for any given vintage of a future, delivery date, with an adjustment that if an emitter had the kind of need that Mr. Royal suggested, that they might be holding 5 percent above their own needs. But a 5 percent seems to be an adequate amount in our judgment.

Mr. MARKEY. The gentleman's time has expired. Let me turn to you, Ms. Mulroy, and I am very intrigued by your blue bank idea. I had testimony from the mayor of Philadelphia recently and he talked about the need for some way of dealing with his water supply problem and the protection of his watershed. Could you tell me how, let us say for Philadelphia's purposes, a blue bank might work to deal with those two problems?

Ms. MULROY. Yes, sir. I am not as familiar with Philadelphia as I am with New York, who shares a similar concern to Philadelphia, and actually are a member of the Climate Coalition that eight of us have formed in the United States. For them, the question is, increased flooding will contaminate reservoirs that today feed New York City and do not require treatment. At some point in time they are going to have to build treatment facilities which will cost them billions of dollars for treating water they have never had to treat before, because as those flood flows increase, it will contaminate those reservoirs.

Mr. MARKEY. So how would the blue bank then work for New York City?

Ms. MULROY. For the blue bank, let us say in the case of New York, it would help them finance those treatment plants to protect New York City and allow them to build them in a timely fashion and not sit through 3 years of a boil order in New York after the contamination has occurred.

Mr. MARKEY. Interesting. So just so I can understand a little bit about this concept that you have, does it have a coalition behind it or is this an idea that you have personally?

Ms. MULROY. No, there is a coalition of water agencies in the United States behind it. I think all of us whether we were in Florida, whether we are in New York or whether on the West Coast know that the way we have been managing water resources for the last 100 years is obsolete and whether it is investments in helping our communities make changes, investments in conservation that we can capitalize or whether it is new facilities because our water supplies are either being contaminated or disappearing before our eyes. We know we are facing those challenges.

Mr. MARKEY. Thank you.

Mr. Anda and Mr. Royal, let us take the European marketplace right now, and talk a little bit about how the price of a carbon credit has fluctuated between $40 a euro and $6 or $8 a euro. Is that a good thing, a bad thing or that is the way the market works and it is better than the government making decisions about where the price should be and differing economic circumstances. Mr. Royal?

Mr. ROYAL. Yes. I mean, I am not familiar with that exact market but I think in general, I mean, markets do go up and down and

that is one of their functions. I think in this context, it could even serve a useful purpose because it would be countercyclical because in times of booming economies, you would expect more demand for the allowances and that would tend to increase prices at a time when it could be afforded whereas in times like we are having now where industries are closing plants, you would have less need, less demand for the allowances which would then tend to drive the price down, so in a way having a market-based mechanism would be self-correcting and it would, you know, help smooth out some of these economic cycles.

Mr. MARKEY. See, that is how I view markets, but, you know, some people would say that is an indication of a market not working, but I would basically argue that is a perfect example of the market working.

Mr. Anda, your comments.

Mr. ANDA. I just think two things. First of all, to highlight the point about the major factor in the market is the global economic recession. If you look in the EPA's recent work on evaluating your draft discussion, there was an interesting chart in there that showed that in 2006 our business as usual or reference scenario for emissions in the United States was, we were going to go from 6 billion to over 8 billion. The current numbers go from 6 billion to about 6.3 billion. So think about the impact. We have really changed our assumptions about how much we are going to emit without policy where those same factors have driven prices down in Europe, point number one.

Point number two, let us not forget that the European market ends on the last day of 2012 and so while allowances are bankable into the next period, we don't really know what the next period is going to be so I don't think it is fair. The world emits, as you know, 30 billion tons of emissions from CO_2. A little over 2 billion are covered in the European trading system. They were bold enough to start with a small market. When we come in, I think we will have less volatility and a bigger market.

Mr. MARKEY. Thank you.

Mr. Doniger?

Mr. DONIGER. If I may add two points to that, and partial response also to Anne Smith's comments about volatility, the $40 mark was hit at a point in the early experiment with the E.U. when they received for the first time accurate information about emission levels. In other words, they started their program without full information about how much was being emitted in the first place and there was a systemic overestimate of how many emissions there were going to be and people paid more for the allowances on the basis of that. When the data came in, there was an adjustment. This problem will not happen here because we already have much better data about actual emissions from the power sector, and thanks to the EPA's proposal of a more comprehensive emissions inventory system, even in advance of your legislation, we are going to have much better information across the board when the program starts.

The other thing is, as Jon was just mentioning, if a program comes to an end, then there is a possibility that the allowances become valueless near the end. That is the advantage of your sketch-

ing out a long-term carbon budget with a declining cap, and since there will be long-term continuity, there won't be that problem of the program coming to an end or appearing to come to an end and people having doubt about what the allowances are worth.

Mr. MARKEY. There is very little likelihood of the European program coming to an end either.

Let me go to you, Mr. Kovacs. Some of the members on the Chamber board, Duke Energy, Alcoa, testified before this committee earlier this week, and while your board represents a broad coalition, it appears that many and possibly most of your members support a domestic policy that would set goals and the means for reducing the overall levels of U.S. global warming pollution. How do you reconcile the Chamber's position with those of some of the firms that sit on the Chamber board who are testifying before our committee asking us to pass a cap-and-trade bill?

Mr. KOVACS. I guess I thought you would never ask. Look, within our federation, we have roughly about 3.5 million members, 3,000 state and local chambers and 1,000 trade associations. That is an enormous difference, so when we analyze a bill like yours, for example, and there was an example I used today, let us just take the application of the new source performance review. You have one group which is relatively small in numbers, 30, that would sit there and literally be exempt from the new source performance review because of the caps. Then you have the second tier, you know, thousands of members that would be subject to it, and then you have the 26 million small businesses out there that in some way have no idea whether they are going to be subject or not but could be challenged, and every one would be hit by an attorney's fee, so what we tried to do is, we take the entire policy. We apply our principles to what it is you are trying to do and we make a determination of whether or not it meets those principles, which are, does it harm the economy, does it promote competitiveness, does it accelerate technology, do we have enough energy in the environment and how is it going to affect the international structure, and that is how we do it.

Mr. MARKEY. Is the Chamber willing to come forward with proposals that tell us what they would be comfortable with as the regulatory scheme?

Mr. KOVACS. I thought you would never ask. We actually had a debate on this issue today, 3 hours, where we had the proponents of a carbon tax, the proponents of a cap and trade representing U.S. CAP and we had quite a spirited discussion, and you know, frankly, it was probably the most optimistic discussion I have had. I don't know that I am free to tell you the results but there certainly was a lot of talk and a lot of willingness to find out how it is we get reductions in a way that helps the economy.

Mr. MARKEY. And your statement that Congress should not mandate the use of technologies before they actually exist, we don't have any mandates for any specific technologies in the legislation so I am just wondering what you are referring to.

Mr. KOVACS. I will give you an example. Probably the biggest issue that we care about is that we don't think you can get enough energy back in the system as a substitute for what you are going to take out. I will give you an example, clean coal, the Bard facility

in Ohio. Here was an example where they went through the DOE loan guarantee process. They literally got all of their permits. They were about to break ground and then they were notified by several environmental groups that they were going to sue. DOE then decided that the risk of that lawsuit was so great, they were going to pull the loan guarantees. This is clean coal, and so what happened is, the company walked away from the project, and if that was the only project, we probably wouldn't care but we have right now looked, and we have only been doing this a month, we have got about 300. I mean, there are other, it is not just energy. The other day we had a presentation on cell towers and someone said well, there are 800 on hold because of this. This is a big issue and we have to deal with it, and we got a lot of cooperation in the stimulus plan when we started off, how do we move this through. We wanted a time limit, and Senator Boxer and Senator Barrasso finally came to an agreement that we would use the most expedited route. But this is an issue that I think if you can solve and start making us feel like we are going to have real energy in this country and it is not going to get stopped, you are going to then find that some of our major concerns are really starting to be addressed.

Mr. MARKEY. Again, we are not mandating any particular technology in the legislation, but I would say this to you in terms of kind of an extension of the optimistic meeting that you had today. Were you in two places at once or how did that work today for you?

Mr. KOVACS. That was from 8:30 to 12. I am not closing in on the number of years of hearings that you have had.

Mr. MARKEY. No, what I am saying is, I thought that you might be, you know, ubiquitous and omniscient, like super Chamber of Commerce. In 2008, there were about 9,500 new megawatts of natural gas capacity installed in the United States. There was about 1,500 new megawatts of coal installed in the United States. But the really, I think, kind of "O. Henry ending" to this is that while there was no new nuclear, there hasn't been for 15 years and there won't be for another 10 years because it takes that long to build a new plant, there were 8,500 new megawatts of wind installed in the United States in 2008, 400 new megawatts of solar, 150 new megawatts of geothermal and 100 new megawatts of biomass, so that is 9,000, more than 9,000 new megawatts from renewables. In other words, 45 percent of all new installed capacity in the United States in 2008 were renewables, and that is before we pass a national renewable electricity standard. That is before we build incentives for a low-carbon economy. So while we are not mandating any specific new technology, it is obvious that the technologies are there and would be improved as the economies of scale kicked in as the market grew larger and larger. So I am a little bit perhaps more of an optimist because of my own experience with the 1996 Telecommunications Act, which I introduced in 1993 before this committee. After it finally passed in 1996, we went from a point where not one home in America had broadband in 1996, not one home, to a point where 10 years later there is a whole new vocabulary, YouTube, Google, eBay, Amazon, Hulu, thousands of companies, millions of new jobs. They didn't exist because the market wasn't there before 1996 for broadband. It was all narrowband.

So here we are talking about the same kind of a situation where there was an equivalent copper wire that we just had to move to digital, we had to move to broadband, we had to move to fiber optic. Well, we have another copper wire for electricity in America and it really hasn't been improved upon, and I agree with the chairman when he says, you know, we might go back 70, 80 years and the truth is that Thomas Alva Edison would recognize our electricity grid if he came back today. We need a revolution. But I think that the problem that I have with the Chamber is that the Chamber opposed the Telecom Act of 1996, and it was basically making the same arguments, you know, how do you move from a black rotary dial phone to a world where everyone has got devices in their pockets and you have all these new, you know, companies that are going to be created, and so you are right, it does take a little bit of a leap but a leap based upon our own American experience with technology and the entrepreneurial spirit. So my hope is that the meeting that you had today will lead to a more optimistic view about what the private sector can do when a new marketplace is created and unleash the opportunities for thousands of companies that will be created, that will create a whole new vocabulary 10 years from now when people look back at this antiquated energy system which we have. And by the way, I would include in that a carbon capture system that probably won't look anything like anyone is talking about today and probably involves enzymes and acetic acids that are reformulating the way in which coal is burned and turning it into a positive product. But we have got to get on with that business, Mr. Kovacs, and I really urge the Chamber to just look back at its own history, especially with the Telecommunications Act and opposing that.

Mr. KOVACS. Do you want me to respond?

Mr. MARKEY. Yes, please.

Mr. KOVACS. On the telecom issue, first of all, I wasn't there but my recollection is, especially as it had gone into broadband, is that they didn't want regulation on it because the wire system as being a regulated system was drying up and they needed a non-regulated system to put in $150 billion in investment. Here in this Act, all I am trying to say is, you have got a structure here which layers cap and trade in two capacities, then you have regulations, then you have litigation. What I am saying is, is that I don't know that that structure will work, and the fact that you have 8,500 new megawatts of wind capacity, that is wonderful. What we are saying is, to get to the 10 percent you need 115,000. That is a long leap and it is a lot of land mass and it is a lot of litigation and——

Mr. MARKEY. Can I say this? It is really not a big leap if you just take us from now to 2025 and you add just—well, it is actually nine total and just go nine times 15 years or 16 years, we have got the number. That is if we don't do any better between now and 2025 if we just keep the pace that we are right now before we pass a national law. So all I am saying to you, Mr. Kovacs, it is such a rear-view-mirror view of what technology can accomplish. You know, if we look out the windshield towards the future, just using 2008 as the metric, we wind up doing it, creating the jobs here and just revolutionizing our Nation's relationship with imported oil and with greenhouse gases. So that is really I am—in a lot of ways, you

know, we do need the Chamber of Commerce to look at this and to look at it optimistically and to realize that the benefits will flow right across the whole society.

And I will just give you one other example and I won't hold you beyond that. I am going to ask each one of you to give us in 30 seconds what you want us to remember about your testimony. But here when I was the chairman, we moved over 200 megahertz of spectrum in 1993. Why did we do that? We took it from the defense department, we gave it over to the Department of Commerce because there were only two cell phone companies in the United States. They were both analog. They were both charging 50 cents a minute. They both projected relatively limited American use of cell phones. Obviously at 50 cents a minute there weren't a lot of people going to be carrying that around in their pocket. So what we did was, we moved over the spectrum but said for the third, fourth, fifth and sixth license in every marketplace from Philadelphia to Las Vegas, they couldn't be owned by the first two companies. Well, guess what the third, fourth, fifth and sixth companies did? They went digital. By 1995, their price was under 10 cents a minute and the first two companies, guess what? They both had to go digital and they were both under 10 cents a minute and then it was a race on to see can we put pictures on that phone, can we put data on that phone, can we have a huge basket of minutes, and here we are today all walking around, everyone in this room, with one or two devices in their pocket, none of it possible before that.

So I guess what I am saying to you and really I would say to everybody who is interested in this issue, is that with just a little bit of optimism, not looking at some rocket science or putting a man on the moon but just what is already happening in America. If we gave the right boost to it, we could have this revolution just so far exceed anything that we are even talking about today. That is what happened in the telecommunications sector, both wireless and wireline, and I think if we give people a chance in a new marketplace that the same thing will happen, Mr. Kovacs. So that is my message and I just hope that it is received in the Darwinian, paranoia-inducing, market-oriented way that we are going to try to construct this bill and put in the right market protections, transparency, anti-fraud, anti-manipulation and then just step back the way we did after 1996 and we don't know who the winners and losers are going to be. We don't know if there is going to be a NYNEX or a Bell Atlantic or a Bell South. All we know is that the companies that win will be the ones that adapt quickly and that is how it should be in our country, really Darwinian, and in a lot of ways, I hate to say it, that is what we are talking about for our planet too. It is a real challenge for us in this Darwinian moment that we can adapt so that we can put in place the incentives that make people rich while also protecting the planet.

So we will come back to you, Ms. Nelson, and we will give you an opportunity for 30 seconds to tell us what it is that you want us to remember.

Ms. NELSON. Thank you, sir. You deserve the endurance prize. I am grateful for your interest. My message is simple. Help States like Wisconsin mitigate costs without compromising the integrity of

the emission reduction goal and we will be your partner in finding a climate change solution.

Mr. MARKEY. Thank you, Ms. Nelson.

Mr. Becker.

Mr. BECKER. Thank you. I have three points to make. The first is that you and Congressman Waxman and others who worked on this bill should be very proud of your efforts. It is a very good bill. The second point is, as you know full well, this was a compromise and yet this will be probably be the high water mark before this gets signed into law. It is going to undergo significant change and it is going to get weaker. And the third point is, in light of that, it is very important that you strengthen the federal, State and local partnerships and preserve the rights of States and localities to not only fill whatever gaps exist but to be able to address emerging problems in the future.

Mr. MARKEY. Thank you, Mr. Becker.

Mr. Royal.

Mr. ROYAL. I will be very brief. In a cap-and-trade market, it is essential that Congress create a regulatory framework that protects the integrity of the market and ensures that the market achieve its environmental purpose.

Mr. MARKEY. Thank you, Mr. Royal.

Mr. Anda.

Mr. ANDA. Three technical comments and one other. Increase the initial flow, think about a central marketplace to get your best execution requirement, the CLOB for carbon I talked about, and make sure that emitters can use the exchange-traded derivatives that you want to create. Lastly, I would just say I heard a lot of testimony today. Chairman Markey, I hope that you are in a position as Mr. Gore was this morning to be a witness. Your comments are great. I think they should be—I would like to see them expanded in a nice half-hour, hour format and good luck to you in your work.

Mr. MARKEY. Thank you, Mr. Anda, very much.

Mr. Doniger.

Mr. DONIGER. Thank you, Mr. Chairman. What this committee is doing is writing the next generation of the Clean Air Act and we have the existing Clean Air Act and what you are doing. We need them both and we need these things to merge and it can be done in a way that makes for an effective carbon control program and an integrated system that takes advantage of the best of the clean air laws that we have already.

Mr. MARKEY. Thank you.

Ms. Mulroy.

Ms. MULROY. Yes, Mr. Chairman. We in the water industry, many of us have been anxiously awaiting this day where we in this country take this issue of climate change head on and begin to make the necessary changes for us. Because it is a decadal issue, we will feel the impacts and we are looking for assistance for research which is so desperately needed to quantify those implications and in making the necessary adaptations that we have to make. Thank you.

Mr. MARKEY. Thank you.

Dr. Smith.

Ms. SMITH. Two points. First, get back to cost minimization by stripping out the prescriptive and redundant measures so that that market-based approach can work in its Darwinian glory, and by incorporating features that provide price predictability so that you can unleash those investments. Second, I would like to correct the record. The prices in the E.U. did go up in the range of $40 a ton twice, once during the early phase and the second time just about a year ago. So it is not just a phenomenon of the learning phase. Thank you.

Mr. MARKEY. Thank you, Dr. Smith.

And Mr. Kovacs, you have the final word of our historic hearings.

Mr. KOVACS. Well, thank you for your good humor, if nothing else. I just wanted to say the success of broadband was really due a lot to what you did but also you didn't regulate it and I think that that is something we need. I am not saying we shouldn't have a regulatory system here but if you are going to do it, it needs to be transparent, understandable. You need to avoid overlapping and confusing regulatory structures between the Clean Air Act and whatever it is you are going to do. You need to find some way to limit litigation so we can get the projects moving, and I think at the end you need to appreciate the fact that if we are really going to reduce GHGs in the atmosphere, we have to have some way in which to engage the international community and we would suggest that the way to do that is an international treaty.

Mr. MARKEY. Thank you, Mr. Kovacs, very much. The paradox of telecommunications regulation and regulation here is that you actually need new regulations in order to undo all of the old regulations that protected industries against change and that is the paradox, that in order to create a truly competitive marketplace that just doesn't play into the needs of the largest utilities whether they be telephone, cable or electric utilities because all of the laws have been written on their behalf at the state and federal level for 100 years. You actually have to create a whole new set of laws, of regulations that ensure that the smaller distributed competitors can then begin to deploy their technologies. That is the paradox. But ultimately you wind up with many, many more, thousands of additional competitors trying to provide information services or here they will be energy and efficiency services for our country. And so that is kind of the paradox here, and while it seems as though we are regulating, what we are really doing is undoing the regulatory protection that was given to these industries for 100 years while the assumption of monopoly on the wires was taken for granted when in fact it is just the opposite if you change the regulatory dynamic. So that is what we are trying to do in this legislation. We have already done it in telecommunications. We have done it in cable. And this is the final wire going into the home. This is the final set of issues that we have to deal with across the board, and if we do it, then we can get out of the way because people's interests in becoming millionaires and billionaires will completely trump anything that we can do because they will be out turning green into gold all across our country with their new technologies and their deployment.

This has been a historic set of hearings. We thank all of you for your participation, and please stay close to us over the next month or so. We are going to need your ongoing advice. Thank you.

[Whereupon, at 5:50 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

June 17, 2009

Dr. Daniel Sperling
Director, Institute of Transportation Studies
2027 Academic Surge Building
University of California, Davis
Davis, CA 95616

Dear Dr. Sperling:

Thank you for appearing before the Subcommittee on Energy and Environment on April 24, 2009, at the hearing entitled "The American Clean Energy and Security Act of 2009".

Pursuant to the Committee's Rules, attached are written questions for the record directed to you from certain Members of the Committee. In preparing your answers, please address your response to the Member who submitted the questions and include the text of the question with your response, using separate pages for responses to each Member.

Please provide your responses by July 8, 2009, to Earley Green, Chief Clerk, in Room 2125 of the Rayburn House Office Building and via e-mail to Earley.Green@mail.house.gov. Please contact Earley Green or Jennifer Berenholz at (202) 225-2927 if you have any questions.

Sincerely,

Henry A. Waxman
Chairman

Attachment

The Honorable Jay Inslee

1. Do you agree with Mr. Drevna that an LCFS is redundant with a cap and trade system, or do you see it as a complimentary policy?

2. Can you address his point regarding tar sands? Do you believe that the LCFS treats them fairly?

3. Do you believe Mr. Drevna's statement that the LCFS could be more carbon intensive than the RFS?

4. You said that you consulted with oil companies when developing California's LCFS. Whom did you work with, and what kind of input did they give? Were you able to address their concerns?

5. You mention the need for aggressive reduction targets – do you believe that the targets in the bill are sufficiently aggressive? If you believe they could be more aggressive, how much more, and how would you propose we achieve those targets?

6. You recommend integrating the RFS into the LCFS as soon as possible. How do you recommend we do this, and under what timeline do you think this is feasible?

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Honorable Jay Inslee
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Dear Congressman Inslee:

I am responding to your questions regarding the low carbon fuel standard, in response to a letter of June 17 from Congressman Waxman, regarding testimony on April 24.

1. I strongly disagree with the assertion of Mr. Drevna that an LCFS is redundant with a cap and trade system. Unlike the LCFS, the cap and trade system does not consider the full lifecycle emissions of transport fuels. And thus they are not redundant. Moreover, it is well understood that there are large market failures and market conditions that impede the introduction of low-carbon fuels. With cap and trade programs, as currently conceived, it is likely that oil suppliers would respond by buying credits from electricity and other GHG emitting sectors and make few investments in low-carbon fuels. The LCFS would stimulate much more innovation and investment in alternative, low-carbon fuels than would a cap and trade program. The LCFS can be thought of as a complementary policy in the sense that it is compatible with cap and trade and that it would lead to further GHG reductions.

2. The LCFS treats tar sands fairly. The LCFS is based on a scientific performance-based standard. It treats all fuels in the same unbiased scientific way—based on their lifecycle GHG emissions. The LCFS does not preclude or ban tar sands, nor any other fuel source. In fact, it stimulates more efficient and low-carbon ways of producing tar sands (and all other fuels). I have been told by senior executives in the oil industry that gasoline from tar sands could be produced with a smaller carbon footprint than gasoline from conventional oil. Lower-carbon fuels from tar sands would cost somewhat more to produce, but the cost would still be competitive with most forecasted oil prices.

3. Mr. Drevna is wrong in stating that the LCFS could result in more carbon intensive energy. By its very design, it would not. The LCFS sets a GHG performance standard for all transportation fuels that requires fuel suppliers to determine how best to reduce GHGs (including carbon emissions). There is no plausible scenario in which an LCFS could increase GHG emissions.

4. During the initial development of the LCFS in California, our university team of researchers invested hundreds of person-hours in meeting with teams of executives and experts from ExxonMobil, Chevron, BP, Shell, ConocoPhillips, Valero, Western States Petroleum Association, and many delegations from Canada that included industry representatives. We met with each of these companies multiple times, with most meetings lasting many hours and including 3-5 individuals from those companies. Several of the companies provided us with strawman proposals for the LCFS, which we spent many hours discussing with them. I estimate that we physically met at least 20 times with oil industry delegations and that oil companies invested at least 200 person-hours in meetings with us—plus untold more hours in phone conversations and email interactions. After the University of California team produced its reports in summer of 2007, the California Air Resources Board followed up with many more meetings and workshops with the oil industry. I was not involved personally in these meetings, but many were held jointly with the Western State Petroleum Association.

5. I believe the LCFS targets included in the early Waxman-Markey bill (0% GHG reductions through 2022, and 5% in 2023 when the RFS is rolled into the LCFS) are weak. If we are to reduce oil imports and move on to a trajectory of shrinking GHG emissions from the transport sector, it is necessary to be more aggressive. But given delayed investment in low-carbon alternative fuels and the long lead time required to replace oil use, I believe that the target of 5% reduction in 2023 could be justified. However, GHG reduction targets after 2023 would need to be steadily tightened to assure continuing reductions in oil imports and GHG emissions.

6. I recommend integrating the RFS and LCFS as soon as possible. It could be done easily and quickly if there were the willingness to do so. The LCFS is an inherently superior policy instrument to the RFS in the sense that it better harnesses market forces, includes all low-carbon fuel options (not just biofuels), does not mandate any fuel or pick any winners, and relies on scientifically derived performance standards. The LCFS will stimulate more innovation and would reduce GHG emissions and oil use at less cost than the RFS. The RFS could be transformed into an LCFS with relatively little effort. The regulated parties in the oil sector are the same, and the RFS volumetric requirements could be easily converted into GHG requirements.

Sincerely,

Daniel Sperling
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