S. HRG. 113–553

KEYSTONE XL AND THE NATIONAL INTEREST DETERMINATION

HEARING

BEFORE THE

COMMITTEE ON FOREIGN RELATIONS UNITED STATES SENATE

ONE HUNDRED THIRTEENTH CONGRESS

SECOND SESSION

MARCH 13, 2014

Printed for the use of the Committee on Foreign Relations

Available via the World Wide Web: http://www.gpo.gov/fdsys/

U.S. GOVERNMENT PUBLISHING OFFICE

93–175 PDF WASHINGTON : 2015

For sale by the Superintendent of Documents, U.S. Government Publishing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
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KEYSTONE XL AND THE NATIONAL INTEREST DETERMINATION

THURSDAY, MARCH 13, 2014

U.S. SENATE,
COMMITTEE ON FOREIGN RELATIONS,
Washington, DC.

The committee met, pursuant to notice, at 11:19 a.m., in room SD–419, Dirksen Senate Office Building, Hon. Robert Menendez (chairman of the committee) presiding.

Present: Senators Menendez, Boxer, Udall, Kaine, Markey, Corker, Johnson, and Barrasso.

OPENING STATEMENT OF HON. ROBERT MENENDEZ, U.S. SENATOR FROM NEW JERSEY

The CHAIRMAN. This hearing of the Senate Foreign Relations Committee will come to order. We welcome our distinguished panel of experts and advocates to address something that has long been an issue of practical and political concern for many in this town and across the Nation. Today we are here to find answers and shed more light than heat, I hope, on the issue; hear the facts and the rationale on both sides.

The proposed Keystone XL pipeline cross-border segment would link Morgan, MT, at the Canadian border to Steele City, NE. It would have a capacity of 830,000 barrels of tar sands per day. Later this year, the State Department will determine whether the project is in the national interest and that is the question we will hear testimony about today from our four panelists.

I hope this can be a balanced, thoughtful hearing, a hearing that puts aside some of the politics that have surrounded this debate and deal with the underlying question of what is in our national interest. I hope we can build a record on both sides of this debate that may not result in agreement, but may result in more agreed-upon facts.

Proponents of the pipeline point to jobs, economic development, and energy security as reasons why the pipeline should be approved, and claim that the alleged harm to the environment is overstated. Opponents raise climate change concerns, concerns about potential spills, and downplay any energy security or economic advantages of the pipeline. That is not to say I do not have my own views. I do, but I want to hear the facts from our witnesses and have a full-throated open discussion.

Before I conclude, I want to introduce into the record a letter written on behalf of the 500,000 members of the Laborers International Union of North America that is signed by their

distinguished General President, Terry O'Sullivan. The letter strongly supports the Keystone XL pipeline, and if there is no objection to that I will enter it into the record. President O'Sullivan has made it very clear about his support of the pipeline and we offered him an opportunity to include his position on behalf of his members in the record.

I have called for this hearing because this committee has been a bastion of bipartisanship when it comes to such issues, and with the help of Senator Corker, the ranking member, I know we can have a rational discussion today. Senator Corker and I believe this is a debate worth having and I want to thank the ranking member for helping us put this hearing together and the four witnesses before us today to take time to provide their insights.

With that, let me turn to the ranking member, Senator Corker, for his remarks.

OPENING STATEMENT OF HON. BOB CORKER, U.S. SENATOR FROM TENNESSEE

Senator CORKER. Mr. Chairman, thank you, and thanks to all of our witnesses for being here. I understand we have two very divergent views on Keystone and I think we can all learn from both of those views. I want to thank you again for the markup we had yesterday and the strong bipartisanship shown with the support of Ukraine.

It is unfortunate that the administration declined to testify here today, very unfortunate. I understand they do not want to prejudice the outcome of the national interest determination process they are going through right now, but I do think it would have been important and is important that they explain to us all of the factors they will consider in making this decision.

I hope today we can look at past determinations—I think that will be very important to us—and circumstances and come up with a clear picture of what it should be. Both sides of this issue would agree in some respects that the United States national interest is indeed at stake here.

The administration is not going to be able to be indecisive at the end of this process, which hopefully will end very soon. I am certainly interested to hear both sides, but to me the link between the completion of the Keystone pipeline and ensuring our energy security, thus our national security, is clear and compelling. Despite years of rigorous review and strong public support for completion of the pipeline, the administration is now the only thing standing in the way of thousands of American jobs, with the potential for many more, and access to a large supply of North American energy.

Based on what I understand from similar pipeline decisions, for Secretary Kerry or the President to determine that Keystone is not in our national interest they would, in effect, have to embrace the idea that this single pipeline, not just fossil fuels in general but this single pipeline, would have a clear, demonstrable contribution to the global climate catastrophe. Such a determination would seem far beyond the bounds of what the process has been in the past and what we would expect it to be now.

The President's apparent climate standard for the approval of the pipeline, announced in a speech last summer, appears to ignore

the findings of exhaustive concrete environmental and economic development analysis that demonstrate the benefits we would reap from this project, which would also strengthen ties with Canada, our largest trading partner.

In fact, the State Department has already determined that Keystone is unlikely to affect the rate of oil sands extraction or demand for heavy crude. Therefore, when compared to other forms of transporting oil the pipeline is likely to provide a safer and more environmental friendly method. Also, I am not sure how refusing to complete this project will do anything to lessen our Nation's dependence on fossil fuels.

So I look forward to hearing your thoughts on this and other aspects of the issue, and I want to thank the chairman again for calling this hearing.

The CHAIRMAN. Thank you, Senator Corker.

Let me introduce our panelists. Gen. James L. Jones is currently the president of the Jones Group International. Over his distinguished 40-year career in the Marine Corps, General Jones served as Supreme Allied Commander in Europe and as the 32d Commandant of the Marine Corps. Following his retirement from the Marine Corps, General Jones served as Special Envoy for Middle East Security and as the President's National Security Adviser. We welcome you, General, back and thank you for your service to our country.

Michael Brune is the executive director of the Sierra Club and formerly of the Rain Forest Action Network. Mr. Brune is a fellow New Jerseyan and we welcome him before the committee to listen to his insights.

Dr. James Hansen is an adjunct professor and director of the Earth Institute Program on Climate Science Awareness and Solutions at Columbia University. For more than three decades, Dr. Hansen served as the head of NASA's Goddard Institute for Space Studies and his scholarly work has made him a respected leader in the field of climate science.

Let me say that in the past both Dr. Hansen and Mr. Brune have been both arrested at protests of the Keystone pipeline. I cannot guarantee it, but I hope this proves to be a more comfortable experience.

Finally, our final panelist today is Karen Alderman Harbert, president and CEO of the Institute for 21st Century at the U.S. Chamber of Commerce. She previously served as Assistant Secretary for Policy and International Affairs at the U.S. Department of Energy and as the Deputy Assistant Administrator for Latin America and the Caribbean at USAID.

We thank you all for joining us, and your full statements will be included in the record without objection. I would ask you to summarize your statements in around 5 minutes so that the members can have a dialogue with you, and I will ask you to testify in the order in which I introduced you.

General Jones.

STATEMENT OF GEN. JAMES L. JONES, USMC [RET.], PRESIDENT, JONES GROUP INTERNATIONAL, VIENNA, VA

General JONES. Thank you, Mr. Chairman and Ranking Member Corker, and members of the committee—it is a pleasure to be here today. It is an honor to be here to share my views with you about the national interest at stake in the Keystone XL pipeline determination. Thank you for making my fuller testimony a part of the record. If I could, I would also recommend that we provide for the committee's interest a 2-year study done by the Bipartisan Policy Center, where I cochaired a study with former Senator Trent Lott, former Senator Byron Dorgan, and former EPA Administrator Bill Reilly, which was a very bipartisan effort on tackling our overall energy future.

[EDITOR'S NOTE.—The Bipartisan Energy Council report mentioned above was too voluminous to include in the printed hearing. It will be retained in the permanent record of the committee.]

General JONES. Mr. Chairman, you requested that I testify today on the U.S. geostrategic and national security interests associated with the approval of the pipeline, interests that in my view are intrinsic to America's energy security and leadership in this century. I hope that my testimony will be useful to the committee's deliberation on both issues, as they will largely determine the direction of our Nation's future, a cause to which, as you pointed out, I have dedicated my 42 years of professional life both in and out of uniform.

It is both significant and highly commendable that the Senate Foreign Relations Committee is holding a hearing focused on an oil pipeline. I think it speaks volumes about energy's role in modern international affairs, a message that resonates especially powerfully today in light of events playing out in the Ukraine.

The fact that energy security is vital to a nation's domestic economy is well established. The Crimean crisis, however, is proving once again that energy security is also a central pillar of global stability. This current crisis serves as one more example of how tension and rivalry over access to energy plays out in conflicts across the international landscape.

Mr. Chairman, I am passionate about energy because there is no doubt in my mind that it is a frontline 21st century national security issue, a reality I came to appreciate during my service as Commandant of the Marine Corps, NATO Commander, and National Security Advisor. We should understand clearly that Mr. Putin's incursion in the Crimea is, among other things, about exercising political power through the control of energy and about brandishing the threat of energy scarcity to intimidate and manipulate vulnerable populations.

For the very same purposes, the Iranian regime habitually threatens the flow of energy through the Strait of Hormuz. In Venezuela, Hugo Chavez used energy abundance to keep his population in check for decades. It is also the same reason that Saddam Hussein invaded Kuwait, sparking 20 years of international tension and conflict, and why one of Osama bin Laden's last decrees to his forces was to attack the global energy infrastructure.

Energy scarcity is a potent strategic weapon. The greater the gap between global supply and demand, the more destructive that weapon becomes. The difference between Mr. Putin and us, however, is that he wields energy as a weapon to achieve his geostrategic goals, while we look to energy flow in free markets as a means of promoting international peace, prosperity, and economic stability.

Less than a week ago, four NATO allies from the eastern part of Europe—Hungary, Poland, Slovakia, and the Czech Republic—appealed to the Congress of the United States to protect them from Russian domination, not by requesting troops or arms, but by sending energy. This is the future we are facing and, fortunately, we are blessed with the capacity to rise to the challenge if we choose to do so.

How many Americans are aware that within the next year the United States will surpass Russia as the world's largest producer of oil and gas combined? We can be sure that Mr. Putin is well aware of that fact. What a stunning change of fortune for our country, whose energy narrative over the past 40 years has been dominated by terms such as "dependence, vulnerability, and peak oil." The United States is on track to produce nearly 10 million barrels of oil a day by 2016, equal to that of Saudi Arabia.

The story, however, does not end at our borders. Our neighbors to the north and south are also blessed with energy abundance and, with the proper resolve and strategy, North America can, and in my view should, become a global energy hub. Energy supply to Europe can serve as a linchpin in the revitalization of the transatlantic dialogue with NATO and as a consequence to Mr. Putin's aggression in the Crimea.

Members of the committee, within our reach is a historic opportunity to harness energy sufficiency to solve some of our country's most significant challenges: insecurity, joblessness, trade imbalance, and a devastating national debt, all of which erode our strength and our global leadership.

But we cannot seize this incredible opportunity if we continue to say "no" to the infrastructure requirements necessary to develop and utilize these resources. I would like to pose what I regard to be a pretty fundamental question: Why would the United States spend billions of dollars and place our military personnel at risk to ensure the flow of energy half a world away, but neglect an opportunity to enable the flow of energy in our very own backyard, creating jobs, tax revenue, and greater security?

I both respect and appreciate the fact that climate change concerns weigh heavily on this issue and on the minds of us all, as they should. We should not have a discussion on energy without discussing climate impact. At a later date, if you would like, I would look forward to testifying on the importance of tackling climate issues in a strategic, comprehensive, and realistic way, through global solutions to what is clearly a global challenge.

In the meantime, I would simply raise two considerations: canceling the Keystone XL pipeline does not mean that the oil from Canadian oil sands deposits will go undeveloped, sparing the world some modest increment of carbon emissions. The Prime Minister of Canada has promised that the country's oil sands will be developed

should the Keystone not be approved. In fact, if the Keystone pipeline is not approved, the perverse result would be that the hydrocarbons will go to countries with very poor environmental records rather than to the United States, where our regulations are comprehensive, strong, and enforced.

Second, a more overarching but no less significant point—and of this I am convinced—if America does not remain prosperous and strong, an imperative dependent on energy security, we will not be in a position to engineer the low-carbon energy solutions the world needs, nor will we be able to exercise the global leadership necessary to answer the climate challenge.

The decision on the pipeline is a litmus test of whether America is serious about national, regional, and global energy security, and the world is watching. America's workers and consumers are watching. Investors and job-creators are watching. Our allies, who need a strong United States and a reliable energy partner, are watching. The developing world, which requires global energy abundance to lift hundreds of millions of people out of poverty, is watching. And the international bullies who wish to use energy scarcity as a weapon against us all are watching intently.

So if we want to make Mr. Putin's day and strengthen his hand, we should reject Keystone. If we want to gain an important measure of national energy security, jobs, tax revenue, and prosperity to advance our work on the spectrum of energy solutions that do not rely on carbon, then it should be approved.

What we need more than symbolic, overpoliticized debates on particular projects is a more strategic approach to U.S. energy and climate policy, one that promotes energy diversity, sustainability, productivity, and innovation. We need to develop the vast array of energy potential that we are blessed to have at our disposal, bearing in mind the environmental impact.

Mr. Chairman, once again allegations are being made both here and abroad that the United States is a nation in decline. My definition of that condition——

The CHAIRMAN. General, I will ask you to sum up for me now, please.

General JONES. I am summing up.

The CHAIRMAN. Because we are well over 5 minutes.

General JONES. My definition of that condition is that a nation is in decline when it can no longer bring itself to do those things that deep down it knows it needs to do for its own good. As a national and international security issue, building this pipeline is one of those things that we must do for our own good.

I thank you for the opportunity to appear before you today.

[The prepared statement of General Jones follows:]

PREPARED STATEMENT OF GEN. JAMES L. JONES

Thank you, Chairman Menendez, Ranking Member Corker, and members of the committee. I am honored to be here and to share my views with you about the national interests at stake in the Keystone XL pipeline determination.

You requested that I testify today on the U.S. geostrategic and national security interests associated with the approval of the pipeline—interests that are intrinsic to America's energy security and leadership in the 21st century. I hope my input will be of service to the committee's deliberations on both issues, as they will largely determine the quality of our Nation's future—a cause to which I have dedicated my professional life, both in and out of uniform.

It is both significant and commendable that the Senate Foreign Relations Committee is holding a hearing focused on an oil pipeline. I think it speaks volumes about energy's role in modern international affairs; a message that resonates especially powerfully today in light of the events playing out in Ukraine.

The fact that energy security is vital to a nation's domestic economy is well-established; the Crimean crisis, however, is proving once again that energy security is a central pillar of global stability. This crisis serves as one more example of how tension and rivalry over access to energy plays out in conflicts across the international landscape.

In a world where global energy demand is expected to increase by 70 percent by mid-century, I suspect that the U.S. Congress, and in particular this committee, will host many more hearings on the future-defining challenges of food, water, and energy insecurity, as well as on the related international environmental issues we must tackle.

Mr. Chairman, I'm passionate about energy because there's no doubt in my mind that it is a frontline 21st century national security issue—a reality I came to appreciate in my service as NATO commander and National Security Advisor.

First, without energy security America will not prosper. If we are not prosperous, we cannot lead in a world that still fervently desires and needs American leadership. We are blessed with abundant and diverse energy resources that are unmatched anywhere else in the world; what we do with this abundance and diversity will have geostrategic consequences that we are just now beginning to comprehend.

Second, energy is a flywheel of the international trading system and serves as a catalyst for human development abroad. Exclusion, extreme poverty, and want, present the most prevalent threats to international peace and global order that we face today. The United States has an important role to play in the international community, where developing countries grapple with their own energy futures.

Third, energy disparities create dangerous friction between the energy haves and have-nots. Throughout history—both in war and in peace—poverty and prosperity have been inextricably connected to energy through the enormous power it confers on those who have it and the vulnerability it spells for those who don't, as well as the tension created by the breach between them. Here again, American leadership on energy development and climate can be an effective means by which we affect world outcomes on a critically important question.

The members of this committee understand clearly that Mr. Putin's incursion in the Crimea is, among other things, about exercising political power through the control of energy, and about brandishing the threat of energy scarcity to intimidate and manipulate vulnerable populations. For the very same purposes, the Iranian regime habitually threatens the flow of energy from the strait of Hormuz, and in Venezuela, Hugo Chavez used energy abundance to keep his population in check for decades. It's also the same reason that Saddam Hussein invaded Kuwait, sparking 20 years of international tension and conflict; and why one of Osama bin Laden's last decrees to his forces was to attack global energy infrastructure. Energy scarcity is a potent strategic weapon. The greater the gap between global supply and demand, the more destructive the weapons will become.

The difference between Mr. Putin and us, however, is that he wields energy as a weapon to achieve his geostrategic goals, while we look to energy flow in free markets as a means of promoting international peace, prosperity, and economic stability.

While Russian troops occupy a sovereign country, including a major port, to stop Ukraine from receiving energy imports, Mr. Putin's rubles are being spent on campaigns to stop natural gas development in central Europe—all with a mind toward creating scarcity, dependence, and vulnerability among countries who are U.S. friends, allies, and trading partners.

Less than a week ago, four NATO allies from the eastern part of Europe—Hungary, Poland, Slovakia, and the Czech Republic—appealed to the Congress of the United States to protect them from Russian domination, not by requesting troops or arms, but by sending energy. This is the future we are entering.

The good news is that the United States has never been better situated to counter these dynamics—to achieve unprecedented levels of energy security—not just by virtue of the vast reserves of unconventional oil and gas we are able to unlock thanks to advanced technology, but due to innovation across the energy spectrum—including in renewable energy and energy efficiency.

How many Americans are aware that next year the United States will surpass Russia as the world's largest producer of oil and gas combined? We can be sure that Mr. Putin is well aware of that fact. What a stunning change of fortune for our country, whose energy narrative over the past 40 years has been dominated by

terms such as "dependence, vulnerability, and peak oil." Energy is now at the forefront of our national and international strategic security agenda.

The story, however, does not end at our borders. Our neighbors to the north and south are also blessed with energy abundance. Together with the proper resolve and strategy, North America can become a global energy hub, providing not only for our own prosperity and security but also serving as a reliable energy source to our allies and global energy markets. Energy supply to Europe can serve as a lynchpin in the revitalization of the trans-Atlantic dialogue and with NATO, and as a consequence to Mr. Putin's aggression in the Crimea.

Members of the committee, within our reach is the historic opportunity to harness energy sufficiency to solve some of our country's most significant challenges: insecurity, joblessness, trade imbalance, and a devastating national debt—all of which erode U.S. strength and global leadership. But we can't seize this incredible opportunity if we continue to say "no" to the infrastructure requirements necessary to develop and utilize these resources. This includes the transmission lines needed to transmit electric energy created by new wind and solar facilities every bit as much as it does for pipelines needed to carry new sources of oil and gas to market. In the case of the Keystone XL pipeline, it will serve as a conduit that, once completed, will add a mere 1 percent to the length of our country's oil pipeline infrastructure.

As the committee members know, America's Fifth Fleet is headquartered in Bahrain, primarily to secure the continued free passage of oil through the Persian Gulf and Strait of Hormuz to global markets. We do so because we understand how instrumental this flow is to global economic stability and to U.S. national interests.

I would like to pose what I regard to be a pretty fundamental question: why would the United States spend billions of dollars and place our military personnel at risk to ensure the flow of energy half a world away, but neglect an opportunity to enable the flow of energy in our very own back yard—creating jobs, tax revenue, and greater security?

I fully understand that policymakers must weigh many concerns and factors when considering major infrastructure projects, particularly those that cross international boundaries. I will leave it to others more conversant in the details of this process than I to address them as they apply to the Keystone determination, but there is no doubt in my mind that the outcome is of strategic importance to this country.

I both respect and appreciate the fact that climate change concerns weigh heavily on this issue and on the minds of us all, as they should. Please know that I don't count myself a denier of climate science or its importance; on the contrary. Much of the initial, groundbreaking research on greenhouse gas emissions and the effects of climate change was conducted by the Office of Naval Research. There's no doubt that significant shifts in global climate patterns are themselves important international security issues we must take very seriously.

At a later date, I would look forward to testifying on the importance to international security of tackling climate issues in a strategic, comprehensive, and realistic way through a global solution to what is clearly a global challenge.

In the meantime, I would simply raise two considerations.

Canceling the Keystone XL pipeline does not mean that the oil from Canadian oil sand deposits will go undeveloped, sparing the world some modest increment of carbon emissions. The Prime Minister of Canada—a country with strong carbon management policies—has promised that the country's oil sands will be developed; and Canada is making every arrangement to fulfill that pledge should the Keystone be canceled.

In fact, if the Keystone pipeline is not approved, the perverse result would be that the hydrocarbons will go to countries with very poor environmental records rather than to the United States, where our regulations are comprehensive, strong, and enforced. Moreover, if not moved to market via an east-west pipeline alternative, the Canadian oil will continue being transported by means of trains and trucks that could produce a larger carbon footprint and generate even greater environmental risk. No less than five studies authored by federal agencies, including the Department of State, have concluded that the pipeline will have no net negative impact on the environment. To quote the administration's position directly, "the overall contribution to cumulative GHG impacts from proposed Project construction and operation would not constitute a substantive contribution to the U.S. or global emissions."

Second, is a more overarching but no less significant point, and of this I am convinced—if America does not remain prosperous and strong—an imperative dependent on energy security—we will not be in a position to engineer the low carbon energy solutions the world needs, nor will we be able to exercise the global leadership necessary to answer the climate challenge.

The decision on the pipeline is a litmus test of whether America is serious about national, regional, and global energy security, and the world is watching.

America's workers and consumers are watching. Investors and job creators are watching. Our allies who need a strong United States and a reliable energy partner, are watching.

The developing world, which requires global energy abundance to lift hundreds of millions of people out of poverty, is watching.

And the international bullies who wish to use energy scarcity as a weapon against us all are watching intently.

If we want to make Mr. Putin's day and strengthen his hand, we should reject the Keystone. If we want to gain an important measure of national energy security, jobs, tax revenue, and prosperity to advance our work on the spectrum of energy solutions that don't rely on carbon, it should be approved.

What we need more than symbolic, overpoliticized debates on particular projects is a more strategic approach to U.S. energy and climate policy—one that promotes energy diversity, sustainability, productivity, and innovation. We can't do that until we organize ourselves better to make and execute a bona-fide national energy security strategy. To that end I would like to submit for the record a copy of a national energy strategy produced by the Bipartisan Policy Center.

Mr. Chairman and distinguished committee members, the logic I would offer in answering the hearing's fundamental question about national interest is simply this: The Keystone XL pipeline is integral to U.S. and North American energy security. Energy security is paramount to our Nation's prosperity and leadership. And, America's ability to prosper and lead in a dangerous and uncertain world that needs us is quite clearly a preeminent matter of national interest. I think that is why Congress has voted consistently, and in a bipartisan manner, to move forward on Keystone.

I hear many at home and abroad define the emerging new world order with fear and trepidation. They see in it the imminence and inevitability of "American decline." Frankly, I've heard about the so-called American decline since the 1950s, when the Soviet's launch of "Sputnik" shook our national confidence. This forecast has been repeated every decade since then, but has not happened yet. And I submit to you today that it will not happen unless we let it happen. We control our destiny, not China or India or Brazil or Russia; no one does but us!

I'm not entirely sure what defines a nation in decline, but it seems to me that a strong warning is when a country can no longer bring itself to do those things that it knows it must do for its own good. I think we are at such a crossroads. I have every faith and confidence that we will make the right decision that will once again answer any question of "American decline" and more, optimistically, perhaps usher in even a new age of American ascendancy!

Again, thank you for the opportunity to testify today. I look forward to answering any questions you may have.

The CHAIRMAN. Thank you.

Mr. Brune.

STATEMENT OF MICHAEL BRUNE, EXECUTIVE DIRECTOR, SIERRA CLUB, SAN FRANCISCO, CA

Mr. BRUNE. Mr. Chairman, Ranking Member Corker, members of the committee, it is an honor to appear before you today to discuss whether Keystone XL is in our national interest. I am Michael Brune, executive director of the Sierra Club. The Sierra Club and the more than 2 million people who submitted comments last week to the State Department know that this pipeline is not in our national interest. The Keystone XL tar sands pipeline would cut through more than 1,000 miles of American farms and ranches, carrying oil that is more toxic, more corrosive, more carbon-intensive, and more difficult to clean up than conventional oil, all the way to the gulf, where most of it would be exported.

Like many of you, I am a parent, and I am deeply concerned about the world we are leaving for our children. One lesson my wife and I try to teach our kids is the need to set goals and to stay focused as they strive to achieve them. Our country has a clear,

science-based goal to limit carbon pollution. We must keep this in mind and recognizing that achieving that goal is incompatible with permitting this pipeline.

None of the scenarios in the State Department's analysis show how Keystone XL could be built in a way that ensures our Nation can meet those climate goals. In fact, Keystone XL would significantly exacerbate climate pollution because it would increase substantially the development of tar sands in Alberta that you see here.

A report last week from Carbon Tracker found that Keystone XL would spur additional production of roughly 500,000 barrels per day, the emissions equivalent of building 46 new coal-fired power plants. I would like that this report be added to the record.

The CHAIRMAN. Without objection.

[EDITOR'S NOTE.—The report from Carbon Tracker was too voluminous to include in the printed hearing. It will be retained in the permanent record of the committee.]

Mr. BRUNE. Although the climate impacts of tar sands are sufficient reason to reject this project, there are others, a few of which I will cite. First, any spill from this pipeline could be catastrophic. Transporting tar sands crude into the United States poses a heightened risk to communities and their air and water than conventional oil. Diluted bitumen is heavier and more toxic than conventional crude. When it spills in a waterway, it sinks. Just one tar sands spill in Michigan fouled more than 35 miles of river. After 3½ years and more than a billion dollars, it still has not been cleaned up.

If you take a look here at this image of a neighborhood in Mayflower, AR where an Exxon Mobil pipeline ruptured, spilling more than 7,000 barrels of tar sands into residents' backyards and driveways.

But even without spills, Keystone XL would risk the health and livelihood of communities living near each stage of the project. Pet coke is a byproduct of tar sands production and it is a major health hazard for U.S. communities. Fuel-grade pet coke contains high levels of toxins, including mercury, lead, arsenic, selenium, and chromium. Huge pet coke piles from refining processes have begun to appear in cities like Chicago and Detroit.

Furthermore, Keystone XL would not even benefit American consumers. This oil is intended for export. Keystone XL would deliver tar sands to refineries on the gulf coast that already export most of their refined products, have increased exports nearly 200 percent in the past 5 years, and are planning to increase these exports further into the future.

Keystone XL would also be a threat to national security, because it would facilitate the development of one of the world's most carbon-intensive sources of oil. It is important to consider the impacts that these additional greenhouse gas emissions would have on people worldwide and on America's national security.

Since 2010 key national security reports have indicated that floods, droughts, and rising seas brought on by a destabilized climate in places of geostrategic importance to the United States multiply threats and the risks for Americans working in those areas.

Climate disruption directly affects our Armed Forces. Admiral Samuel Locklear, who is head of the U.S. military's Pacific Command, believes the single greatest threat to his forces is the instability sparked by climate disruption.

Finally, clean energy will power a new American century. Let us not delay. America is a land of innovators. Today the factories of Detroit, the laboratories of Silicon Valley, and the next generation of American consumers are already investing in, and profiting from, clean energy technology. Thanks to fuel efficiency standards, gasoline demand in the United States is decreasing and projections show decreases through 2040 and beyond.

Investing in the clean energy economy is supported by American businesses, American workers, and all who care about clean air, clean water, and a stable climate. That is a win-win-win scenario. Compare this to Keystone XL, which jeopardizes our drinking water, our farm land, our climate, and our health. The sad truth is that the Keystone XL tar sands pipeline is all risk and no reward.

Secretary Kerry has called climate disruption "the world's most fearsome weapon of mass destruction." And last week he instructed all U.S. diplomats and employees around the world to lead by example through strong action at home and abroad to fight the climate crisis. America can lead on climate by saying "no" to this polluting pipeline and by saying "yes" to clean energy.

Thank you.

[The prepared statement of Mr. Brune follows:]

PREPARED STATEMENT OF MICHAEL BRUNE

INTRODUCTION

Mr. Chairman, Ranking Member Corker, members of the committee, it is an honor to appear before you today. My name is Michael Brune, and I am the Executive Director of the Sierra Club.

The Sierra Club, and more than 2 million people who submitted comments last week to the U.S. State Department, firmly believe that the Keystone XL tar sands export pipeline is not in the national interest.

In 2009, President Obama made a commitment to reduce U.S. greenhouse gases by 17 percent by 2020. The Obama administration put this forward in Copenhagen as our country's share of a global effort to limit climate change to no more than 2 degrees Celsius, or 3.6 degrees Fahrenheit—the target scientists tell us may be safe.

Achieving this goal, which has been unanimously agreed on at a global level, is central to the success of President Obama's Climate Action Plan, announced in June of last year.

It is therefore shocking to realize that the State Department failed to take this target into account when it evaluated the climate impacts of the Keystone XL pipeline.

By avoiding any consideration of climate safety, the State Department report is blindingly clear on one point, if only by implication: The Keystone XL tar sands pipeline is not compatible with a climate-safe world.

Last week, Secretary John Kerry issued instructions to all U.S. diplomats and employees around the world on combating climate change. "Lead by example through strong action at home and abroad," was his first directive to his staff. America can and should lead on climate, by saying no to this polluting pipeline, and by saying yes to clean energy and the many more jobs it will create and the security it will bring for us here at home.

If America, and the world, are going to meet the challenge of climate change, we must face the conclusion of climate science that the vast majority of proven fossil fuel reserves will need to be left in the ground if we are to limit warming to less than 2 degrees Celsius, or 3.6 degrees Fahrenheit. Given this clear science, it makes no sense to permit a pipeline that would facilitate the extraction of some of the dirtiest, most expensive oil on the planet. We have to start stopping somewhere.

Keystone XL would significantly exacerbate climate pollution because it would increase the development of the tar sands substantially. A report just last week from the U.K.-based organization Carbon Tracker showed that Keystone XL would enable additional production of roughly 500,000 barrels per day and trigger the emissions equivalent of building 46 new coal plants.

Put another way, the additional emissions triggered by Keystone XL over the next 35 years would be roughly equivalent to all the carbon emissions of the United States in 2013. That sounds very significant to me.

Proponents of Keystone XL like to say that industry will inevitably develop Alberta's tar sands, so even a rejection of the pipeline would make no difference. This has always been Goliath's argument to David: You can't make a difference, so don't even try. Americans know, though, that we can make a difference. They said we couldn't put a man on the moon, but we did.

Like many of you, I am a parent, and I am deeply concerned about the world we are leaving for all our children. One of the most important lessons I try to teach my kids is the need to set goals, and to keep them in mind over time as you strive to achieve them. Our country has a clear, science-based, laudable goal to limit global warming. We must keep that goal in mind and recognize that achieving it is inconsistent with permitting the Keystone XL pipeline.

Building the Keystone pipeline is incompatible with the level of emissions reductions necessary to avoid catastrophic climate change.

It is now clear from industry reports and analysis that building the Keystone XL Pipeline only makes sense in a world where the United States fails to meet its climate goals, and oil prices stay high partly as a result of this failure. If Environmental Resources Management, the consulting group that prepared the State Department's Final Supplemental Environmental Impact Statement (FSEIS) for Keystone XL, had considered a scenario where the United States together with other countries achieves our climate goals, the Keystone XL pipeline would have been shown to be both uneconomic and disruptive to the climate.

The FSEIS used three future U.S. energy-demand scenarios developed by the Department of Energy. None of these scenarios modeled a world in which the United States meets its stated goal of limiting climate change to less than 2 degrees Celsius, or 3.6 degrees Fahrenheit, despite the fact that even these flawed models revealed that the carbon impact of the pipeline could equal as much as 5.7 million cars each year. According to the Carbon Tracker Initiative, the projected U.S. oil demand for 2035 in the FSEIS is 68 to 86 percent above the safe climate scenario modeled by the International Energy Agency.

Additionally, the FSEIS analysis is at odds with Goldman Sachs, Citi, and other mainstream oil industry analysts. Carbon Tracker substituted the data that those analysts use rather than a "hypothetical value" used by State, and found that the KXL pipeline triggers emissions would be on a par with building 46 new coal plants.

Finally, all of the scenarios used by the State Department in the FSEIS would place us on a path to 6 degrees Celsius, or 11 degrees Fahrenheit, of global warming. International Energy Agency Chief Economist Fatih Birol said recently that a 6-degree Celsius temperature rise would have "catastrophic implications."

Similarly, the FSEIS scenarios link the economic viability of tar sands to a scenario of rising oil prices that is unlikely to occur if the world begins to seriously reduce greenhouse gas (GHG) emissions. The long-term viability of oil sands production is closely linked to rising oil prices (which are underpinned by a consistent growth in global oil demand).

Even leaving aside the impact of effective climate policies, oil analysts don't agree with the high prices projected in the report. The FSEIS projects oil prices to be in excess of $100 per barrel in 2020, but the current futures price for WTI crude is $79.13 by December 2019. The International Energy Agency similarly estimates that oil prices will decline by about $20 a barrel over the next 5 years.

Keystone XL is a linchpin to tar sands development.

Industry analysts are clear that the Keystone XL pipeline is a linchpin to tar sands development. If the President approves the pipeline, he will be effectively approving the further development of the tar sands.

In February of 2013, RBC Dominion Securities said: "The growth envisioned in Canada's oil sands is likely to be temporarily deferred in the event that Keystone XL is not approved. Our analysis would suggest that up to 450,000 bbl/d—or one-third, of Canada's oil sands growth could be deferred in the 2015–17 timeframe."

The International Energy Agency's 2013 World Energy Outlook (November 2013), states that the oil industry's plan for tar sands expansion "is contingent on the construction of major new pipelines to enable the crude to be exported to Asia and the

United States." They later add that, "In Canada, if the controversies over the Keystone XL pipeline and the pipelines from Alberta to the British Columbia coast were to be resolved quickly, oil sands production could easily grow 1 Mbd (million barrels per day) higher than we project."

A recent working paper by the Stockholm Environmental Institute analyzed a number of scenarios to answer the question of how the proposed "Keystone XL might affect the global oil market by increasing supply, decreasing prices, and thus increasing global oil consumption." The study concludes that the "approval of the Keystone XL pipeline could lead (depending on assumptions about how much of the oil would otherwise make it to market) to an increase in global GHG emissions four times as big as prior analyses have concluded and potentially counteract some of the flagship emission reduction policies of the U.S. Government."

In December 2013, Barclays Bank released its "Global 2014 E&P Spending Outlook" with its projections and recommendations for the new year. It stated: "Approval of the northern leg of the Keystone XL pipeline, which will transport oil from Alberta to Cushing, remains the most significant catalyst for improving takeaway bottlenecks, in our view."

Goldman Sachs, in a 2013 research report, entitled, "Getting oil out of Canada: Heavy oil diffs expected to stay wide and volatile," wrote: "In the event that either the Keystone XL newbuild or Alberta Clipper expansion (or both) encounter further delays, we believe risk would grow that Canadian heavy oil/oil sands supply would remain trapped in the province of Alberta, putting downward pressure on WCS pricing on both an absolute basis and versus WTI."

Goldman Sachs's emphasis that Keystone XL and the expansion of the Alberta Clipper pipeline are linchpins to future tar sands growth is especially significant in light of the fact that the Obama administration has the ultimate power to approve—or reject—both of them. The Alberta Clipper expansion would increase the capacity of that pipeline (which stretches from Canada's province of Alberta to Superior, Wisconsin) to 800,000 barrels per day. As 16 environmental organizations stated in a letter to the State Department in January 2014, that President Obama could deny both of these projects only further demonstrates that tar sands development is not inevitable—the U.S. Government has a great deal of influence over the future development of this resource.

Oil industry representatives and Canadian officials admit that Keystone XL is a linchpin to tar sands development.

As recently as January of this year, Russ Girling, CEO of Transcanada, said when referring to Keystone XL, "[w]hen markets come up, you have to take advantage of them . . . If you miss an opportunity, you may lose it for decades and decades to come."

Brian Ferguson, CEO Cenovus Energy Inc., a large Canadian oil company that plans to nearly triple its tar sands production to reach 1 million bpd by 2023, recently said, "If there were no more pipeline expansions, I would have to slow down."

Steve Tungesvik, President and CEO of Statoil, said in 2013 that he is "reluctant" to invest in tar sands due to the uncertainty around export pipelines.

Joe Oliver, Canada's Natural Resources Minister, stated in a memo obtained through Canada's Access to Information Act that, "in order for crude oil production to grow, the North American pipeline network must be expanded through initiatives, such as the Keystone XL pipeline project."

Rail is not a viable alternative to a project that would pump 830,000 barrels per day through the United States.

The argument that tar sands development is inevitable, based on the notion that oil companies could simply export the same amount of oil from Canada's province of Alberta by rail, is fundamentally flawed.

The recent Carbon Tracker analysis demonstrates that Keystone XL would have a greater impact on the rate of future tar sands development than rail. The lower costs of transporting tar sands through this pipeline, as opposed to rail, mean that by 2018 industry could develop an additional 510,000 to 525,000 barrels of bitumen per day. This is a quarter of Canada's entire 2013 bitumen production. By 2050, Keystone XL would be directly responsible for the additional greenhouse gas emissions equivalent to 1 billion passenger vehicles' annual emissions, or equivalent to yearly emissions from 1,400 coal-fired power plants—almost the amount of total U.S. emissions in 2013.

Even the U.S. State Department, in its FSEIS, recognized that transporting tar sands by rail costs $15 to $20 per barrel (versus Keystone XL's cost of $8 per barrel). The State Department estimated that, on average, rail would cost $8 a barrel more to transport tar sands than pipelines. Considering that industry representa-

tives recently told Canadian officials that increasing costs by $0.80 per barrel would hinder investment and curb production, rail's incremental cost demonstrates its infeasibility as an alternative to new pipelines.

Genscape, a provider of energy information for commodity and financial markets, recently reported that the economics of railing Canadian heavy crude to the gulf coast are deteriorating. It reported that, in the last week of February, the price differential between Mexican heavy crude, known as Maya, and Canada's heavy crude (WCS) had widened to $13–14 per barrel and $24 less than WTI (West Texas Intermediate). In reference to railing Canadian heavy to the gulf coast, it quoted a crude oil trader as saying, "It's not that viable to break even railing to the gulf."

And while transporting bitumen by rail is already more costly than a new pipeline would be, the cost of rail is only likely to increase. In the past few years, it has become strikingly evident that crude-by-rail projects are dangerous and sometimes even deadly—and certainly not a solution to the country's energy needs.

2013 was marked by a numerous rail accidents (like the Lac-Mégantic train derailment in Quebec, which killed 47 people) and spills (in 2013, U.S. trains spilled more crude oil than they had in the previous four decades combined). U.S. Government agencies are currently calling for stricter regulations on the transportation of oil by rail, which would require extensive capital investment in the modernization of crude-by-rail infrastructure.

For example, in September 2013, the Pipeline and Hazardous Materials Safety Administration (PHMSA) announced that it was considering revising Hazardous Materials Regulations (HMR) "to improve the regulations applicable to the transportation of hazardous materials by rail." During PHMSA's public comment period, the Association of American Railroads (AAR) argued that the new regulations should include retrofitting 72,000 older tanker cars, performing minor upgrades on 14,000 additional cars, and phasing out any cars that do not meet new safety requirements. AAR's recommendations also included upgrading the DOT–111, a model that represents approximately 85 percent of the Nation's 92,000 tank cars, as these have been demonstrated to puncture when trains crash.

Additionally, in January 2014, both the U.S. National Transportation Safety Board (NTSB) and the Transportation Safety Board of Canada issued joint recommendations "to address the safety risk of transporting crude oil by rail." Expressing concerns about "major loss of life," NTSB recommended stricter standards for trains carrying crude, including modifications to tank cars that, according to Bloomberg Government, could cost shippers and leasing companies $5.2 billion. Also in January, U.S. Department of Transport Secretary Anthony Foxx stated that the oil and rail industry would begin implementing voluntary accident-reduction procedures in early 2014, which will include reduced train speeds for certain trains carrying crude oil.

These planned and proposed regulations by U.S. agencies and the rail industry demonstrate that stricter regulations are inevitable, since, as NTSB Chairman Deborah Hersman said in January, "The large-scale shipment of crude oil by rail simply didn't exist 10 years ago, and our safety regulations need to catch up with this new reality." These important regulations not only will do more to protect our communities but will also make rail more expensive—making the idea that they could "replace" proposed tar sands pipelines even more absurd.

Keystone XL would be an export pipeline.

Keystone XL would be a pipeline through, rather than to, America. Thanks in great part to increased fuel efficiency standards and the fact that, for the first time since 1970, U.S. oil production is on the rise, a new pipeline that would increase the amount of oil coming into the U.S. is not only unnecessary—it would increase the likelihood that tar sands oil will be exported.

Keystone XL would deliver tar sands to refineries in the gulf that already export most of their refined product, and that are planning to increase these export amount. The State Department's Draft Supplemental EIS acknowledged that gulf coast refineries export most of their product.

Since 2008, when the Keystone XL permit application was first submitted to the State Department, gulf coast exports of petroleum products have soared 172 percent. Many gulf coast refineries have access to deep water port facilities, and the region now produces much more product than the U.S. markets can handle. Throughout the 2008–2013 period, the gulf coast refineries averaged 73 percent of U.S. oil exports. In 2013, that rose to 76 percent.

Exports of refined petroleum products from the gulf coast region (also know as PADD 3) reached nearly 3.3 million barrels per day in December 2013, nearly four times the capacity of Keystone XL.

And while the gulf coast refining region includes a number of inland refineries without access to export facilities, Keystone XL would primarily supply a group of refineries in the vicinity of Houston; Port Arthur, TX; and Lake Charles, LA. These refineries all have excellent access to export facilities and are at the heart of the gulf coast export boom.

The Motiva Port Arthur Refinery—owned by Saudi Aramco and Shell—recently became America's largest refinery. As a Bank of America-Merrill Lynch analyst has stated, "The bulk of the Motiva plant's production is—like a growing share of refinery capacity along the gulf coast—geared for export (. . .) (w)e can export gasoline and diesel to northwest Europe cheaper than they can produce it locally."

Asia would be a major recipient of the product transported by Keystone XL. The comments submitted by Sierra Club, et al., to the State Department in March 2014 summarize a key finding of a report by Philip K. Verleger, Jr. (which was cited in the State Department's FSEIS) to have concluded that the Keystone XL pipeline, if built, would facilitate Canadian crude exports to China rather than the United States, because buyers for refineries on the gulf coast can limit their purchases of Canadian crude, forcing the Canadian producers to seek buyers in overseas markets, most likely China.

Another recipient of Keystone XL product would be Europe. For years, industry representatives and Canadian Government officials have been lobbying the European Union (EU) to not label tar sands as an especially carbon-intensive source of fuel as part of the EU's efforts to combat climate change. The EU's proposed Fuel Quality Directive would classify tar sands as a particularly dirty source of transportation fuel, as part of a plan to require countries in the EU to reduce the greenhouse gas intensity of transportation fuels by 6 percent by 2020.

It is significant that a current prohibition on the export of crude from the U.S. (i.e. nonrefined product) does not apply to Canadian crude if it has not been commingled with U.S. oil. Keystone XL would likely create a surplus of heavy oil on the market that would have to leave the gulf somehow. Or as a Platts editorial director explained, "When the Canadian crudes rise in price [U.S. refiners] will look at other alternatives, and force the Canadian crudes to move out of the gulf coast. The Canadian crudes cannot go back up into Canada again. They will have to go out."

Keystone XL proponents like to maintain that the pipeline would simply replace the heavy oils the U.S. already imports from countries like Venezuela. This argument ignores the evidence that Keystone XL oil would not replace heavy oil from Latin America or the Middle East. Venezuela, Saudi Arabia, and Mexico own around half of the heavy oil refining capacity in the gulf. Those refineries are expected to continue giving preference to refining their own countries' oil as opposed to Canadian heavy oil. Meanwhile, thanks to high levels of U.S. light oil development, gulf refiners can buy discounted domestic oil, and these refiners are increasing their intake of domestic light oil while reducing their processing of heavy oil. This makes it all the more likely that a glut of Canadian heavy oil in the gulf will be pushed onto the world market by exploiting a loophole in U.S. crude export regulations.

In short, the argument that Keystone XL is a pipeline that would benefit oil consumers in the U.S. ignores a mountain of evidence demonstrating that this project's product is intended for export.

Approving Keystone XL would be a threat to national security.

Because Keystone XL would facilitate the development of one of the world's most carbon intensive sources of oil, it is important to consider the impacts that these additional greenhouse gas emissions would have on global populations and on national security.

On the issue of national security, I rely on military and intelligence professionals to assess the national security threat from climate change. Since 2010, key documents setting out U.S. security doctrine have indicated that the destabilizing impacts of climate change on basic human needs, such as food and water, as well as extreme weather events and coastal flooding can have a major destabilizing effect in areas of geostrategic importance to the U.S.—acting as a threat multiplier that increases security risk to Americans.

The recently released Quadrennial Defense Review 2014, stated that "[t]he impacts of climate change may increase the frequency, scale, and complexity of future missions, including defense support to civil authorities, while at the same time undermining the capacity of our domestic installations to support training activities." The report further states: "The pressures caused by climate change will influence resource competition while placing additional burdens on economies, societies, and governance institutions around the world. These effects are threat multipliers

that will aggravate stressors abroad such as poverty, environmental degradation, political instability, and social tensions—conditions that can enable terrorist activity and other forms of violence."

The top U.S. commander in the Asia-Pacific region, Adm. Samuel J. Locklear III, recently stated that climate change is the top security threat in that region. Locklear is a four-star admiral in charge of monitoring hostilities between North and South Korea, as well as between China and Japan, so his determination that the top threat is climate change does not reflect a lack of other serious security concerns in his area of responsibility. In a recent interview with the Boston Globe, Admiral Locklear stated: "We have interjected into our multilateral dialogue—even with China and India—the imperative to kind of get military capabilities aligned [for] when the effects of climate change start to impact these massive populations . . . If it goes bad, you could have hundreds of thousands or millions of people displaced and then security will start to crumble pretty quickly."

Interestingly, these comments were made months before Typhoon Haiyan devastated the Philippines, displacing millions.

In addition to destabilizing conditions overseas, the Keystone XL pipeline presents a new threat to homeland security. According to the Department of Homeland Security, pipeline infrastructure has been a popular target for cyber security attacks. In fiscal year 2012 alone, the Department's Industrial Control Systems Cyber Emergency Response Team assisted 23 oil and natural gas sector organizations with incident response and recovery efforts. According to DHS, the hackers succeeded in obtaining information pertaining to the organizations' Industrial Control Systems and Supervisory Control and Data Acquisition (SCADA) systems—including data that DHS says would facilitate remote operations. All of us who live in the California Bay Area remember the catastrophic consequences of the natural gas pipeline rupture in San Bruno. As someone who has seen at close hand what can happen when pipeline managers aren't getting accurate data from their SCADA systems, I am deeply worried about potential cyber security attacks on Keystone XL's SCADA system that threaten communities throughout America's heartland.

The number of hearings and bills on cyber security, as well as the recent Executive order and framework, demonstrate that Congress and the administration share my concern about the cyber security threat to critical infrastructure. Of course, this sort of cyber security threat is not something that can ever be fully prevented, but that doesn't mean that the Obama administration should approve a major new cyber security target without significant evidence that they are taking action to protect Americans along the route. In the absence of clear evidence that the U.S. Government has assessed this risk, and has an effective plan in place to manage it, the State Department would not be in a position to determine that the pipeline is in our national interest.

Finally, it is intriguing that Keystone XL proponents argue that approving Keystone XL, by increasing exports, would reduce countries like Ukraine's dependence on Russia. Besides acknowledging that Keystone XL's product would be intended for export, this argument has been rebutted by energy security experts. For example, the Council on Foreign Relations' Michael Levi recently noted: "The idea that U.S. oil exports would give Europe some sort of special buffer is silly. The world oil market is pretty flexible, and U.S. exports would be a drop in an already large sea. To the extent that Europe is constrained in its ability to switch oil sources quickly, that's because of infrastructure, something U.S. exports wouldn't change."

There is no evidence that either the Government of Canada or the provincial Government of Alberta would be willing or able to "mitigate" the emissions from a project that would increase the development of Alberta's tar sands.

Canada's Prime Minister, Stephen Harper, has reportedly offered to embark on a plan to reduce Canada's GHG emissions if President Obama approves Keystone XL. However the Government of Canada, under Prime Minister Harper's leadership, should be judged by its inability to live up to its climate commitments to date. Canada's Federal Government has repeatedly missed its own targets to regulate Canada's oil and gas sector. In fact, it will miss its own 2020 GHG reduction targets, in large part due to tar sands development. Tar sands are Canada's fastest-growing source of greenhouse gas emissions. Even though it has a relatively small population, Canada is already one of the top 10 greenhouse gas-emitting countries in the world. In 2011, the Canadian Federal Government's own peer-reviewed reports forecast that emissions from tar sands would be triple 2005 levels by 2020.

Prime Minister Harper has shown an unwillingness to take serious action on climate change, and he has even actively undermined his own government's climate programs and research. Prime Minister Harper's government drastically cut funding for government research on climate change, ended the government's National Round

Table on the Economy and Environment, and cut support for research programs like the Canadian Foundation for Climate and Atmospheric Sciences.

Meanwhile, the province of Alberta's "Specified Gas Emitters Regulation" (SGER) is ostensibly intended to reduce greenhouse gas emissions on oil and gas development in the province. However, its carbon pricing mechanism, as the Pembina Institute details, "is too weak to provide an incentive for oilsands operators to meaningfully reduce greenhouse gas emissions." The SGER means tar sands operators have to pay a mere 18 to 22 cents to produce a barrel of oil, which is too weak a penalty to prompt emission reductions. Moreover, targets are set in terms of intensity (GHG emissions per barrel) instead of a cap, and tar sands emissions have grown every year since this policy went into effect.

A 2013 study compiled extensive evidence showing that fewer than 1 percent of environmental violations in Alberta's tar sands region are actually enforced with fines or other enforcement mechanisms.

Keystone XL would produce up to 15,000 tons of petcoke a day, a filthy byproduct of tar sands production that is hazardous to communities and has its own major climate implications.

Petroleum coke, or petcoke, is an extremely carbon-intensive byproduct of tar sands production. Petcoke resembles coal and commonly replaces coal as a fuel in power plants and other industry processes. When combusted, petcoke releases 5 to 10 percent more carbon dioxide than coal (on a per-unit of energy basis). As Oil Change International details in its 2013 report "Petroleum Coke: The Coal Hiding in the Tar Sands," the bitumen carried by Keystone XL would carry approximately 15,000 tons of petcoke each day——enough to fuel five coal-fired power plants.

Much of the petcoke produced by Keystone XL would be shipped overseas and combusted in power plants in countries like China. The U.S. and Canada already export millions of tons of petcoke each year. Petcoke is sold at an average of a 25 percent discount to conventional coal, meaning its cheap price incentives power plants to blend it with coal. Thus, as Oil Change International stresses, "Petcoke is making coal-fired power generation more carbon intensive and cheaper at exactly the time that we urgently need low carbon solutions to energy production."

In addition to releasing climate-disrupting greenhouse gases, petcoke is also a major health hazard for U.S. communities. Fuel-grade petcoke has high levels of metals including mercury, lead, arsenic, selenium, chromium, nickel, and vanadium. Huge petcoke piles from refining processes have begun to appear in cities like Chicago and Detroit, from which black dust clouds often escape and land on homes and communal spaces. The particulates in these dust clouds include EPA-recognized carcinogens, as well as other metals proven to cause developmental and cardiovascular problems in humans. On February 26, 2014, Senators Barbara Boxer and Sheldon Whitehouse invited health experts to speak to brief press and staff on the health impacts of extracting and refining tar sands, including the harmful impacts of petcoke piles to communities in Chicago.

Tar sands cause additional major impacts to communities and their health.

The extraction, development, and refinement of tar sands are harmful to communities' health in both Canada and the U.S.

In Canada, communities living near tar sands mines are exposed to chemicals in their air and water that are proven to cause cancer, damage DNA, and cause developmental impacts. First Nation communities near the Fort McMurray tar sands extraction site are being negatively impacted by high concentrations of carcinogenic pollutants in their air and water. Studies have found elevated concentrations of benzene, styrene, and seven different polycyclic aromatic hydrocarbons (PAHs) within 30 miles of Fort McMurray. Toxic tailings ponds, full of arsenic, mercury, benzene, lead, and ammonia, leak into the surrounding environment and threaten water supplies. A 2009 study on health impacts in the Fort Chipewyan community, 124 miles downstream of tar sands development in Fort McMurray, found that from 1995 to 2006, cancer rates were 30 percent higher than typically expected during this time period, with high rates of biliary tract, blood and lymphatic, lung, and soft tissues cancers. Dr. John O'Connor, a physician in the Fort Chipewyan community, has called for more public health investigations in his community, particularly in response to three localized cases of cholangiocarcinoma, a rare form of cancer.

Tar sands also have major health implications for refinery communities in cities like Houston and Port Arthur, TX, where tar sands from Keystone XL would be refined. Emissions from diluted tar sands are significantly more toxic than conventional crude oil and release significantly higher concentrations of copper, nickel, lead, and benzene. These pollutants have been demonstrated to increase the risk of cardiovascular illnesses, respiratory ailments, developmental delays, and cancer.

The impacts of tar sands refinement are disproportionately high on low-income communities and communities of color. Dr. Earthea Nance, Associate Dean and Professor at Texas Southern University, recently submitted comments on the FSEIS illustrating that the proposed pipeline would have "disproportionate impacts" on African-American and Latino communities in Houston and Port Arthur, TX. She illustrated that affected communities in Port Arthur face "increased risk of developing cancer, asthma, and cardiovascular disease caused by their proximity to industrial sources of pollution."

A spill from KXL would be catastrophic.

Transporting tar sands crude oil into the United States poses a different risk to communities and natural resources than conventional oil does. Diluted bitumen, or dilbit, is a highly corrosive and acidic blend of thick raw bitumen and volatile natural gas liquid condensate. The impacts of spills can be much greater than conventional crude, and effective clean-up methods do not yet exist—and may never exist.

The health impacts from a tar sands spill and its subsequent long-term persistence in the environment include numerous toxic effects. Long-term exposure to benzene, which is a known carcinogen, can adversely affect bone marrow and cause anemia, leukemia, and possibly death. Long-term exposure to toluene may affect the nervous system or kidneys. Long-term exposure to ethylbenzene has been observed in animal studies to cause damage to the kidneys, inner ear, and hearing, and more.

This information is based on the paucity of research that has been done on the health impacts from tar sands spills. This means that the residents of communities affected by tar sands spills, like Marshall, Michigan, and Mayflower, AR, are involuntarily serving as guinea pigs for determining the long-term impact of a tar sands spill.

There is still no indication that dilbit, which would be traveling along the Keystone XL pipeline, can be effectively cleaned up. TransCanada's Keystone I pipeline leaked 14 times in the United States—including one spill of as much as 21,000 gallons—and 21 times in Canada during its first year of operation. If the proposed pipeline were to spill and contaminate the Ogallala Aquifer, it would be a catastrophe for the millions of Americans who rely on it for drinking and irrigation water every day. Building Keystone XL would be an abdication of the U.S. Government's responsibility to protect resources like the Missouri River, Prairie Pothole Region, Ogallala Aquifer, and the thousand other bodies of water that this pipeline would transect.

The projected job numbers from Keystone XL are low.

Keystone XL will not create many jobs. The State Department's FSEIS concluded: "Approximately 10,400 seasonal construction worker positions, engaged for 4-to-8-month construction periods, would be required to complete the proposed Project. When expressed as average annual jobs, this equates to approximately 3,900 average annual jobs (3,900 over 1 year of construction, or 1,950 per year over 2 years). Thus, if built over a 2-year period consistent with the explanation provided above, the proposed Project would likely generate 1,950 construction jobs per year . . . Once the proposed Project enters service, operations would require an estimated 50 total employees: 35 permanent employees and 15 temporary contractors."

Rejecting Keystone XL and continuing to reduce demand will create jobs and benefit the economy. Energy security will come through reduced demand and clean energy alternatives—not from a new tar sands pipeline.

America is a land of innovators. And today the factories of Detroit, the laboratories of Silicon Valley, and the next generation of American consumers are ready to invest in and profit from clean technology. The U.S. does not need to accelerate development of one of the most toxic forms of oil in the world. Largely thanks to fuel efficiency standards, U.S. demand for gasoline is decreasing. In fact, due to improved fuel efficiency and decreases in vehicle miles traveled, the U.S. Energy Information Administration (EIA) projects that the energy use by light-duty vehicles will decline steadily through 2040. Meanwhile, U.S. production of oil is rising for the first time since 1970.

The 2012 fuel efficiency standards are expected to save 3.1 million barrels of oil per day in 2030. That is equivalent to the amount of oil we import currently from Venezuela and the Persian Gulf together. By burning less oil and improving vehicle air conditioning systems, these recent standards will keep 570 million metric tons of greenhouse gas pollution out of our atmosphere in 2030—that's nearly 10 percent of current U.S. greenhouse gas emissions.

Additionally, these more-efficient vehicles will save consumers money at the pump. A family that buys a new vehicle in 2025 will save $8,000 compared with the average vehicle on the road today, even after paying for fuel-saving technology.

That's money that can be reinvested in local economies, instead of being sent to Canada to buy tar sands and into the pockets oil companies. Combined, Americans are expected to save $140 billion in 2030 as a result of these fuel efficiency standards, after paying for new fuel-saving technologies.

By setting standards through 2025, President Obama is giving automakers the certainty they need to innovate and thrive. Already, automakers have technologies that can help meet these standards—advanced transmissions, start/stop engines, and strong, lightweight materials. The innovation and manufacturing of vehicles as a result of these standards will continue to create jobs—in the auto industry and throughout the economy. The Blue Green Alliance projects that the second round of fuel efficiency standards alone (from 2017–2025) will create roughly 570,000 jobs. Over the next 2 years, new standards for our medium- and heavy-duty trucks are also expected, which will further increase investment in our economy and decrease our reliance on the oil industry.

Investing in the clean energy economy brings the support of American businesses, American employees, and environmental groups, and we create win-win-win scenarios. Compare that with Keystone XL, which threatens major sources of freshwater, American lands, and a stable climate.

XIV. CONCLUSION

The proposed Keystone XL pipeline is not in the national interest. The U.S. is on track to lower the amount of oil that we consume, and we are taking active steps to reduce our greenhouse gas emissions. Approving Keystone XL would be a step backward and would jeopardize the stability our our climate, the strength of our economy, and our children's futures.

Thank you for this opportunity to testify, and I look forward to answering any questions you might have.

The CHAIRMAN. Thank you.

Dr. Hansen.

STATEMENT OF JAMES HANSEN, PH.D., DIRECTOR OF THE PROGRAM ON CLIMATE SCIENCE, AWARENESS AND SOLUTIONS, AND ADJUNCT PROFESSOR, COLUMBIA UNIVERSITY EARTH INSTITUTE, NEW YORK, NY

Dr. HANSEN. Thank you for the opportunity to discuss climate and energy and the significance of the Keystone pipeline.

My first chart shows the carbon content of conventional oil, gas, and coal and the unconventional fossil fuels, including tar sands. The purple portions have been burned already. The science is crystal clear. If we want to avoid leaving young people a climate system that is spiraling out of their control, the additional fuel burned must be less than that already burned. That means we must phase out coal burning and leave most of the unconventional fossil fuels in the ground.

Tar sands are among the dirtiest and most carbon-intensive fuels. It makes no sense to set up a system to exploit them in a major way.

My second chart shows that China is now the largest emitter of carbon dioxide, the pie chart on the left. However, it is the cumulative emissions that drive climate change, the pie chart on the right. The United States is by far the largest emitter. We have burned our fair share of the carbon budget and some of China's and India's. We are all on the same boat. We will either sink together or find a way to sail together.

My next chart shows that fossil fuels provide over 85 percent of our energy. Nonhydro renewables provide only 3 percent of our energy in the United States and in the world.

So how can we possibly phase down carbon emissions? My next chart shows the two things that we can do. We can reduce our

energy intensity and we can reduce the carbon intensity of the energy. We have been reducing the energy intensity, the amount of energy per GDP, improving efficiency, and appropriate policies can further improve that. However, the principal requirement is to reduce the carbon intensity. Over the next few decades, we must drive the carbon intensity down near zero.

There is one country that has done a good job, Sweden. Sweden has decarbonized its electricity, which is provided by nuclear power and hydropower. They have one more big step to make, to make liquid fuels from electricity. That is actually not difficult, but they are a small country and have not developed that industry.

Why is the rest of the world not driving carbon intensity down? It is because fossil fuels appear to the consumer to be the cheapest energy. Fossil fuels are not really the cheapest energy. They are not required to pay for the human health costs of air pollution and water pollution or for the costs of climate change. The public picks up the tab.

So the required policy is to put a gradually rising fee on carbon, collected from fossil fuel companies at the first domestic sale, at the domestic mine or port of entry. One hundred percent of the money should be distributed to the public, equal amounts to all legal residents, so the person who does better than average in limiting his carbon footprint will make money. This will provide a huge incentive for individuals and a huge incentive for entrepreneurs and business people. It will spur our economy, make it more efficient, and it will modernize our infrastructure and create hundreds of times more jobs than building a pipeline to transport the dirtiest fuel on Earth.

With a fee of $10 per ton of CO_2, rising $10 each year, after 10 years it will reduce our fossil fuel use almost 30 percent, according to economic simulations by the Carbon Tax Center. It will reduce our oil use in 10 years three times more than the volume of the Keystone pipeline.

George Shultz and conservative economists, in fact most economists, agree that a rising revenue-neutral carbon fee is the way to solve the climate and the energy problems. In fact, it is an opportunity to make our economy more efficient. An important point is that such legislation I think needs to be introduced by a conservative, because I am afraid liberals will try to take part of the money to make the government bigger. Not one dime should go to the government; 100 percent should go to the public.

Now, I would like to enter in the record a specific one-page description of this fee and dividend which was written by Jim Miller, a Boston businessman. He gave me a copy yesterday. I think it is a nice simple summary of a fee and dividend system.

One final comment that I would like to make. It is crucial that we begin to work with China to solve both their air pollution problem and their carbon emission problem. China is now contemplating and making plans for a massive coal gasification operation hundreds of times bigger and copied to some degree on the coal gasification plant in the Midwest that Jimmy Carter started, but on a massive scale.

We cannot allow that to happen—if that happens, it will be very difficult, nigh impossible, for our children to control climate change.

So we need to work with them and work with them on clean energies, including nuclear power, where we still have the best capabilities. With our university system and our free enterprise system, we should work with them and help them get clean energy, because it is to our benefit as well as theirs.

Thank you.

[The prepared statement of Dr. Hansen follows:]

PREPARED STATEMENT OF DR. JAMES HANSEN

Thank you for the opportunity to discuss climate and energy. Fundamental facts about climate and energy reveal a great responsibility that our government has not only to the American public today, but to future generations. The facts imply the need for specific actions to address this responsibility. The required policies would improve our economy and our security, while also dealing with current issues such as the advisability of the Keystone tar sands pipeline.

Science has exposed the fact that we cannot burn all fossil fuels without enormous growing costs that would be borne most heavily by young people. So far we have burned about 380 GtC (gigatons of carbon), the purple areas in Fig. 1. Preserving creation, a planet that continues to look like the one civilization developed on, requires that we limit total fossil fuel emissions to something close to 500 GtC.

The exact limit is debatable, but there is no scientific debate about the fact that we cannot burn all of the fossil fuels without unacceptable destruction of life and property. That means we must phase out coal emissions and leave most of the unconventional fossil fuels, including tar sands, in the ground.

Fossil fuel emissions need to be phased down as rapidly as practical. Appropriate policies will spur development of carbon-free energies until tipping points are reached and rapid energy transition occurs. Time required to replace existing energy infrastructure means that some overshoot of the 500 GtC emissions target is probably unavoidable, but prompt policy actions can keep the overshoot small. In that case, improved agricultural and forestry practices can help draw down the excess atmospheric carbon. The crucial requirement is that we not push the climate system so far into the danger zone that we leave young people with a planetary system spiraling out of their control.

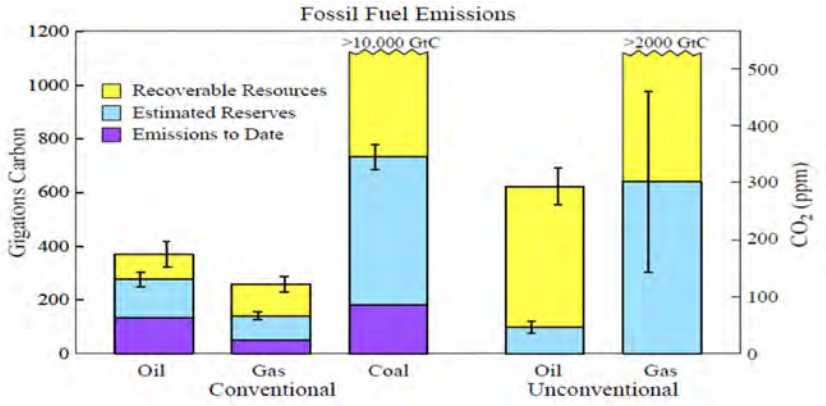


Fig. 1. Fossil fuel CO_2 emissions and carbon content. Purple portions are fossil fuels already burned. Unconventional oil includes tar sands and tar shale. Unconventional gas includes hydraulic-fracturing. See following for further information, units and data sources. (Hansen, J., P. Kharecha, M. Sato, V. Masson-Delmotte, F. Ackerman, D. Beerling, P.J. Hearty, O. Hoegh-Guldberg, S.-L. Hsu, C. Parmesan, J. Rockstrom, E.J. Rohling, J. Sachs, P. Smith, K. Steffen, L. Van Susteren, K. von Schuckmann, and J.C. Zachos, 2013: "Assessing 'dangerous climate change': Required reduction of carbon emissions to protect young people, future generations and nature." PLOS ONE, 8, e81648, doi:10.1371/journal.pone.0081648.)

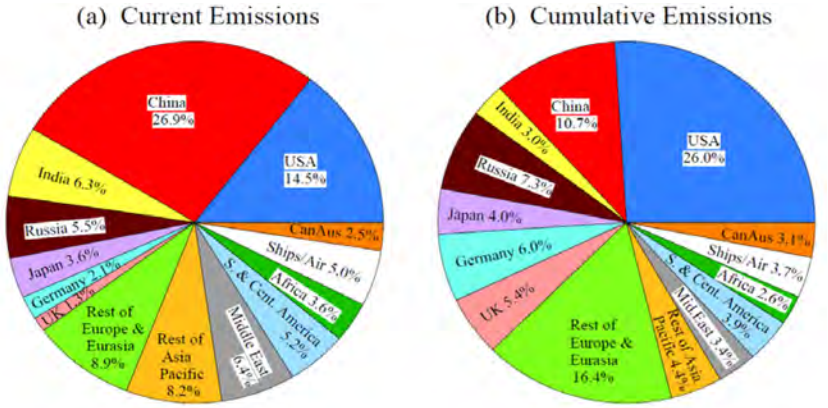


Fig. 2. (a) Fossil fuel CO_2 2012 emissions and (b) cumulative 1751–2012 emissions. (Boden, T.A., G. Marland, and R.J. Andres. 2013. Global, Regional, and National Fossil-Fuel CO_2 Emissions. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. doi 10.3334/CDIAC/00001—V2013.)

China's fossil fuel emissions today far exceed those by the United States (see Fig. 2a) and China's emissions are continuing to increase rapidly, mostly from coal burning. However, climate change is driven by the cumulative emissions (Fig. 2b), as the CO_2 (carbon dioxide) from fossil fuels remains in the climate system of the order of 100,000 years. The United States is, by far, the nation most responsible for excess CO_2 in the air today (Fig. 2b), a conclusion that is all the more true on a per capita basis.

The United States burned not only its share of the global carbon budget, but a large part of the budget belonging to China, India, and other countries. While it can be argued that the United States has a right to burn its own resources, we have no right to unlimited use of the global atmosphere as a waste dump. The capacity of that dump is limited. We have filled much of that dump, leaving little room for other nations. If other nations follow our example, the consequences, without question, will be catastrophic for all.

This situation does not call for hand-wringing and despair. Other nations do not wish to fill the air with waste. However, they have the right to develop, to aspire to a better life. Thomas Jefferson posited "pursuit of happiness," after life and liberty, as one of the most fundamental human rights, the human rights that Americans decided to fight for. That specific right implies a right to develop. Development requires energy. We used fossil fuel energy to develop our Nation and raise our standard of living. If the rest of the world follows our example we will all be losers.

Let's be clear. The task before us is not easy. Developing countries need energy to lift their people out of poverty, just as developed countries did. Affordable energy is important as a matter of justice, but also to bring global population under control. As countries develop and poverty declines, so do birth rates, which is important so that we leave room on the planet for all the other species whose eco-services we depend upon. Developed countries have a responsibility to work with the developing world, because we burned much of their share of the global carbon budget.

Developed nations, including the United States, also have a need for abundant clean, affordable energy. Clean energy is needed to phase out fossil fuels and to provide energy for producing liquid fuels, for desalinizing water, for recycling metals. Yes, we can be more efficient in our energy use, but energy needs are not going away. Obtaining an adequate continuing supply of clean energy is a great challenge.

The energy challenge is also a great opportunity. We have the potential to meet the challenge. We have the potential for innovations. Our free enterprise system, fed by the greatest university system in the world, creates the potential for rapid progress. However, we must have policies that provide the incentives required for this potential to be realized, not policies that hamstring it.

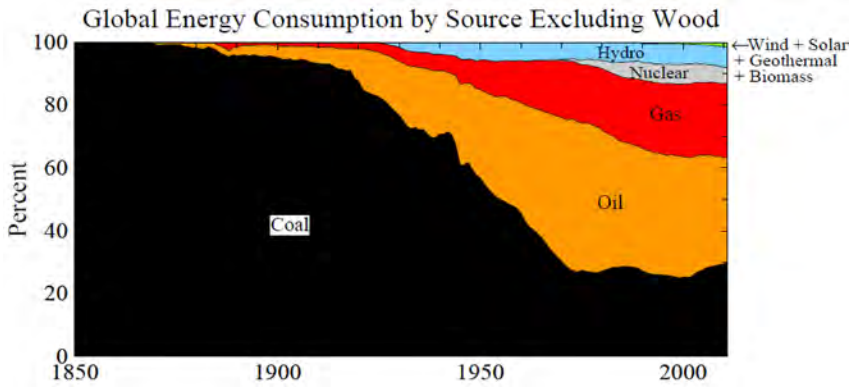


Fig. 3. World energy consumption for indicated fuels, excluding wood.

The needed policies are easier to define if we first examine two more charts. The fuels that provide global energy are shown in Fig. 3. Fossil fuels provide more than 85 percent of global energy. Coal use has surged in the past decade, surging in absolute terms even more than in the percentage shown in Fig. 3. Most of the growth is in developing countries, with 60 percent of the increased CO_2 emissions from China.

Nonhydro renewable energies provide only about 3 percent of global energy and 3 percent of U.S. energy. Thus total installed renewables, installed over a period of a few decades, offset only one year's growth of global energy use. Renewables are nowhere near covering the growth of energy requirements.

I am sorry that we scientists have not done an adequate job of communicating energy facts. A note and a draft op-ed discussing the energy situation in simple direct language is available. (Hansen, J. Sleepless in Ningbo and World's Greatest Crime Against Humanity and Nature.)

My final chart (Fig. 4) shows the energy intensity and carbon intensity for several nations and for the world. There are two ways we can reduce our carbon emissions while still having the global economic growth that is needed to phase out poverty. One way is to reduce our energy intensity, i.e., use less energy to produce our products. Energy intensity is declining slowly in most nations, and with appropriate policies we can make it decline faster.

The crucial urgent factor is the carbon intensity, the amount of carbon released to the atmosphere per unit energy. We must reduce carbon intensity to near zero to stabilize climate.

There is one nation that has come close: Sweden. Sweden decarbonized its electricity, mainly via the combination of hydropower and nuclear power. With one additional step Sweden can be at or near the low carbon intensity needed to stabilize climate. The main remaining need is to produce liquid fuels for transportation from electricity or perhaps a breakthrough in battery technology.

Fossil fuels are the dominant energy source globally because they are, or appear to be, the cheapest energy. They are not actually cheapest, but they appear cheapest to the consumer because they are not required to pay their costs to society. They do not pay for the human health effects of air pollution and water pollution. They do not pay for growing climate effects.

The policy that is needed is a gradually increasing across-the-board carbon fee collected on oil, gas, and coal at the first domestic sale, at the domestic mine or port of entry. It is very simple to collect from a small number of sources. One hundred percent of the funds should be distributed to the public, equal amounts to all legal residents, electronically to their bank account or debit card.

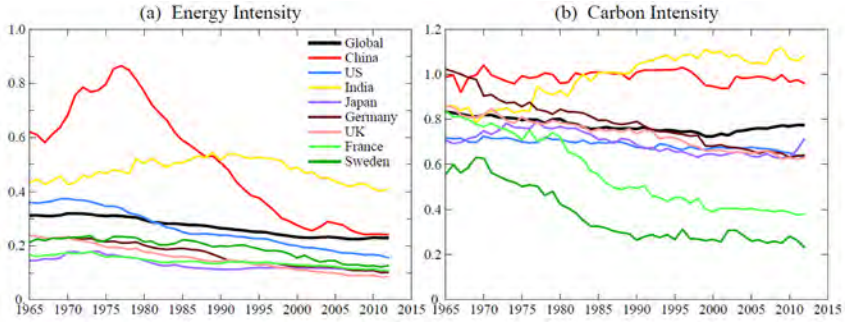


Fig. 4. (a) Energy intensity, defined as energy consumption (Gt of oil equivalent) divided by real gross domestic product (trillions of 2005 US$), and (b) carbon intensity, defined as fossil fuel carbon emissions (GtC) divided by energy consumption (Gt of oil equivalent).

Thus the person who does better than average in limiting his fossil fuel use will make money. There will be an incentive for individuals to move to low-carbon and no-carbon energies, and an incentive for entrepreneurs to develop those products. Energy choices are left to the individual and the market place. Not one dime to the government. It's a conservative plan that would work wonders. In 10 years, if the fee rises $10 per ton of CO_2 per year, U.S. emissions will be reduced by 20–30 percent according to economic simulations by the Carbon Tax Center. (This fee is progressive. Sixty percent of the people, especially low-income people who do not travel around the world a lot, will receive more in the dividend than they pay in increased prices. But to stay on the positive side of the balance sheet, they must pay attention to what they buy.)

The annual reduction of oil use alone, after 10 years, would be more than three times the volume of oil carried by the proposed Keystone XL pipeline, rendering the pipeline superfluous. By eliminating the need for the pipeline, the danger of oil spillage on American soil is also eliminated. With this approach we would move over a period of years to true energy independence, as the economic incentive from a rising carbon fee would spur our entrepreneurs to develop alternative energy carriers, including liquid fuels from abundant no-carbon electricity. The no-carbon electricity can be provided by renewables or nuclear power or some combination as the market decides or as the public chooses.

In addition to a carbon fee-and-dividend, we in the United States have a moral obligation and a great opportunity to work with China to help assure that their drive to develop energy does not release so much CO_2 as to cause climate change out of humanity's control. It is an obligation, because we burned much of their share of the global carbon budget. It is an opportunity, because it will provide us the chance to get back on top of the nuclear technology world. For the sake of the whole world, as well as for our own sake, it is important that the United States provide leadership to assure that nuclear technologies are as safe as possible and resistant to weapons proliferation.

The alternative is that we leave the field to Russia. Russia is more than happy to fill the void. Indeed, China has already agreed to purchase nuclear technology from Russia, including fast reactors with potential for recycling of nuclear material. The United States still has the best technology capabilities, but that lead is rapidly shrinking and will be gone in the near future if we continue to languish.

Before describing what we should do in such cooperation, I must say what we should not do. It is inappropriate and an insult to go to China and tell them to work harder on renewables and energy efficiency. China is already doing more in these regards than we are in the West. For example, where possible, codes for new buildings in China require use of geothermal heat and other renewables, and efficiency standards are ratcheted up as soon as improved technologies appear.

We also should not expect China to use renewable energy for base-load electricity. We just completed a solar power plant, Ivanpah, near the Nevada-California border on public land provided free. Ivanpah cost $2.2B and it covers 5 square miles (about 13 square kilometers). With a generous estimate of 0.25 for the plant's capacity factor (the ratio of average power to peak power when the sun is highest and the sky is clear), Ivanpah will generate 0.82 TWhours of electricity per year. The power is intermittent because Ivanpah does not have energy storage, which would make the plant far more expensive.

In contrast, Westinghouse is nearing completion of two AP–1000 nuclear plants in China. These nuclear facilities each require about 0.5 square miles (about 1.3 square kilometers). With a capacity factor of 0.9, typical of nuclear power plants, the output of each plant will be 8.8 TWhours per year. It would require more than 10 Ivanpahs to yield as much electricity and an area of more than 50 square miles (128 square kilometers), area that China does not have to spare. The AP–1000 cost in China is about $3.5B per plant

What the United States should do is cooperate with China and assist in its nuclear development. The AP–1000 is a fine nuclear power plant, incorporating several important safety improvements over existing plants in the United States, which already have an excellent safety record. There has been only one serious accident among 100 reactors, at Three Mile Island in Pennsylvania, and it did not kill anyone. However, further advances in nuclear plants beyond AP–1000 are possible and the large demand in China allows rapid progress and building at a scale that can drive down unit cost.

China has initiated nuclear R&D programs, including cooperation with U.S. universities and firms. Cooperation with our universities and the private sector could be expanded rapidly, and areas of relevant excellence persist in some Department of Energy Laboratories despite inadequate levels of support. Training of nuclear engineers and operators in the U.S. could help assure safe operations during a challenging period of rapid expansion. Benefits of cooperation in technology development can eventually circle back to United States industry and utility sectors as cost effective power plants are perfected.

In assessing the potential for the U.S to eventually benefit from a cooperative program of nuclear technology development, it is apparent that reforms are required in our Nuclear Regulatory Commission. There is widespread agreement that the NRC has done a good job of regulating. They have capable technical staff, and they do a good job as resident inspectors at nuclear plants, in incident reporting, and in keeping the nuclear plant operators on their toes.

It is a different matter, however, with regard to the nuclear reactor permitting process. The heavily lawyer-laden permitting process results in paper-work requirements and delays that stretch into years and billions of dollars of cost growth. Nuclear power proponents make a strong case that this situation is in part a consequence of pressure from antinuke "greens" who aim to delay nuclear construction and make nuclear power so expensive that it will fade away. Whatever the balance of causes, this problem needs to be fixed or the U.S. will suffer serious economic disadvantages and decline in comparison to rising economic powers such as China.

SUMMARY

Issues such as the Keystone pipeline (and the reliability of Russian energy exports) should be viewed in a broader context of energy and climate. Basic facts include:

(1) The carbon budget for the planet has been nearly used up, implying that the world as a whole needs to phase off fossil fuel energy as rapidly as practical.

(2) Current skyrocketing of global emissions is primarily a consequence of rapidly developing countries, especially China.

(3) The West, especially the U.S., has burned more than its fair share of the allowable global carbon budget, implying a responsibility to help developing countries find a low carbon pathway to development.

(4) Nonhydro renewables provide only a tiny fraction of global energy and do not appear capable of satisfying the large energy requirements of developing nations such as China and India.

These facts suggest the following policy recommendations:

(1) A carbon fee-and-dividend system that places a flat across-the-board rising fee on the carbon content of fuels with the funds distributed 100 percent to legal residents. This approach provides a strong incentive for energy efficiency as well as development of carbon-free energies. A flat across-the-board rising carbon fee provides the basis for an international agreement that could begin to phase down global carbon emissions. Such an approach would require initial agreement only among a few major nations such as the United States and China. Border duties would be placed on products from nations without an equivalent carbon fee to avoid handicapping domestic manufacturers, and the carbon fee on products exported to nonparticipating nations would be rebated to domestic manufacturers.

(2) The United States should cooperate with China to aid its transition to low-carbon and no-carbon energy sources, including the development and deployment of improved nuclear power technology. It is to everyone's disadvantage if China continues down a path of heavy carbon emissions, including, for example, extensive

development of coal gasification. There is a strong complementarity of the contributions that the two nations could bring to such cooperation and there could be enormous benefits, not only to the two nations, but to the world.

The CHAIRMAN. Thank you.

Ms. Harbert.

STATEMENT OF HON. KAREN ALDERMAN HARBERT, PRESIDENT AND CEO, INSTITUTE FOR 21ST CENTURY ENERGY, U.S. CHAMBER OF COMMERCE, WASHINGTON, DC

Ms. HARBERT. Chairman Menendez, and Ranking Member Corker and all the members of the committee, thank you for the opportunity to testify today.

By 2040 global energy demand will grow by over 50 percent, but 90 percent of that demand will be in the developing world and we will be well on our way to adding 2 billion people to this planet. China, India, Africa, and even the Middle East will be growing in their energy demand and traditional suppliers will be looking to sell to them and not to us.

Our own government has concluded that by 2040 still 80 percent of the world's energy demand will be met by fossil fuels. That means we have to do more here at home to meet our energy demand. The unrest in the Ukraine has shown that energy vulnerability equals geopolitical vulnerability. Despite an increase in supply here coupled with moderating demand, we will still import 40 percent of our oil by 2020. So we can choose the status quo by relying on oil from Venezuela, which has people today protesting in their streets, or from places far away that do not share our values or democratic principles.

In 2002 North America had 5 percent of the world's reserves, 18 percent the following year when oil sands from Canada were added, and now our own EIA believes that could even be tripled. However, the global share of production of oil from those countries that are considered Not Free or Partly Free by Freedom House has jumped from 65 percent in 1985 to 77 percent in 2012.

So we have a choice. We can choose to embellish the legacy of Hugo Chavez and ignore the geopolitical manipulation of energy, or we can choose to have a secure and stable supply of oil from Canada and develop our own vast resources here. Let us not forget that KXL will also transport U.S. crude. Canada is our most important energy supplier already and one of our most stalwart allies. They were there for us right after Hurricanes Katrina and Rita. They were there for us right after 9–11. They accompanied us into war against terrorism.

They have made a choice to develop their oil sands. It is in their national interest and they will do it one way or another. Increasing our existing deep relationship with our longstanding ally Canada, coupled with reforms in Mexico and production here at home, we could shift the gravity of the oil market to North America.

Jobs. The Keystone pipeline will create 42,000 jobs. And for those who say those are temporary, they do not understand the construction industry or they are simply against the $2 billion that will be put in labor's pockets. Or they are against the $3.4 billion in additional GDP for our economy that is sputtering. Or they are against the pipeline being one of the largest property taxpayers in

Montana, South Dakota, Nebraska, which will support schools, fire, police services, and infrastructure.

Today the United States and Canada enjoy a very robust trading relationship and the most peaceful border. I do not think we have to fear the Canadian Mounties coming and circling our bases like Russia is doing to Crimea. But equally that trade relationship pays off. For every dollar we spend buying a Canadian good, 89 cents returns to the United States. That is money that stays here for the benefit of our economy. That is not like our other oil suppliers. Only 27 cents comes back here from oil we buy from Venezuela.

On the environment. I would suggest that every one of us here in this room is an environmentalist. We enjoy and like and support clean air, water, and land, and the State Department has concluded some very important things in its review. Number one, the Keystone pipeline will have a negligible impact on the environment. Today the oil sands production accounts for only 0.1 percent of global greenhouse gas emissions and their carbon footprint is going down and in 2011 it is now equal to the Venezuelan crude that it seeks to displace.

Number two, the oil sands will be developed with or without the Keystone pipeline. Our Government has concluded that, the Canadian Government has concluded that, and they are now looking east, west, and south for options and producers are investing to make that a reality.

Third, alternatives to the Keystone pipeline would have a higher emissions profile than the pipeline itself.

So, put plainly, given our practical energy reality, if you are in support of the environment you are in support of the pipeline.

So in conclusion, the 5-year review process has been exhausted, hearing from people and organizations all across this country. It has included field hearings and Cabinet agencies' input. In fact, it has received input from the people on this panel. And the conclusion is clear: Keystone XL is in our national interest, as was its predecessor, the Keystone pipeline. Keystone is good for the economy, jobs, tax revenue, property revenue, investment, and trade. It is good for our energy security, adding a more stable and secure source of energy. And the State Department has concluded that the Keystone pipeline will have a "negligible impact" on the environment, their words, and that oil sands will be developed one way or another.

KXL and, more broadly, developing the resources here in North America will have a significant effect on improving our national security and by adding more democratic molecules to our mix. Sixty-five percent of the American people support this pipeline. We live in a dangerous and precarious time. Approving the pipeline will strengthen our economy, decrease our energy risk, respect our commitment to the environment, while also furthering our trade and bilateral relationship with our democratic ally to the north.

The Keystone XL pipeline is in our national interest and, in the words of Canada's Prime Minister, is a "no brainer."

Thank you very much.

[The prepared statement of Ms. Harbert follows:]

PREPARED STATEMENT OF HON. KAREN A. HARBERT

Thank you Chairman Menendez, Ranking Member Corker, and members of the committee. I am Karen Harbert, president and CEO of the Institute for 21st Century Energy (Institute), an affiliate of the U.S. Chamber of Commerce, the world's largest business federation representing the interests of more than 3 million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations, and dedicated to promoting, protecting, and defending America's free enterprise system.

The mission of the Institute is to unify policymakers, regulators, business leaders, and the American public behind a common sense energy strategy to help keep America secure, prosperous, and clean. In that regard we hope to be of service to this committee, this Congress as a whole, and the administration.

INTRODUCTION: THE STRATEGIC CONTEXT

According to the Energy Information Administration (EIA), fossil fuels will remain the largest energy source worldwide for decades into the future. As the global economy recovers and developing economies continue to rapidly expand, demand for energy will increase by as much at 56 percent by 2040, and competition for petroleum and all forms of energy will increase throughout the world.

Through the application of new technologies, North America is moving from an era of energy resource scarcity to one marked by energy abundance. Indeed, the core assumption underlying our energy policy—scarcity—is no longer valid. North America has the largest fossil fuel resource base in the world.

This has caused a shifting in the world's energy center of gravity from the Middle East to North America. The rapid change in U.S. and Canadian energy fortunes has caught many analysts and policymakers by surprise. Many experts now believe energy self reliance for North America actually may be within reach in the coming decade.

Nevertheless, forecasts agree that the United States will continue to be a net importer of oil for many years to come. EIA's "Annual Energy Outlook" 2014 Early Release, for example, projects that U.S. consumption of petroleum and other liquids will peak around 2020 at 19.5 MMbbl/d and decline gently thereafter. EIA also projects that crude oil production will approach 9.6 MMbbl/d by 2020. As a result of these two trends, net crude oil imports have declined from 60 percent of total crude oil supply in 2011 to less than 50 percent today, and they are projected to decline further to 40 percent by 2020. As the United States remains a net importer of crude oil, the greater access to Canadian crude oil afforded by Keystone XL would increase the reliability and the diversity of foreign supplies of crude oil the United States will continue to need.

America needs sustained economic growth. The economy continues to expand at a slow pace, and unemployment remains stubbornly high. North America's abundant energy resources provide a readily available mechanism to ensure affordable energy, grow our economy, create millions of well-paying jobs, and strengthen our Nation's long-term energy security. We have the largest stimulus package available to our economy in the form of energy, and this economic injection is not one that is borne by the American taxpayer.

In 2002, North American proved reserves accounted for about 5 percent of the world total. The following year, the addition of 175 billion barrels of oil from Canada's oil sands to proved reserves boosted North America's reserves to 215 billion barrels and its share of proved global reserves to 18 percent. In a recent report, EIA estimates that in 2013—10 years later—technically recoverable resources of unproved conventional and shale oil resources could be as high as 594 billion barrels, triple the 2003 estimate. Rapidly improving technology could send this estimate even higher. When combined with the estimated 2 trillion barrels of U.S. oil shale and oil sand resources, North America's crude oil resource is greater than the amount of proved conventional reserves in the rest of the world today. The region can be an energy superpower if we let it.

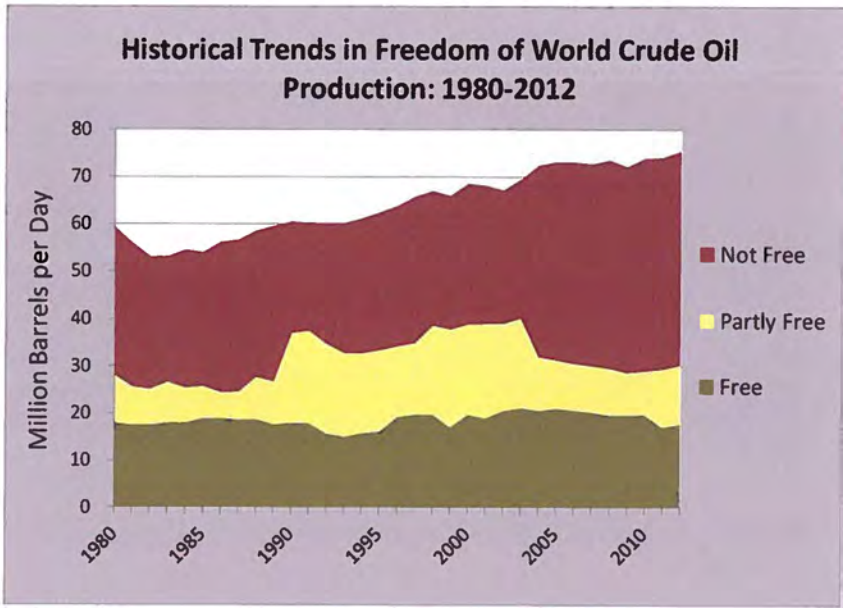
Canada has doubled its oil production over the last two decades and sends almost all of its oil exports to the United States (though with new outlets for Canadian crude oil in the works, that will change). Production from the Alberta oil sands can increase from the current 1.4 MMbbl/d to more than 3.5 MMbbl/d by 2025, and some estimates are higher still. This represents crude oil that we will not need to import from OPEC nations. Much of the Canadian crude is supplied to the United States through 19 cross-border pipelines, which received permits under both Republican and Democratic Presidents, including President Obama.

Canada is an important and reliable trading partner and is by far the largest supplier of oil and natural gas to the United States, supplying 16 percent of U.S. petro-

leum consumption needs and 28 percent of U.S. petroleum imports. Stable, long-term energy supplies from Canada are critical to U.S. energy security at a time when global supplies are often found in geopolitically unstable regions of the world and production from once-reliable sources is slowing.

The Institute has taken a close look at energy supply issues and how they impact U.S. and international energy security as part of our Index of U.S. Energy Security Risk and International Index of Energy Security Risk studies. One way to look at supply risk is to measure how much of the global oil supply is in the hands of potentially politically unstable countries. This was done using Freedom House rankings of civil and political liberties, which the group uses to categorize countries as Free, Partly Free, and Not Free (Figure 1). The chart shows that since 1980, output from Not Free and Partly Free countries has increased while output from Free countries has been stuck in a range of 17 to 20 million barrels per day. As a result, the share of global production in Not Free and Partly Free countries climbed from a low of 65 percent in 1985 to a high of 77 percent in 2012. At a time when North Sea oil output is falling, large emerging economies are growing into large oil consumers, putting pressure on spare oil production capacity globally. Potential political instability in many producing countries is also on the rise, and greater output from a close friend and ally like Canada is needed and welcome.

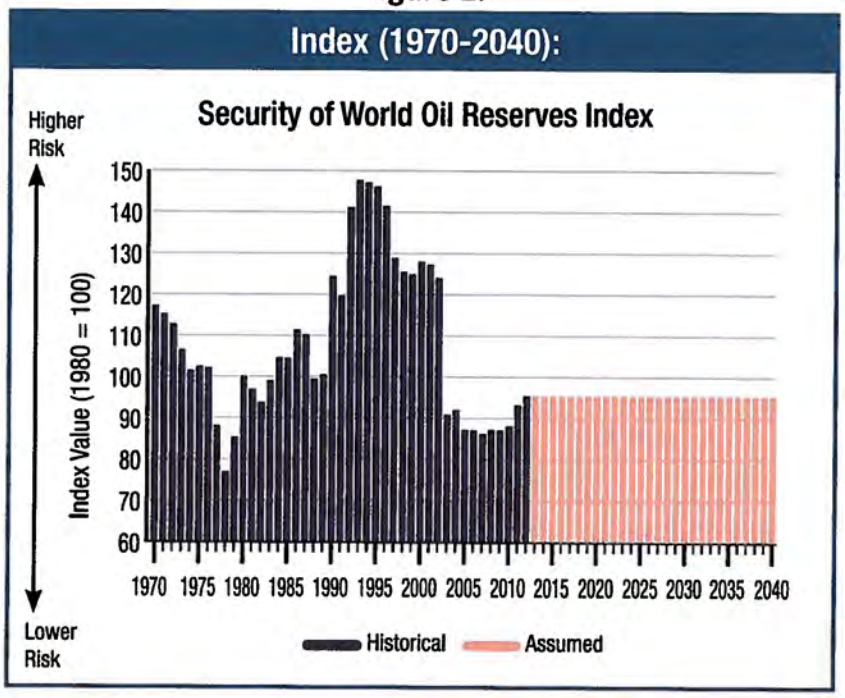
Figure 1.



Taking this analysis a step further, the Institute has developed metrics of global supply risks for oil, natural gas, and coal reserves and supplies that combine measures of reliability (using Freedom House rankings as a proxy) and market diversity. Diversity of supply is a key aspect of energy security—the greater the supply diversity, the lower the supply risk.

Of particular relevance to this discussion is the global crude oil proved reserves risk metric shown below (Figure 2). It shows a sharp increase in global supply risks in the early to mid-1990s because of increases in reserves being listed for Iran, Iraq, Saudi Arabia, United Arab Emirates, and Venezuela. The stunning plunge in global risk observed in 2003 is entirely due to the listing of an additional 175 billion barrels of crude reported for Canada.

Figure 2.



Both of these charts demonstrate energy supplies from reliable trading countries such as Canada can lower energy security risks for the United States and other countries. Therefore, the construction of TransCanada's Keystone XL pipeline will help us lower our energy security risk while also realizing the economic and energy security benefits of Canadian and U.S. resources.

ECONOMIC BENEFITS

We believe it is clearly in the national interest that TransCanada's Keystone XL (KXL) pipeline project proceeds. TransCanada's Keystone XL pipeline is a $3.3 billion pipeline expansion project that would increase the existing Keystone Pipeline system that connects Canada's 175 billion barrel oil sands resource to U.S. refining centers from a capacity of 591,000 bbl/d to more than 1.2 MMbbl/d.

The economic impact and long-term benefits of the construction of the KXL pipeline are significant and vitally important to American jobs and our economy, especially during this time of sluggish economic growth. According to the Department of State's Final Supplemental Environmental Impact Statement (January, 2014), 42,100 Americans will be employed in direct, indirect, and induced jobs during construction of Keystone XL, generating $2.02 billion in earnings for workers. In addition,the FSEIS reported that the project will generate $66 million in sales tax for goods and services during construction that will infuse economic vitality into local communities. Overall, the Keystone XL project will contribute $3.4 billion during construction to the U.S. Gross Domestic Product (FSEIS, January 2014).

Keystone also will enhance an already deep trading relationship. It is estimated that for every $1.00 spent to buy oil from Canada, $0.89 is returned in the purchase of U.S. goods or services. The development of Canadian oil sands resources already supports tens of thousands of American workers in hundreds of companies spread throughout the Unites States who are supplying goods and services to oil sands developers. The approval of the Keystone XL pipeline will help allow for the continued growth in development of the oil sands and an increased flow of trade between the United States and Canada.

Once the pipeline is built, TransCanada will become one of the single largest property taxpayers in Montana, South Dakota, and Nebraska. During construction of the pipeline, TransCanada will pay $55.6 million in property taxes to states and local communities in counties with Keystone facilities (FSEIS, January 2014). This revenue will help support key local services like schools and fire and police services, as well as needed projects like roads, bridges, recreation facilities, and new schools—thus helping create and support additional construction jobs and economic benefits.

In addition to these economic benefits, expansion of the Keystone XL pipeline would enhance U.S. energy security. Linkages to the pipeline system also could enable crude oil production from the Bakken formation and, if they are allowed to be developed, oil shale formations in Wyoming to be transported to refineries in the gulf region more efficiently.

The failure of the Federal Government thus far to grant a construction permit for the Keystone XL pipeline exemplifies perhaps better than anything the challenges of building energy projects and the need for common sense energy policy reform in the United States.

FOREIGN RELATIONS AND TRADE

After over 5 years of environmental and other reviews, the portion of the northern section of the pipeline from the Canadian border to Steele City, NE, is still awaiting Presidential approval. Some have called this the most studied piece of U.S. infrastructure ever. The Prime Minster of Canada called the project a "no-brainer." And leaders, investors, and markets have been watching. This failure has tarnished America's image as a "can do" country open to investment, a failure that can be difficult to shake from investors' minds.

Also, while the Keystone XL proposal has been under consideration and delayed, Canadian oil sands developers have been looking to countries other than the United States, such as China and India, as markets for oil sands crude. Proposals have been developed and accelerated to build pipelines that would stay within Canadian borders, running west from Alberta to the Pacific Coast, and move crude to markets in the East.

Reliable, long-term energy supplies from Canada are critical to U.S. energy security at a time when global supplies are often found in geopolitically unstable regions of the world and in countries that aren't concerned with U.S. best interests. While expansion of U.S. domestic energy sources must remain a top priority, imported oil will continue to play a key role in meeting energy demand, and oil from Canada can help meet our supply and demand challenges.

The increased supply of crude oil from KXL would greatly contribute to our move toward North American energy self-sufficiency. U.S. refineries in the gulf coast rely mostly on foreign imports of heavy crude oil. When completed, the KXL pipeline will have the capacity to supply over 800,000 barrels per day of crude oil from Canada and the U.S. Bakken region to U.S. refineries, curbing dependency on crude oils from Venezuela and Mexico, whose volumes of crude exports are in decline, and less stable countries in the Middle East and Africa.

It is critical to reiterate that Canada is an important and reliable trading partner for the United States. These two nations already enjoy the largest trading partnership across the longest peaceful border in the world. In addition, the approval of the Keystone XL pipeline would result in an increased flow of trade between the U.S. and Canada. For every U.S. dollar spent on Canadian products, Canadians return 89 cents through the purchase of U.S. goods and services. Compared to the 27-cent return that we get from energy trade partners like Venezuela, the benefits of Canadian trade are obvious, as are the energy security advantages.

Finally, during the 5-plus year period that the project has been under review, America has been sending billions of dollars overseas to purchase oil from countries that are not our allies. It just doesn't make sense.

ENVIRONMENTAL GOALS AND OBJECTIVES

The Keystone XL project is a "win-win" for the United States. The FSEIS (January, 2014) found that the project will have "limited adverse environmental impacts" during construction and operation. It will help provide an important source of energy for our Nation, boosting our economy and improving our energy security by reducing our dependence on oil from overseas.

According to EIA (2013), U.S. energy-related emissions of carbon dioxide fell are at their lowest level since 1994. While Canada is committed to developing its oil sands resources, it is also steadfast in its efforts to reduce its greenhouse gas (GHG) emissions and has made great strides in cutting emissions from oil sands. According

to the Canadian Government, technological advancements have cut per-barrel GHG emissions from oil sands production by 26 percent compared to 1990 levels. Oil from the oil sands is destined to reach the United States and our refineries. Efforts to stop crude transportation projects like KXL will have no impact on the development of oil sands. The recently released FSEIS states that approval or denial of any one crude oil transport project is unlikely to significantly impact the rate of extraction in the oil sands or the continued demand for heavy crude oil at refineries in the United States.

The FSEIS also states that KXL will produce 28–42 percent less GHG emissions than any other possible alternative oil sands transportation scenarios, adding additional benefit for the environment.

The Department of State has conducted a comprehensive, extensive, and thorough independent environmental review. Multiple federal, state, and local agencies have been involved, and opportunities for public input were provided throughout the process. Any further reviews or delays are unnecessary and unwarranted.

CONCLUSION

The Keystone XL pipeline has called attention to a much larger problem in America. The good news is that over the last 5 years the world's energy center of gravity has shifted closer to North America. The alarming news is that our energy policy has lagged far behind this reality and is now standing squarely in the way of realizing a more competitive and secure energy future for America. The question is on the table: "Is America open for business?"

As a nation, we have been blessed with abundant natural resources and a great capacity for technological innovation. Fulfilling America's energy potential requires strategic thinking underpinned by durable policy. For too long, our approach to energy has been conflicted, contradictory, and myopic. The extraordinary opportunities being created in U.S. energy today have come about despite government policy, not because of it. That has to change if we are to energize the economy and put people back to work, and that means approving needed energy infrastructure, like the Keystone XL pipeline, in a timely manner.

If done right, energy can be a potent driver for our Nation's economic recovery. We can choose to seize the new opportunities being created across America's energy landscape or simply cede these potential advantages to other countries.

The Energy Institute believes that unleashing the power of free markets to create a competitive energy marketplace will stimulate economic activity and create jobs. The majority of the Keystone XL project has been under review for over 5 years, taking into consideration comments and information collected through multiple hearings, comment periods, and interagency processes. Public citizens, governments, Tribal governments, and nongovernmental organizations have all taken part in the review process. A new scientific poll shows that 65 percent of Americans support this pipeline. There is no doubt that the oil sands in Alberta will be developed, and the only question is where the oil will go. America has a choice of getting more oil from its trusted ally Canada and in the process increasing revenue and investments in the United States or sending more of our hard earned money to unfriendly or unreliable countries.

Approving the Keystone XL pipeline and making energy infrastructure a priority will put America on a long-term path to a safe, strong, prosperous, and clean energy future. It is more than past time to move forward and grant the Presidential Permit to allow construction on the pipeline to begin.

The CHAIRMAN. Thank you all for your testimony.

Several witnesses have asked for documents to be entered into the record and, without objection, they shall be included.

So let me start off. Mr. Brune, I understand the seriousness of climate change. I have seen its effects when Super Storm Sandy devastated our home State of New Jersey. I personally believe in acting on climate by putting a price on carbon and I support the President's plan to cut carbon emissions from power plants.

However, it seems strange to regulate carbon by means of transportation, which is what denying the Keystone pipeline would amount to. We do not limit the amount of carbon on roads leading to power plants, so why should we regulate carbon through this pipeline?

You need to put your microphone on when you are responding.

Mr. BRUNE. Thank you, Mr. Chairman. The reasons to oppose this pipeline are as varied as the reasons to promote fuel efficiency in our cars and trucks. For the pipeline, again, we would be taking oil from the most carbon-intensive fuel source on the planet, taking it all the way through the country, most of it to be exported. This is a fuel source that has been documented to be much more carbon intensive than conventional oil. But it is also a fuel source that has, through experience, we have seen polluted American waterways and posed a significant risk to air quality across the country.

When we have a policy decision before us where we have a choice between putting $7 billion into this pipeline or investing instead in clean energy and fuel sources that would create more jobs, it is incumbent upon us to think both for what would strengthen our economy today, but would also protect and strengthen our economy long into the future. So from our perspective this is not a step to regulate carbon; it is a step that could be taken—rejecting this pipeline is a step that could be taken to promote clean energy and energy efficiency instead.

The CHAIRMAN. Well, what about Ms. Harbert, just to continue on this as a mode of transportation versus the other issues, which I generally agree with you. The State Department's final EIS for the pipeline expansion concluded that if the pipeline expansion is blocked and producers are forced to ship the oil by rail or truck instead, overall transportation emissions could be greater than that of the pipeline by 28 to 42 percent and would likely result in additional accidents.

So is approving the pipeline actually more environmentally sound and safer than the alternatives?

Ms. HARBERT. That is what the State Department concluded.

The CHAIRMAN. I am sorry, I was not asking you. I know you said that. I was referring to Mr. Brune that you made that comment. I expounded upon it.

I would like to hear your response to it.

Mr. BRUNE. We believe it is a false choice. What has been proven is that shipping tar sands oil by rail is not safe. We have seen more accidents by rail in the last year than we have in the past previous decades. What is also been proven is that shipping tar sands oil through pipelines is not safe. The first tar sands pipeline leaked 12 times, spilled 12 times in the first 12 months.

So the choice is not whether to accept the increased risk through rail or to accept increased risk through pipeline, but whether to take this oil out of the ground to begin with. The IPCC, the world's top climate scientists, have said that in order to keep global warming below 2 degrees Celsius, or 3.6 degrees Fahrenheit, we have to keep at two-thirds of our fossil fuel reserves around the world in the ground. So a reasonable person would suggest that the way to do that—and that is a tall order for the global economy. It is a tall order for the American economy. The best way to do that is to start with the most carbon-intensive fuel sources, such as the tar sands up in Canada.

The CHAIRMAN. Ms. Harbert, your testimony—we have heard a lot of testimony about jobs. I have heard a great variety of figures around the number of jobs this project will create. TransCanada

has claimed that the project will create 20,000 jobs in construction and manufacturing and almost a half a million, 465,000 jobs exactly, throughout the U.S. economy. Tom Donohue, your boss, lowered the indirect jobs number to 250,000, and in previous testimony you upped the construction jobs to 25,000 and lowered the indirect jobs to 116,000.

However, the State Department's final EIS concluded that the project would only create about 2,000 short-term construction jobs and only 50 ongoing jobs for maintenance. So how do you justify the wide spread even within your own organization on numbers? And if one is looking to the EIS as a compelling reason for approval, then as it relates to the jobs how is it that you are so disparate from where they are?

Ms. HARBERT. That is a very good question and let me address it in two different ways.

The CHAIRMAN. We only ask good questions here.

Ms. HARBERT. Of course. That is why we are here.

Those larger numbers were the entire span of the pipeline from Canada all the way to the Gulf of Mexico and, as you well know, half of that pipeline or the lower third is already under construction and being put into operation now. So the numbers obviously for what we are looking at now are smaller.

We are happy to take the State Department numbers——

The CHAIRMAN. So the State Department's numbers are what you would say for that which is under consideration?

Ms. HARBERT. We are going to take the State Department at its word that it believes those are the numbers.

The CHAIRMAN. So 2,000——

Ms. HARBERT. But we would like to see the 42,000 jobs that they cite in their EIS, not 2,000 but 42,100, to be exact, is what they put forward in the final environmental impact statement. Certainly we would like to see those bigger. I know our friends in the labor community are hoping they are bigger. But we are going to use what the government has put out. I would have to say, as I said in my testimony, those are good-paying jobs for construction workers and we should not be against them.

I will say one thing about Mr. Brune's testimony that he just put on the table. He said the question is whether we should take these oil sands out of the ground. I would just like to submit that I do not think that is the United States decision. That is Canada's decision to make, not ours.

The CHAIRMAN. Well, let me ask you, since I listened to your testimony with interest. Your testimony suggests that the Chamber of Commerce is an environmentalist organization.

Ms. HARBERT. Did you say environmental-less?

The CHAIRMAN. An environmentalist——

Ms. HARBERT. Environmentalist.

The CHAIRMAN [continuing]. Organization. Sorry, I am struggling with a cold here.

Does that mean the Chamber agrees that, one, that climate change is real and is caused by humans?

Ms. HARBERT. The Chamber has a long record on climate and here is what it is. Number one, we support addressing our environment in things that work. We look today at what is happening in

the United States. Our emissions are coming down, and why? Well, we have had a recession. That is unfortunate. But we have increasing efficiency in our economy and we are not doing what Europe is doing. Europe's emissions are going up and they have a very hard and difficult cap-and-trade system, which is not working.

We want to be in favor of things that work, technologies that work, that put Americans back to work. So we strongly believe in improving the environment while also protecting the economy.

The CHAIRMAN. I appreciate that—but that is not responsive to my question. I asked a very simple question. Does the Chamber believe that climate change is real and caused by humans, yes or no?

Ms. HARBERT. We believe that we should be doing everything in our power to address the environment.

The CHAIRMAN. That is great. Is climate change caused—is it real? Is it real?

Ms. HARBERT. The climate is warming, without a doubt.

The CHAIRMAN. Okay, so climate change is real. Is it caused by humans?

Ms. HARBERT. And the other part of that answer is, is it warming as much as some of my colleagues on this panel have predicted in the past? And the answer is "No."

The CHAIRMAN. I am going to get to them, too. I have been getting to them. You have got to give me your answer. Is it caused by humans?

Ms. HARBERT. It is caused by lots of different things and you cannot say that climate change is only caused by humans. I think the science is what people are—what you are pointing to, and we have a robust debate going on in this country, as we should. And those that would say that everything is settled sort of undercut the integrity of science. It is an ongoing discussion.

The CHAIRMAN. Does the Chamber believe that a price on carbon is needed to reduce emissions?

Ms. HARBERT. One could argue today we already have a price on carbon, in that we are pushing efficiency into our vehicles and into our electricity, which is raising prices. So we have an indirect price on carbon already.

The CHAIRMAN. Well, would then—is that your argument? Is that the Chamber's argument?

Ms. HARBERT. That is a fact. It is not an argument.

The CHAIRMAN. Okay, so that is the Chamber's fact? You use that as a fact.

Ms. HARBERT. No, it is an economic fact. That is what—I am just quoting the facts.

The CHAIRMAN. If it is a fact that you say that there is a price by greater efficiency, then the arguments that were made earlier that there is a price that is paid—I think it was Dr. Hansen who said—that there is a price to be paid that collectively, we as a society, pay for the emissions in the consequence of health costs, agricultural problems, and other elements would be then fair to include as well. There are prices on both sides.

Ms. HARBERT. I am not sure that that actually logically flows through.

The CHAIRMAN. Well, let us try and see if we can follow the logic.

Ms. HARBERT. Okay.

The CHAIRMAN. You say that there is a price as a result of greater efficiency and that that efficiency creates greater costs, and you say therefore we could argue—your words, not mine—that there is already a tax.

Ms. HARBERT. If you are going to be building a residence or a building that is going to be more energy efficient and those materials are more expensive, then there is a cost associated with that. If you are going to be buying something that is more expensive, there is a cost associated with that. But I have to tell you, I do not agree with the fact that you think that the Chamber lacks a compass on the environment. It is quite the opposite. We have been a proponent of research and development on advanced technologies——

The CHAIRMAN. You made the——

Ms. HARBERT [continuing]. The biggest supporter on energy efficiency legislation.

The CHAIRMAN. You made the comment. I did not say the Chamber lacked a compass. I asked some specific questions as it related to climate change. Now, the question simply is: should we not include a cost of what happens when we allow any person or industry in our country to ultimately operate in a way in which it creates a collective consequence on our health and well-being, and that is subsidized by what—by the government, through health care, through Medicare, through Medicaid, through a whole host of other things.

I think it is good for the goose, it is good for the gander. That is my point.

Senator Corker.

Senator CORKER. Thank you, Mr. Chairman. I thought it was going to be contentious on our side of the aisle. But it has been a very good hearing. I appreciate all the witnesses being here.

Dr. Hansen, I have to say that I actually found some like-mindedness in your testimony and I appreciate you being here. It seems to me that, number one, you are a very strong proponent of nuclear energy. I know you were using Sweden as an example and most of their energy comes from nuclear energy, so I find this to be very like-minded in that regard.

Dr. HANSEN. Well, I am a strong proponent of clean energy, carbon-free energy, and letting the market choose the energy source. We should not be specifying that electricity has to come from renewable energy. We should say it has to be clean, carbon-free energy, and let the alternatives compete.

It is likely that nuclear power would compete well. Now, it is not going to be easy in the United States because it has been made so difficult—a nuclear power plant. It takes so long to build a nuclear plant. That is another reason why we need to work with China, because if we do they are going to build on a large scale and they will be able to drive down the unit cost, and then it can circle back to the United States if, in fact, we want to have more nuclear power in the United States, and I think we should.

Senator CORKER. If our Nation was ever to get to a point where it was going to put a price on carbon, the carbon tax would be a much better way than the Rube Goldberg mechanism that the Senate looked at a few years ago. So I just want to tell you, while

that is not where we are, if that was ever to come about I would agree with you that that is a much better way, especially a revenue-neutral way of doing it, than what was contemplated in the past.

Dr. HANSEN. Well, I agree with that. And it had better come about pretty soon or we are not going to solve this problem, because that is the only way you can do it. As long as you allow the fossil fuels to get by scot-free without paying their costs, then we are going to keep burning them. You are basically burning dirt.

Senator CORKER. So I will let stand the comments you made about what people might do with the money. But let me ask you about the transportation issue. I know the chairman mentioned that. What I do not get about the Keystone pipeline and the resistance to it is that the alternate transportation, as was mentioned, is very expensive and it is hugely carbon-intensive.

I guess I would ask you this question. The Canadians are obviously going to develop these whether we transport it south or not. I have met with them directly. I am sure you have, too. And certainly they are going to build a pipeline to the west, which would go to China, if we do not do this. I guess I do not understand how someone like you, that has such credentials environmentally, would oppose a more efficient way of that oil, that fossil fuel, making it to market.

Dr. HANSEN. It is a question of how much of that tar sands is going to be taken out of the ground. If we build this expensive pipeline, it will facilitate the extraction of much more than if we do not build it.

As soon as you put a price on carbon that is significant and rising, one of the first things that falls off the table is tar sands. And Canada knows that. That is why they are so desperate to get the United States to approve this. If we do not approve it, a lot of that tar sands will never be developed.

The world is going to realize pretty soon that we have to limit the amount of carbon we put in the atmosphere and we are going to have to do that via a price on carbon, and that is going to cause the most carbon-intensive fuels to be left in the ground and that includes tar sands.

Senator CORKER. Mr. Brune, let me ask you this question. Again, this pipeline, it has been beyond belief to me that it has generated this much opposition when it seems, as was mentioned by someone, to be such a no-brainer. But we have 19 pipelines that cross between Canada and the United States and I am just curious as to whether your organization is opposed to all of those in the same way that you are opposing this one?

Mr. BRUNE. First let me say that I appreciate your earlier comment about the carbon tax. I appreciate your earlier comment about the carbon tax and should there be a moment where there is an opportunity to move that forward the Sierra Club would look for an opportunity to do that with you.

Senator CORKER. I was not suggesting I was necessarily——

Mr. BRUNE. I understand that.

Senator CORKER. But I do think if it were going to be addressed, it is far more transparent. There is a way to make it revenue-

neutral. And what we considered a few years ago was utterly ridiculous.

But go ahead.

Mr. BRUNE. I understand you were not preparing to introduce legislation, but when the moment comes perhaps we could talk.

Senator CORKER. Thank you.

Mr. BRUNE. Regarding your question, I am not sure if the Sierra Club has taken a position against all 19. I would be happy to get back to you on that. But to be clear, we are opposed to the expansion of development in the tar sands, and to the extent that this oil would come through the United States we are opposed to those types of projects.

Part of the reason that I think needs to be shared here today is that we do not agree with the assumption that this oil will come out of the ground anyway. As you know, Alberta is landlocked. They are currently producing 2 million barrels of oil per day. The vision for the industry coming from the Prime Minister is to have that production grow to about 6 million barrels of oil per day. There are two pipelines that have been proposed to the west through British Columbia. There are two pipelines that are being proposed to the east and there is the Keystone XL pipeline to the south and another one, and other projects that are being considered.

Each of those faces significant resistance. The two pipelines going to the west are dead in the water. They are not moving forward. They have opposition coming from the provincial government in B.C. as well as the First Nations, the native communities in B.C., who have legal standing to oppose those pipelines. The ones to the east also are facing significant difficulties.

So you may, or may not, believe the veracity of what the Sierra Club is saying, but if you look at what the oil industry in Canada is saying and if you look at what oil industry analysts from CIBC, RBC, and other banks up in Canada are saying, this oil will not come out of the ground if the tar sands Keystone XL pipeline is not built.

Senator CORKER. Listen, thank everyone for being here. General Jones, thank you for your service. It is always good to see you. I very much appreciated your testimony.

I just want to ask one specific question, if I could, to Mrs. Harbert. In August 2009 this administration determined that the Alberta Clipper crude oil pipeline was in the U.S. national interest. The pipeline was designed to bring large quantities of crude oil from the oil sands of Alberta, Canada, to oil markets in the Midwestern United States. In particular, the national interest factors cited by the State Department in its determination that this pipeline would be in the national interest included: increasing the diversity of available supplies among the United States worldwide crude oil sources in a time of considerable political tension in other major oil-producing countries, shortening the transportation pathway for crude oil supplies, and increasing crude oil supplies from a major non-OPEC producer.

Just asking you this one question, Would these same factors that led to a successful national interest determination for Alberta Clipper apply to the KXL case?

Ms. HARBERT. Absolutely. The only thing that has changed is that the demand around the world for oil has gone up, and so we must do even more to ensure that we can supply more here within North America to our market.

Senator CORKER. Thank you all for your testimony.

The CHAIRMAN. Senator Boxer.

Senator BOXER. Thanks so much. Thanks to all of you.

I ask unanimous consent to place in the record the final supplemental environmental impact statement on Keystone from the State Department, showing there would be 50 permanent jobs. I would like to put that in the record.

The CHAIRMAN. Without objection.

[EDITOR'S NOTE.—The State Department Impact Statement mentioned above was too voluminous to include in the printed hearing. It will be retained in the permanent record of the committee.]

Senator BOXER. All right. And I want to say, Ms. Harbert, you are a great advocate, but you do not speak for environmentalists. And when you said if you are an environmentalist you are in support of the pipeline, let me just say that is ludicrous on its face, please do not speak for me, and do not speak for lots of folks who do not see it that way.

And I appreciate some people saying it is a no-brainer. Maybe in some brains it is a no-brainer, and I respect that. But in my brain it is not a no-brainer.

So I want to tell you, Mr. Chairman—and I want to thank both you and Senator Corker for this hearing—National Nurses United, representing 185,000 nurses, has joined me and Senator Whitehouse in calling for a thorough health impacts study on our people, the people of America, when you look at the immediate 45 percent increase in importation of tar sands and the eventual 300 percent increase in production of this filthy, dirty oil. The nurses—some of them are here in the audience. I want to thank them.

By the way, 82 percent of the people give them an approval rating, compared to 8 percent for the Congress. When I stood next to them today, I hoped a little would rub off. But I just want to thank them, because they understand the impact on the health of our families.

I want to show you two pictures. It does not matter which one first. This is pet coke, Mr. Chairman. You need to take a look at this because a lot of it is going to be stored around our Nation. Already we have seen it coming. This is just a sample of what America is going to look like when you see this tar sands filthy, dirty oil. This is what remains of it after it is refined, and it is stored just like this. We had testimony from people in Chicago who said kids were having a picnic, the stuff blew around, they were covered in soot and had to leave.

I want to show you Port Arthur, TX, and what it looks like when this stuff is refined. Here it is. This is what the people—right by a playground. This is what is going on. So when my friend the General talks about our national interest, I personally believe we have to weigh in on a health impacts study, because personally I think our national interest should include if our kids are going to suffer more asthma, cancer, and the rest.

So I guess I would ask my friend from the Chamber, Are you familiar with the fact that the community in Canada where the tar sands are located continues to be disproportionately burdened with blood, lymphatic, and rare cancers that have been linked to chemicals produced by the petroleum industry? Are you familiar with the studies?

Ms. HARBERT. Senator, we agree with you. We agree we should protect our air and our water.

Senator BOXER. Are you familiar with the studies? If you could just stick to this because I do not have a lot of time.

Ms. HARBERT. If there is a particular study you want us to review——

Senator BOXER. Yes.

Ms. HARBER [continuing]. I would be delighted to review it.

Senator BOXER. The Alberta Cancer Board study—I am going to send it to you—from 2009.

I am also going to send you the 2010 article entitled "Oil sands development contributes elements toxic at low concentrations to the Athabasca River and its tributaries."

Mr. Brune, is it in our national interest to promote an industry that has increased the levels of carcinogens, such as PAH—and I am going to say it—polycyclic aromatic hydrocarbons, PAH's, and nervous system toxins such as mercury in the river and into our lakes? Is it in the national interest?

Mr. BRUNE. Absolutely not. Our national interest must include protecting the health of American families.

Senator BOXER. I would say, Mr. Brune, Is it in the national interest to expose U.S. communities living close to refineries that will refine Keystone XL tar sands, such as Port Arthur, TX, to higher levels of toxic and cancer-causing air pollutants? Is that in the national interest?

Mr. BRUNE. Absolutely not, particularly when we have clean energy alternatives that will protect our health, clean up our air and water, and put more people to work.

Senator BOXER. Absolutely. You know, I think we need to be fair and look at everything, and I think we have to weigh everything. But for me, I take an oath to protect and defend the people. That includes their health. And the nurses testified today from these areas where they already see—and let us put up the refinery picture—they see who is coming in to the emergency room, what is happening. These are the forgotten voices in this debate.

I ask unanimous consent to place into the record a letter from the nurses in which they call on Secretary Kerry to look at a health impacts study before any decision is made.

The CHAIRMAN. Without objection.

Senator BOXER. So I just want to say this, and I am going to stop before my time is up. If you have ever met a child with a breathing problem—and I am sure that you all agree with this—you just want to do everything you can to help them. Why is it when it comes to this project we are told it is a no-brainer, if you are an environmentalist just do it? No. Let us look at what is happening in Canada.

I will tell you, I stood shoulder to shoulder with doctors from Canada who have seen 30 percent increases in rare cancer. I think

that issue has been swept under the rug. I am just one Senator, I am just one voice. But now I have 185,000 nurses behind me. And I am just saying to you, I am going to do every single thing in my power to protect the health and safety of the people.

I want energy security, desperately, and if you look at California, we are moving quickly toward clean energy and it is exciting. And the jobs are growing exponentially. But we cannot do something in the name of national interest where it winds up costing us the health of our families.

So I am going to keep pressing on this, and I thank you for the time.

The CHAIRMAN. Thank you, Senator.

Senator Johnson.

Senator JOHNSON. Thank you, Mr. Chairman.

Dr. Hansen, do you offhand know the average price of electricity per kilowatt-hour?

Dr. HANSEN. No, I do not have that off the top of my head. I do not have a specific number.

Senator JOHNSON. Do you have some concept of it?

Dr. HANSEN. Certainly, and I know that——

Senator JOHNSON. Let me—just throw a number if you think you kind of know where it is at?

Dr. HANSEN. No——

Senator JOHNSON. Cents per kilowatt-hour? Mr. Brune, do you know?

Dr. HANSEN. No. It is more important to know the relative costs of one source versus another.

Senator JOHNSON. Again, I will get to that.

Mr. Brune, do you know the cost per kilowatt-hour?

Mr. BRUNE. It depends greatly on the region that you are talking about.

Senator JOHNSON. I understand, but overall?

Mr. BRUNE. 10 cents, give or take.

Senator JOHNSON. Very close. It is about 10 cents per kilowatt-hour in 2013.

Senator Obama when he was a candidate said because of his cap-and-trade proposal that electricity rates would necessarily skyrocket. Dr. Hansen, did you basically concur with that?

Dr. HANSEN. Cap and trade I would not advocate. It indeed would cause an increase in costs. What we need is an economically sensible approach and that is to put a simple fee on carbon.

Senator JOHNSON. So how would that prevent electricity rates from skyrocketing like a cap-and-trade proposal would? I mean, you talked about a fee and dividend system.

Dr. HANSEN. Yes.

Senator JOHNSON. You are going to impose costs on energy. Is that not going to increase the price of energy?

Dr. HANSEN. It will impose costs on carbon-based fuels, yes. Presently those fuels are—the costs are there, but they are borne by the public.

Senator JOHNSON. President Obama's Energy Secretary, Steven Chu, made the comment that somehow we have got to figure out how to get our gasoline prices up to the level of Europe. I think

he made that comment when our gasoline prices were, I think, actually below $2 a gallon.

Dr. HANSEN. No——

Senator JOHNSON. I might be wrong.

Dr. HANSEN [continuing]. No, we are not——

Senator JOHNSON. Let me finish my question.

Back then I think European gasoline prices were $8 per gallon. Now, again, so these are the stated goals, the stated policy——

Dr. HANSEN [continuing]. No, I did not state that goal——

Senator JOHNSON. Mr. Hansen, Dr. Hansen, please let me finish.

So these are the stated goals of President Obama and his Energy Secretary, to get electricity rates to skyrocket or get gasoline prices basically to quadruple. Do you disagree with those policies, with those goals?

Dr. HANSEN. Certainly, certainly. What I have said is to make the costs honest. There are health costs, there are climate costs, and those are borne by the public. You are dumping all those costs on the public. Let us add them to the fossil fuels where they belong.

Senator JOHNSON. This is my question and answer period here.

I understand the externalities. I am talking right now about what families would feel in Wisconsin in terms of their energy price, their monthly energy bill. Their utility bill would necessarily skyrocket if the policies that are supported by individuals like you—and by the way, I agree with Ms. Harbert. I think we are all environmentalists. I like a pristine environment. I get my water out of a well. I love to fish. I love the outdoors. So we are all environmentalists.

Dr. HANSEN. What you are saying is blatantly false.

Senator JOHNSON. It is not.

Dr. HANSEN. What you can easily show is that if you put an honest flat fee on carbon, 65 percent of the people will get more money than they pay in increased electricity and other prices. The economic models show that very clearly.

Senator JOHNSON. I come from a——

Dr. HANSEN. Only the high-income people will pay more than they get in the dividend.

Senator JOHNSON. Listen, I come from a manufacturing background. Ms. Harbert, is it not true if you want to manufacture goods you need power?

Ms. HARBERT. Well, they are the largest consumer of power in the country. And you look at what is happening right now in Germany, which has electricity prices four times as high as we have here, and the German industrial community, where are they going? They are coming and investing in the United States. Why? Because we have got affordable energy, affordable electricity, affordable natural gas.

So we are seeing investment come out of Europe because of high prices and come here. So we do not have to look very far to a model that is not working. And by the way, their emissions are going up, not down.

Senator JOHNSON. So if electricity rates were necessarily to skyrocket, that would put a real—that would really hamper manufacturers' ability to be competitive in the world. And what would that

do to the number of jobs that would be created and available here in the United States?

Ms. HARBERT. Well, it would certainly hurt our competitiveness. It would reduce investment. It would hamper jobs. But also, let us not forget that that is regressive. It would hurt the lowest part of the people with the less, the least amount of disposable income would pay the most. So it is very painful.

Senator JOHNSON. Okay, I appreciate those comments.

Dr. Hansen, are you familiar with the estimates from the National Renewable Energy Laboratory—because you were mentioning all the jobs that would be created with green energy—that showed the government spent $9 billion over the last few years on green jobs and created 910 new jobs, which means that cost $9.8 million per job. Are you aware of those types of statistics?

And by the way, I have seen three or four different studies. This is kind of the midpoint in terms of the cost of these green energy jobs.

Dr. HANSEN. Yes. I strongly disagree with such policies. I say put a simple, honest fee on carbon. Do not say you have got to buy renewables.

Senator JOHNSON. Okay.

Dr. HANSEN. I have never agreed with that—so do not blame those policies on me.

Senator JOHNSON. I am not blaming you. I am just talking about the policies that are actually being pushed by this administration. They are not creating the jobs. The jobs that have been created are enormously expensive and they are policies that are going to really hamper the ability to create new jobs.

Dr. HANSEN. So that is why I am asking you to stop and think, and what is the conservative solution to this? It is to put a price on carbon.

Senator JOHNSON. President Obama on November 14 said: "The temperature around the globe is increasing faster than was predicted even 10 years ago." Yet an article in The Economist in March 2013, said: "Temperatures have not really risen over the last 10 years." A month earlier, the BBC News reported that since 1998 there has been an unexplained standstill in the heating of the Earth's atmosphere.

This is largely correct, right, that temperatures have remained flat over the last 10, 15 years?

Dr. HANSEN. No. The rate of increase has been lower, and it is not unexplained. There is the natural Pacific decadal oscillation and the Pacific tropical temperature has not warmed during that period, and that has affected the global temperature.

Senator JOHNSON. I think the evidence refutes that.

Let me ask just a final question. Mr. Brune, Dr. Hansen, are you both familiar with a fellow named Patrick Moore?

Mr. BRUNE. Yes.

Senator JOHNSON. So he was the founder of Greenpeace, correct?

Mr. BRUNE. And disavowed by them three decades ago.

Senator JOHNSON. Well, he is disavowing them as well. He said that—he left the group because he said the group became more interested in politics than science and had taken a sharp turn to the political left. But he made the statement, he said: "We do not know

whether the present pause in temperature will remain for some time or whether it will go up or down at some time in the near future. What we do know with extreme certainty is that climate is always changing between pauses and that we are not capable with our limited knowledge of predicting which way it will go next."

I live in Wisconsin. There were, I think, 200-foot thick glaciers in Wisconsin. How do you explain—before man ever had a carbon footprint. How do you explain that environmental change?

Dr. HANSEN. The statement you just made is blatantly false. We do know——

Senator JOHNSON. How do you explain? How do you explain climate change that occurred 10,000 years ago before man had a carbon print? How do you explain that?

Dr. HANSEN. Climate—there are variations in the Earth's orbital elements. The eccentricity of the Earth's orbit, the time in the season at which it is closest to the sun, and——

Senator JOHNSON. So those variations just end right now, so now it is all man-made?

Dr. HANSEN. No one has said it is all man-made. There are natural——

Senator JOHNSON. Well, that seems to be the tack that most environmentalists take.

Dr. HANSEN. However, the manmade effect is now dominant, and we can measure that, because we can measure the energy balance of the planet, and we see that there is more energy coming in than is going out. So therefore the planet is going to continue to get warmer.

It does not mean each year it is going to get warmer, because there are natural fluctuations. But this decade is going to be warmer than the last one, and the following one will be still warmer. We know that.

Senator JOHNSON. I agree with Ms. Harbert. I think the science is far from settled.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

I am going to—expressions of approval or disapproval are not permitted in the committee.

I am going to ask Senator Kaine to preside while I go to vote. I do have other questions for this panel, so I intend to come back and ask you to—you will have as much time, Senator Kaine, as you need.

Senator KAINE [presiding]. Thank you, Mr. Chairman.

To the panel, thank you for being here today. I may get 10 or 15 minutes, which is fantastic.

I am going to put myself in the camp that does not believe this is a no-brainer. So people who say it is a no-brainer one way or the other, I do not think that is the case, because while the testimony of the panel is kind of divergent, you put two pretty important interests on the table, energy security of the Nation and its multiple ramifications and the important science about climate and the damage that we may be doing to the planet, which our kids in grand-kids will be the ones who will have to figure it all out if we do not take the appropriate leadership role—and I think those are two very compelling interests.

This project in and of itself I do not believe the support of it is game over for the planet, and I do not believe that opposition for it is coddling Chavez or Putin. It is a hard question that requires careful thought. And I do not pretend to expertise on this, but I do think you have to start with the science. I will just be blunt. There are people I care about very deeply, some in this room, who are on both sides of this issue. I think you have to start with the science.

In Virginia I feel comforted in that. Our quintessential Virginian, Thomas Jefferson, was the preeminent scientist of his day. So I say grapple with the science and ask yourself the basic question. And I think the scientific consensus is quite clear. It is not unanimous. It is not unanimous, but it is overwhelming. It is an overwhelming consensus that the climate is changing in ways that negatively impact the planet and that humans have a significant effect on that. Not the only effect. There are plenty of other effects that will continue, but human effect is significant.

When I hear from witnesses or anybody who contacts me about this who will not kind of grapple with the science, who either deny the science or pretend that there is essentially an equivalence among the scientific debate, I have a hard time taking that position seriously. I think the Chamber ought to have a position on whether human activity affects climate. I think any organization should, yes or no. You can acknowledge some continuing debate, but I think people ought to take a position on the science. An unwillingness to take a position on the science troubles me. I think those of us who are making decisions, we have to start there. We have to take a position on the science.

I think the science is clear. I have lived it, I am seeing it. I am seeing it in Virginia with sea-level rise, Hampton Roads second most vulnerable community in the eastern part of the United States—the sea-level rise. There are people I know on Hampton Roads who live in homes that, they cannot sell them now, homes that were built 100, 150 years ago, that have been able to be sold many times during the cycle. These homes, they cannot sell them now because these homes are now on flood plains and they were not earlier.

We see it in extreme weather events, and we have an obligation to try to do something about it, I believe, consistent with promoting the security goals that some testify.

I agree with General Jones, the disapproval of this particular project, if it were just this project, might have an incremental effect on climate. But I also believe the disapproval of this project is going to have an incremental effect on the global energy security status. I think you testified, I think it is correct, the United States is going to be number one over Russia whether or not, because we do not count tar sands oil as American energy and we have a lot of energy that we are producing here and that we will continue to produce that I strongly support.

But I do strongly believe that you have got to grapple with the science and answer that yes-or-no question and then make policy decisions based on it. The way I look at it is this. I would have loved to have had this hearing before I had to vote on this matter, but I have already voted and I can change my mind. We have had to have a vote. We had to grapple with this in connection with the

vote last March, and my staff and I dug deeply into the science question.

My review of the science leads me to conclude that we have got a pie chart of the way we produce energy in this country and in this world and there are elements of the pie chart that are heavy carbon and there are elements of the pie chart that are lighter carbon and there are elements of the pie chart that are small but growing that are no carbon. The right strategy is to make it cleaner tomorrow than today, to grow the pieces of the pie chart that are low carbon, to grow the pieces of the pie chart that are no carbon, and to take the pieces of the pie chart that are heavy carbon and reduce them in size progressively over time, not immediately, but to also reduce the carbon intensity of those portions of the pie chart.

Oil is a portion of the pie chart. Tar sands oil by virtually all accounts is significantly dirtier than conventional petroleum. Could it be made cleaner? Sure it could be, but it is still significantly dirtier, not only in carbon emissions but in other kinds of emissions, lead and other concentrations, than other kinds of petroleum.

I just grapple with this question, when we have so many other alternatives, both low carbon, no carbon, but also fossil fuels like natural gas, that have enabled us to fuel-switch. As Ms. Harbert indicated, we have been improving our emissions in this country without agreeing to the Kyoto Accords, without congressional action, because of innovation in the natural gas area. And that moves us down the carbon density scale, not as fast as some would like, but it is moving us down the carbon density scale.

When we are showing through American innovation that we can get cleaner tomorrow than today and move down the carbon density scale, why would we backslide? Why would we backslide to tar sands?

I acknowledge your point and it is absolutely correct that this is a decision for Canada to make. They will make that decision. But the United States sends a very powerful message about whether we want to lead on this issue of dealing with climate change or not by whether we embrace and support tar sands oil or whether we say, you know what, that is a bridge too far; we want to be cleaner tomorrow than today, we do not want to be dirtier tomorrow than today, we are going to focus on cleaner alternatives.

So while I acknowledge the laborers have a great point of view, our scientists have a great point of view, our military has a great point of view, I am just struck by the need of this body to take leadership on an issue. I think we have waited too long to take leadership on it.

One of my predecessors, John Warner, near the end of his 30-year career in the Senate, decorated combat veteran of two service branches, the Navy and the Marines, as General Jones knows, and Secretary of the Navy, and then 30-year member of the Senate on the Armed Services Committee, he ended up concluding that the biggest security challenge we faced as a nation was actually not energy independence, but was climate, because of its destructive nature, pushing migrants across borders, destabilizing countries, affecting natural resources.

He reached that point at the end of his career and was and remains a proud champion for American leadership on climate action. I think it would be very hard for us to be a leader in tackling climate if we embrace tar sands oil and say we think it is fine.

So that is not a question, obviously, but it is an explanation, because there are people in the room I care about who care a lot about this issue, who have seen the way I voted, probably have not heard my full explanation of it. That is why I have come to the conclusion that I do not think this is a good idea.

It is funny. We talk about it as a pipeline. It is not about the pipeline. Pipelines are fine. Pipelines are fine. I was mayor of a city with a gas utility. We built pipelines. It is really about tar sands oil and where tar sands oil is in the continuum of energy sources from low carbon, no carbon, heavy carbon, dirty carbon. That is the challenge with this. I think sometimes the debate about the pipeline confuses everybody about what the real issue is. I think it is carbon density.

I have taken my time with a statement, not a question. Senator Markey, you are up.

Senator MARKEY. Thank you, Mr. Chairman, very much.

We are talking about the dirtiest oil in the world, coming through the United States, almost using us as a straw, bringing it down to Port Arthur, TX, and then exporting that oil around the world. Where is the advantage for the United States to export oil out of the United States, with no restrictions on it? The Chamber of Commerce opposes any restrictions on where the oil can go. They say here: Well, we have to do everything we can to help energy independence in North America. But when you say how about a restriction on taking all this oil and making sure it stays here in America, oh no, they say, oh no.

And by the way, they also support exportation of American natural gas. Yes, do that too, they say. But meanwhile we are sending hundreds of thousands of young men over to the Middle East, and we know what they are over there for. We know at the core it is oil. Oil is fueling the revolutions over there, oil that we import into the United States.

By the way, right now we import, we import in the United States, 6.3 million barrels of oil a day, 6.3 million barrels. That is our Achilles heel. That makes us weak. So what does this proposal say? Take the dirtiest oil in the world for Canada, build a pipeline, have the United States take all the environmental risks, bring it down to Port Arthur, TX, and then export it.

By the way, we were having a big debate here yesterday about exporting natural gas, the natural gas that could be used to move our vehicles from oil, which emit more greenhouse gases, over to natural gas and have it be here in the United States. What do the people who are on this committee say? Well, we should start exporting our natural gas, too. Well, we already export our young men and women over to the Middle East so that we can protect imports.

We do not have self-sufficiency in natural gas in the United States. We import it. We do not have self-sufficiency in oil. We import it. So this is a national security issue. It is an economic issue. It is a manufacturing issue. It is a climate change issue.

Now, I heard the Senator from Tennessee say earlier that, talking to Mr. Brune, there was a bill that he supported that was utterly ridiculous. I assume he is talking about the Waxman-Markey bill in the House. I did not take it personal, but I like the company I am with. I like the company I am with with that bill. We had the Edison Electric Institute endorse it, the Nuclear Energy Institute endorse it, General Electric, Dow Chemical, Dupont, Johnson Controls, United Auto Workers, United Steel Workers, Dow-Corning, Applied Materials, utility workers, all the way down the line.

We had industry on our side. The Chamber of Commerce was not with us, no question about it. But I like who we had. I do not think the Edison Electric Institute was utterly ridiculous. I think they understood where we have to go to protect the climate, an 80-percent reduction in greenhouse gases by the year 2050.

So this just is a further extension of what is going on. The oil industry is pushing to reverse four decades of law prohibiting the export of American crude oil so that our crude oil can be shipped to China. There is a crude oil ban right now. They want to lift it. As we debated here yesterday, the natural gas industry is pushing to use the crisis in Ukraine as a basis for unleashing natural gas exports to China, because that is where it is going. It is 15 bucks in China they pay for it, only 10 bucks in Europe. Where do you think Exxon-Mobil is going to send it? To China.

The mantra of the Chamber of Commerce from 5 years ago, "Drill here, drill now, pay less," has morphed into "Drill here, export to China, pay more here in the United States as we export our own natural resources." That is what it has morphed into, and we are supposed to accept it as though somehow or other we are in an Orwellian 1984 where you can just change all the language. Now it is better for us to export this.

And this Keystone pipeline down to Port Arthur, TX, to export it, while we take all the environmental risks, while the planet takes environmental risks. That is utterly ridiculous. It just is.

So, ladies and gentlemen, we have a huge debate here, and I thank everyone who is here and participating, and I apologize for the rollcalls which are on the floor right now. But the Senator from Wisconsin, he raised a question earlier about higher energy prices and what it would do to our manufacturing sector. Well, this natural gas export issue dwarfs anything we are talking about here today. The Energy Information Agency said that if we allow for an export, just one more terminal is approved, that it would lead to a $62 billion increase in costs for American consumers per year. That will just devastate this return of manufacturing from China, from other countries, to our own shores, just devastate that revolution. There is only two major costs in manufacturing: labor, energy.

So we are here debating these issues as though they are unrelated to the real economy that we live in, but also the responsibility that the United States has to be the leader in climate change issues. The world is looking at us. They are saying: You cannot preach temperance from a bar stool. You have got to be lowering your greenhouse gases, not increasing them. You have got to show that you are serious about this.

I think we had an incredible corporate coalition who are ready to get serious about it, that then was stymied over here in the Senate back in 2009 and 2010.

So I guess what I would ask from you, Ms. Harbert, would you support as part of this Keystone approval a ban on any of this oil leaving the United States, so that, in your own words, we can have North American energy independence? Would you support that going in as part of the language?

Ms. HARBERT. Thank you very much for the question, because I think it is very important to understand the contractual part of this pipeline. One hundred percent of that oil is under contract to refineries to refine it here in the United States, so therefore no molecules have the ability to be exported in their raw—as crude oil.

Senator MARKEY. Again, here is the bottom line on all of this. It is great, it is great. Just so we understand, this is in the hands of the oil companies. It is all in the hands of the oil companies. Whether we talk about natural gas exports—it is not going to Ukraine; it is going to China; 15 bucks versus 10 bucks. You do not have to go to Harvard Business School to take a 50-percent markup to send it to China.

So that is really what this whole debate is about. It is an oil company agenda and they just want to refine it and send it around the world. Well, we need it here in America. We need the low-priced oil, if we are going to do it. If we are going to take all the environmental risks, if we are going to raise the risk of asthma and climate change and damage, leaks out of the pipeline, the least that we should be able to say to the oil industry, keep that oil here. And that refined product could be, in fact, kept here, because right now there is no restrictions on it being kept here. We have a restriction on crude oil being exported. We could put a restriction on that refined product being exported, so it would be lower priced in Boston, lower priced in communities all across America, that they could use it for their purposes.

So that is why I am going to be introducing legislation today to ensure that the Keystone pipeline, if it is approved, that oil has to stay in the United States. We should not be a middleman to transport the dirtiest oil in the world to the thirstiest foreign nations who are our economic rivals. I mean, that just fails the test on so many different levels—national security, economic, and environmental—that it just makes no sense.

So I am going to file that legislation, so we have a vote on that. And then all the ads that we see on Sunday morning on all the talk shows funded by the American petroleum industry, Canada, the United States, Keystone pipeline, North American energy independence—let us either vote for this amendment or stop running those ads, because those ads are deceptive. If you do not want that oil to stay in the United States, then what is the point of us participating in this? What is the point? What is the point?

These young men and women are over there. They are serving our country. They take great risks every single day. The least that we should have is a policy that squares up what we do here with what we are expecting those young men and women to do overseas. So let us not export this oil, or otherwise we have to continue to export young men and women. We are importing 6.3 million bar-

rels of oil a day. So let us just make this truth in legislation, truth in treaties, and make sure that we guarantee that we are protecting those that we say that we are most interested in protecting.

Thank you, Mr. Chairman.

The CHAIRMAN [presiding]. Thank you, Senator.

I appreciate the panel's forbearance. I think we can finish up shortly.

I just want to follow on the one question. I think I may have missed Senator Markey's full engagement with you. I do not know if he specifically asked a question on this issue, but for the record, General Jones, you argued that if we fail to grasp the enormous opportunity presented by Keystone XL pipeline we will miss out a chance to improve the energy security of the North American alliance. But the question is, What assurances do we have that this crude oil shipped through our country to the gulf coast will stay in the United States and contribute to our energy security?

My understanding is that the energy market is global in nature and so there is no guarantee that, even if we put up the pipeline and have the tar sands flow to the gulf coast, that at the end of the day it is going to stay in the United States or, for that fact, even in North America.

General JONES. Mr. Chairman, I think these are obviously business and economic decisions that will have to be made. The same argument could be made in Saudi Arabia—why should they export their oil? Why not just keep it?

The CHAIRMAN. They have an overwhelming abundance and they want to sell it.

General JONES. Sure.

The CHAIRMAN. Which is really what the marketplace is all about, right?

General JONES. Sure, sure, exactly. And by 2016, by some projections, we will be producing as much oil as the Saudis from our own sources.

My perspective on this is that, first of all, I really enjoyed listening to the testimony of my colleagues here at the table. I learned something. I have always believed that the United States is blessed by having an abundance of energy sources. They all are important, they all should be developed, and they all should be developed in such a way as to be respectful of the environment and impact on the climate. The technologies that we are preeminent as a country in being able to develop make our energy future so optimistic and are very encouraging.

I believe that we are at a transformative period in our history and the American people should be fully aware of just how enormous this potential is and what it means for the future of our country. By the way, I am not an advocate for the term "energy independence" because I think it is protectionist and isolationist. We live in a globalized world. Energy leadership demonstrated by this country, with its responsibilities toward the climate, the environment, and also the wealth of energy that we can influence, will have significant ramifications for the rest of the century with regard to American leadership, including in the developing world.

So this is an enormous opportunity that will prove to provide a truly historical and transformational change if done right. I firmly

believe that the Keystone pipeline is a part of it. KXL is not the determining factor of our energy future, but it is an important and symbolic piece. It reinforces the importance of working with our very close neighbors and allies to our north and south to create a North American energy hub that can greatly enhance our ability to exercise leadership and influence geopolitical issues in a complex world. This committee has enormous influence over whether we will be able to realize this vision, of which the Keystone pipeline is an important component.

The CHAIRMAN. I appreciate that. To use your words, not energy independence; you mentioned energy security for the North American alliance. My only question is here that in fact we have—energy is a global marketplace, and so there is no way to confine that energy here within the United States. As a matter of fact, when I proposed legislation that says, when we had a big push to let us drill everything we have, and I said, well, if we are going to drill it we should keep it, there was strong opposition to that.

So the problem is that there is no guarantee that energy transported in this case through Keystone to the gulf ultimately does not end up in a global marketplace. And so—and that may be an economic equation that we want to consider. But we should be honest with the American people that in fact that that energy that is created or could be created from tar sands does not necessarily mean it stays in the United States, inures to the benefit of America consumers or manufacturing or anyone else. I think that is an honest statement to be made.

General JONES. Mr. Chairman, I would just simply respond by saying that I believe that the United States is in a historically new and exciting position. The potential to harness home-based energy abundance has happened very, very quickly, and I am not so sure that we really understand the ramifications. But I am convinced that in the case of Ukrainian and European dependence on Russian energy, how the United States, Canada, and Mexico together use our vast energy potential can actually have geopolitical ramifications that would prevent future insecurity and conflicts.

The Europeans remain overly dependent on energy from abroad. I was in Europe as the NATO commander in 2006 when Mr. Putin played with the energy pipelines into Europe, and he uses energy as a weapon. So we have an opportunity now to better counter this kind of behavior. We are not as dependent as we were, and for the foreseeable future we control our energy future, which is something that for 40 years we have hoped to achieve. So it is a great opportunity if we do it right.

The CHAIRMAN. Well, let me ask one final question, and they are somewhat different in nature, but the same in my effort to deduce a set of facts here. One is to you, General Jones; the other is to you, Dr. Hansen.

General, in 2011 you said that if the Keystone XL was not approved that, "We are definitely in a period of decline in terms of our global leadership and in terms of our ability to compete in the 21st century." And you have echoed that sentiment today in your testimony. Why would the denial of a single pipeline permit request from a foreign corporation signify a decline in U.S. global leadership?

To Dr. Hansen, along the same, somewhat the same lines: I understand the seriousness of climate change, but is it really true that Canada tapping into its tar sands reserves would be a, your words, "game over" for the climate, as you have claimed? Is that not an exaggeration of the threat posed by this one project? Could we not lower emissions in other sectors to compensate?

I would like to hear from both of you on those answers, General Jones first and then Dr. Hansen.

General JONES. Thank you, sir. The world watches what the United States does. The Keystone pipeline has become a litmus test for how people will determine how the United States projects itself in the global energy arena. I think that is enormously important. I am a proponent of energy sufficiency. I do believe that it would be wrong, though, to regard energy as something that we hoard. It would be a tremendous mistake, in terms of the global playing field, to refuse to accept the leadership role that comes with being a major energy producer.

The decision on the pipeline, particularly as it relates to one of our closest allies and the energy future of the North American alliance, if you will, is something that is transformational on the global playing field and has far-reaching ramifications. Even little gestures sometimes cause people to draw conclusions that may be far out of proportion to the judgment itself, but the consequences of those conclusions are real and can be very powerful.

For that reason, I think that we should go forward with the project. I quote Professor Chris Knittel, a professor of energy economics at MIT, who says, "If we build Keystone, greenhouse gas emissions will, if anything, go down. Any oil that comes from it will displace the most expensive oil on the market today, heavy Venezuelan crude that results in more carbon dioxide emissions than tar sands oil."

The CHAIRMAN. Dr. Hansen.

Dr. HANSEN. I am glad you asked me that question because my comment continues to be misinterpreted. My first chart showed how much carbon there is in conventional oil and gas and in coal and in the unconventional fossil fuels. It was clear, it has been clear, that conventional oil and gas are limited. We are probably close to peak oil for conventional oil. So the science is clear that we cannot burn all the coal. We are going to have to phase that out and that is a solvable problem because coal is used mainly for electricity production and we can generate electricity in other ways, including nuclear power, which is carbon free.

Then there is this other huge source of carbon, the unconventional fossil fuels. My statement was that if we are going to now open up that other source, unconventional fossil fuels—that is what tar sands are, the first big step into that unconventional fossil fuels. But the science tells us we cannot do that. We are screwing our children and grandchildren and all the young people in future generations if we think we can use that unconventional fossil fuels.

The science is crystal clear on that and the world is just ignoring the science. The scientists are saying: Wait, you cannot do that. And that is what I was saying. This is game over if you do not understand that we have to leave that extremely large amount of carbon in the ground.

The CHAIRMAN. So I have now the greater definition, I just personally do not think that the approval or disapproval of the pipeline is a decline in global leadership, nor do I believe that the specific approval or disapproval is necessarily game over. I understand what you are saying. There is a broader context, which is whether you have access to this fuel when you start down that road.

So I just wanted to refine this as it relates to the question before the committee, which is the question of approval of the pipeline.

Senator Barrasso.

Senator BARRASSO. Thank you very much, Mr. Chairman. Mr. Chairman, I just want to follow up on Senator Corker's comments at the unwillingness of the administration to testify here today. I think it is clear that the administration knows that its failure to permit a pipeline in 5½ years, after five environmental reviews, is an embarrassment and it is a disgrace and cannot be defended.

General Jones, in your testimony you discuss the recent events in Ukraine. You explain that Mr. Putin's incursion into the Crimea is about brandishing the threat of energy scarcity to intimidate and manipulate vulnerable populations. You note that last week four of our NATO allies appealed to Congress to protect them from Russian domination, not by requesting troops or arms, but by sending energy.

You explain that North America can become a global energy hub, providing not only for our own prosperity and security, but also serving as a reliable energy source to our allies and global energy markets. Finally, you state that energy supply to Europe can serve as a linchpin in the revitalization of the transatlantic dialogue and NATO.

So my question is, would you please discuss—and we have about 5 minutes left; this is my only question. Could you please discuss how exports of American natural gas to our allies in Europe will enhance U.S. national security interests? And please be extensive in your answer. Thank you.

General JONES. Thank you, Senator. During my time as the Supreme Allied Commander of the North Atlantic Treaty Organization—still arguably one of the best, most important security organizations on the planet—we paid a lot of attention to the threat of terrorist organizations to attack our energy infrastructure. We did some analysis about the vulnerability of the Nation to such attacks and we found that our infrastructure was extremely vulnerable.

I started to learn just how important energy is in terms of our national and international leadership, as well as the future. I came to the conclusion that the future for the United States is not only bright, but incredibly bright, and that it would be highly advantageous for the United States to set an example for the rest of the world by developing our energy responsibly.

We know that in different parts of the world energy has in some cases started conflicts and in other cases, with people who have an abundance of energy, prevented them. But how a nation develops and uses its energy assets is what is really important here. So to me energy is a national security issue that deserves to be treated as such along with cyber security and the more conventional threats to U.S. security and prosperity.

Where Europe is concerned, energy could serve to revitalize the transatlantic dialogue with our longest and oldest partners. We could be of assistance to them in making them less dependent on Mr. Putin's energy exports. And that will have a behavioral change, in my view, on Russia's tendency to be aggressive toward its neighbors. The Russian economy is a fraction of the United States economy. It essentially has two components. It has nuclear weapons and energy. Thankfully, we have held the nuclear weapons in check, but now we have to do what we can to come to the aid of not only the four countries that requested it, but also to the broader set of European allies.

There are many ways to do that. We are a globally influential nation and I presume most Americans would like us to remain that way. There are other ways we can do that employing energy to help bring greater stability and development to vulnerable areas. For instance we could champion a pipeline from Basra through Turkey to the port of Ceyhan on the Mediterranean.

There are other ways in which you can use energy in coalition with our Arab friends. Many of our Arab friends have concluded that because of our own brighter energy future we are now less interested in the Persian Gulf and in the problems of this vulnerable and strategically critical region: in the Middle East peace process, in Syria, and so on and so forth. My personal view is that nothing could be further from the truth, because this is the most dangerous place on the planet.

Energy can play a key role for a superpower and a nation of global influence not only to use its own resources, but also to show the world how the flow of energy can promote prosperity in the developing world and prevent future conflicts.

Thank you.

The CHAIRMAN. Thank you, General.

Let me thank you all. Let me just make a comment for the record. I have heard several of my colleagues suggest that the administration refused to testify. We inquired about an administration witness and they thought it inappropriate to testify about a pending matter that they have yet to make a final decision on. After listening to that, I did not consider it a refusal. Clearly, when the administration makes a decision that can be the subject of a hearing, at which time we would expect the administration to testify. But since it is pending—there are many times in which we have matters that have the State Department pending in its review that we do not have witnesses from the administration on. That is true both past and present.

I appreciate the testimony from all of you and the dialogue that has been had. I think we have gotten, flushed out a lot of the issues that are pertinent to the specific issue of the pipeline and in some cases beyond.

The record will remain open until the close of business tomorrow and, with the gratitude of the committee, this hearing is adjourned.

[Whereupon, at 1:05 p.m., the hearing was adjourned.]

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

A DESCRIPTION OF FEE AND DIVIDEND WRITTEN BY BOSTON BUSINESSMAN, JIM MILLER, SUBMITTED BY DR. JAMES HANSEN

CLEAN ENERGY AND SHARED PROSPERITY ACT

Under the Clean Energy and Shared Prosperity Act the federal government will levy a fee on carbon dioxide (CO_2) emissions an CO_2 equivalent emissions that are generated from acquiring, transporting, and burning fossil fuels like coal, natural gas, and petroleum. The fee will be levied on energy companies at the approximately 3,000 points of production where the energy is produced or imported into the United States (wellhead, mineshaft, port, or pipeline). All of the revenue that is generated from the Clean Energy and Shared Prosperity Act will be placed in the Clean Energy and Shared Prosperity Fund and returned to the American people as annual dividend payments.

CLEAN ENERGY AND SHARED PROSPERITY FUND

1. The Clean Energy and Shared Prosperity Fund will be held at the U.S. Treasury in its own fund, separate from the Federal Government's General Fund.
2. The funds held in the Clean Energy and Shared Prosperity Fund and any income generated by those funds can only be used to make annual Clean Energy Dividend payments to the American people.
3. In order to receive a Clean Energy Dividend payment you must file a federal income tax return or extension by April 15 of each year.
4. If you are filing jointly or are head of a household with dependents, your income tax return must include the name, birth date, and social security number of all the adults and dependent children on your tax return. If you do not owe any federal income taxes there will be a simple, one page form for you to file stating that you do not owe any federal income taxes.
5. Everyone is counted equally in determining the amount an individual or family receives in their dividend check. For example, a couple filing jointly with two dependent children will receive a dividend check four times larger than a single person filing an individual tax return.
6. On or before May 15, dividend payments will be mailed or electronically transferred to every eligible American or legal resident of the United States who filed a federal income tax return or extension by April 15.

Question. Is there any dividend program similar to this?

Answer. Yes. Since 1982 the Alaska Permanent Fund has paid an annual dividend to every Alaskan resident from the royalties paid to the state by oil companies for oil drilled in Alaska. The Alaska Permanent Fund dividend program is incredibly popular and there is no danger of the funds being used by the government for any purpose other than annual dividend payments to the residents of Alaska.

Question. How will it work?

The key to this model is twofold:

1. The Clean Energy and Shared Prosperity Act carbon fee will increase by $10 per metric ton of carbon dioxide each year until the United States is on track to reduce its carbon emissions to 10 percent of 1990 levels by 2050. This represents a 8.4 cents increase in the price of a gallon of gasoline and less than half a cent per kilowatt hour of electricity each year while the country transitions to clean, renewable energy sources; and
2. The government does not keep a penny of the carbon fee. One hundred percent of the revenue collected is refunded equally to the American people on a per-capita basis as Clean Energy Dividend payments.

Question. How much will Americans receive in their Clean Energy Dividend checks?

Answer. The amount of money in your dividend payment will be decided by the price placed on carbon pollution. The primary goal of the Clean Energy and Shared Prosperity Act is to lower carbon and CO_2 equivalent emissions, so the carbon fee has to be sufficiently high in order to change the market forces behind energy generation and consumption, which will in turn lead to lower carbon and CO_2 equivalent emissions. Fortunately, a higher carbon fee means larger annual dividend checks for all Americans. It is a very simple formula: Higher Carbon Fees = Larger Dividend Checks + Lower Carbon Emissions.

Question. What are the costs of doing nothing?

Answer. The costs of doing nothing are enormous and no country has more to lose from the devastating effects of global warming than the United States. Hurricane Katrina caused over $100 billion in damage. Hurricane Sandy is projected to cost as much as $50 billion. It is a scientific fact that global warming fed these monster storms and is at the root of the relentless rise in temperatures that has scorched the United States and other parts of the world in recent years. Although climate change is a global crisis, it has become an especially destructive force in the United States. Droughts threaten to turn America's farm belt into a dust bowl. Uncontrollable wildfires threaten to consume the great forests of the Rocky Mountain and West regions. Warmer oceans and rising sea levels threaten every inch of America's 82,836 miles of ocean coastline. This includes every beach and coastal community in the United States as well as major metropolitan areas like Washington, DC, New York, Boston, Miami, New Orleans, San Diego, San Francisco, and Seattle. In the face of the destructive power of global climate change, the most expensive and dangerous thing we could do is to do nothing. We must act now.

Question. Will a carbon fee put American manufacturing at a competitive disadvantage?

Answer. Absolutely not. If a product imported into the United States is manufactured in a country that does not meet or exceed the carbon emissions standards set forth in the Clean Energy and Shared Prosperity Act, then a carbon import fee ("Carbon Import Fee") will be assessed in order to account for the costs of carbon emissions associated with making the product and transporting it to the United States. The World Trade Organization would recognize the Carbon Import Fee as a fair trade and free market solution that levels the playing field between foreign and domestic manufacturing and promotes innovation. In fact, America is blessed with vast wind, solar, and other renewable resources, which promise to put American manufacturing at a competitive advantage to its foreign counterparts while providing other countries a powerful incentive to also place a price on carbon pollution.

Question. Are there any health benefits to reducing carbon emissions?

Answer. Yes. The same fossil fuels that are driving climate change are also responsible for polluting our air, water, and food. Burning fossil fuels generates pollutants that make us sick, reduce our life expectancy, and drive up health care costs while driving down the productivity of American workers. For example, coal pollution causes over $100 billion in health care costs from asthma and other respiratory illnesses each year. Coal and gas fired power plants are causing acid rain and ocean acidification. Coal plants are responsible for dangerous levels of mercury in the fish we eat. Billions are lost each year in lost productivity from workers who become ill or who have to take time off from work to care for sick children and other family members. It does not have to be this way. By reducing the amount of fossil fuels we burn, the Clean Energy and Shared Prosperity Act is guaranteed to reduce health care costs and better protect our air, water, and food which in turn offers Americans the opportunity to lead longer, healthier, and more productive lives.

Question. Will a carbon fee reduce the deficit?

Answer. All of the revenue generated from the Clean Energy and Shared Prosperity Act will be returned to the American people in annual dividend payments. In that regard, it is revenue neutral with all of the money going back to the American people rather than to reducing the deficit. It does, however, indirectly reduce the deficit by reducing health care costs and increasing productivity.

Question. Is there a free market, small government solution to this problem?

Answer. Yes. The Clean Energy and Shared Prosperity Act is a free market, small government solution to the problem of carbon emissions and climate change.

1. It is a small government solution in which 100 percent of the revenue collected is refunded equally to the American people. The government does not keep a penny of the carbon fee.

2. There are real, quantifiable costs associated with burning fossil fuels—destruction of wealth and property; diminished quality of life, shorter life expectancies, and increased health care costs; polluted air, water, and food supplies; loss of productivity and economic growth potential; enormous military spending in the Persian Gulf; and global warming and climate change, to name just a few. In spite of all this, carbon emissions are the only pollutants that we allow companies to dump onto the public at no cost. This creates market distortions that unfairly favor fossil fuels and unwisely stifles innovations and investments in other energy solutions.

3. The Clean Energy and Shared Prosperity Act is designed to account for these costs but it does not pick winners and losers. Instead it levels the playing field by

placing solar, wind, thermal, and hydroelectric energy on equal footing with fossil fuels.

4. With a level playing field, the creative genius of America's free market capitalism will be unleashed to pursue energy solutions that promise a future of clean, sustainable, and ubiquitous power for the American people.

RESPONSES OF GEN. JAMES L. JONES TO QUESTIONS SUBMITTED BY SENATOR ROBERT MENENDEZ

Question. The Keystone XL pipeline project is an addition to the existing Keystone Pipeline system that connects Canada's 179 billion barrel tar sands resource to U.S. refining centers. It would increase capacity from 591,000 bbl/d to more than 1.2 MMbbl/d. However, given the size of this oil resource, a push for further pipeline expansion is inevitable.

- Given that this seems to be an initial step in drastically increasing tar sands production, do you think opponent's concerns about carbon emissions have merit?

Answer. I am unaware of any plans to expand the United States pipeline infrastructure beyond Keystone XL. As a general matter expansion, if it were to be required, should be based on its merits when proposed, recognizing that the United States pipeline infrastructure is extensive and Keystone XL (if constructed) will add a small percentage to the total length of the existing network.

I personally am concerned about carbon emissions as a global issue, and am committed to helping find ways that the United States can continue down the path of reduction during the coming decades (a path that we have pursued with a remarkable degree of success over the past several years thanks in part to the abundance of U.S. natural gas, which emits fewer emissions than other alternatives such as coal). However, based on government studies, I do not believe that rejecting the Keystone pipeline is likely to have a large effect on carbon emissions or is an effective means of dealing with this issue.

The oil that would be transported through the Keystone pipeline if it is built will be taken out of the ground regardless of whether or not the United States sanctions the project; the Canadian Prime Minister himself has proclaimed this publicly. Since the Canadian Government has already determined to bring this oil to market, the question I think we should focus on is: who will help deliver it to market in the most responsible and efficient manner possible? My answer is that the United States should be the partner that Canada can rely on to do this. EPA Administrator Gina McCarthy recently told the Boston Globe in an interview about Keystone XL that: "If there's oil there, someone will find it and use it." Indeed, if Keystone XL isn't built, Canada will have greater incentive to ship its oil sands via other pipelines or by truck or rail for export to China and other Asian markets, which do not have the same stringent environmental standards that we do, and as Canada also does.

The Department of State has conducted a thorough review of the proposed project that has involved federal, state, and local constituencies, and provided comprehensive analysis of alternate routes and crude supply scenarios in its EIS. The Department has found that the proposed project will have negligible impact upon the environment during both construction and operating phases.

Lynne Helms, Director of the Department of Mineral Resources of the North Dakota Industrial Commission, recently testified that greenhouse gas emissions from rail transportation and truck transportation are 1.8 times and 2.9 times greater than the emissions from pipeline transportation, respectively.

I continue to believe that even as the United States continues to reduce its total carbon footprint, we must tackle the issue of global climate change on an international basis. Much of the innovation necessary to build a bridge to a low carbon future will come from the United States. Ensuring our energy security is necessary if we are to sustain a strong economy and innovation system necessary to drive future energy and environmental solutions.

Question. Those arguing that the Keystone XL will improve U.S. energy security often state or at least imply that fuels derived from the pipeline will be used domestically. For instance the API Web site states that "[t]he Keystone XL pipeline expansion would provide a significant boost to U.S. energy security, bringing more than 800,000 barrels of oil per day to U.S. refineries. . . ."

- Is there any assurance that the fuels derived from the oil sent through this pipeline, for which America would assume the environmental risk, will stay in

the United States and therefore increase our energy security and benefit American consumers?

Answer. The oil transported via the Keystone pipeline from Canada will be refined and processed in U.S. facilities, which is undoubtedly good for the U.S. economy and employment, and therefore American consumers.

As a general matter the oil transported through the Keystone pipeline does not need to remain in the United States in order to greatly benefit the energy security of America, and, in particular, American consumers. Today's oil market is global. New sources of supply coming onto the market, whether sold in the United States or exported to third countries benefit all oil consumers. Similarly, disruptions in supply affect oil prices around the world, even in oil producing countries.

Over the past 10 years or so Canadian oil sands have become a key component of the oil supply globally; this has meant that oil sands have become the single largest source of U.S. oil imports. Additionally, there is potential for this new resource to account for as much as 16 percent of all new oil production by 2030.

The increased North American energy production that we have enjoyed thus far is already helping us to reduce the chance of price shocks resulting from supply disruptions in the Middle East and other regions of the world. Today, for the first time in several decades, the United States is in a position of increased stability in terms of potential disruptions to the global oil market. As Fox Business reported, U.S. reliance on oil from unstable regions of the world is dropping rapidly, thanks to our shale boom and to the fact that we are importing so much more oil from our neighbor and ally, Canada.

On the matter of the United States assuming environmental risk, Keystone XL is the safest way to transport Canada's resources. The State Department concluded in its EIS that: "Keystone XL would have a degree of safety over any other" as it will go above and beyond the requirements of current operational pipelines and adopt approximately 57 extra safety measures.

RESPONSES OF MICHAEL BRUNE TO QUESTIONS SUBMITTED BY SENATOR ROBERT MENENDEZ

Question. I understand and sympathize with many of the arguments you have put forth as to how this project could cause damage to our environment. It is clear, however, that there are other considerations relevant to this project, such as energy security, jobs, relations with Canada, and many others. Should our carbon policy, as applied to one pipeline, trump all of these other considerations?

Answer. As I illustrated in my testimony, rejecting Keystone XL is very important from a climate perspective, as it will serve a linchpin to the development of one of the most carbon-intensive sources of oil on the planet. Additional considerations about energy security, jobs and relationships with other counties are not only important; they bolster the argument that this project should be rejected.

ENERGY SECURITY

Our energy security will be undermined by this export pipeline. Leadership from Transcanada has refused under oath to commit to keeping the tar sands oil that travels through Keystone XL in the United States, which flies directly in the face of the argument that this pipeline somehow strengthens our own energy security.

As already acknowledged by the State Department's Draft Supplemental EIS, the gulf goast refineries where Keystone XL will deliver crude oil already export most of their product. Exports of refined petroleum products from the gulf coast region (also know as PADD 3) reached nearly 3.3 million barrels per day in December 2013, nearly four times the capacity of Keystone XL. As a result of increasing U.S. oil production along with improved fuel efficiency standards, it is likely that most of the crude traveling through Keystone XL will be exported.

Asia would be a major recipient of the product transported by Keystone XL. The comments submitted by Sierra Club, et al., to the State Department in March 2014 summarize a key finding of a report by Philip K. Verleger, Jr. (which was cited in the State Department's FSEIS) to have concluded that the Keystone XL pipeline, if built, would facilitate Canadian crude exports to China rather than the United States, because buyers for refineries on the gulf coast can limit their purchases of Canadian crude, forcing the Canadian producers to seek buyers in overseas markets, most likely China.

Keystone XL proponents like to maintain that the pipeline would simply replace the heavy oils the United States already imports from countries like Venezuela. This argument ignores the evidence that Keystone XL oil would not replace heavy

oil from Latin America or the Middle East. Venezuela, Saudi Arabia, and Mexico own around half of the heavy oil refining capacity in the gulf. Those refineries are expected to continue giving preference to refining their own countries' oil as opposed to Canadian heavy oil. Meanwhile, thanks to high levels of U.S. light oil development, gulf refiners can buy discounted domestic oil, and these refiners are increasing their intake of domestic light oil while reducing their processing of heavy oil. This makes it all the more likely that a glut of Canadian heavy oil in the gulf will be pushed onto the world market by exploiting a loophole in U.S. crude export regulations.

JOBS

President Obama himself has acknowledged what the State Department's FEIS concludes: the tar sands pipeline is not a major jobs creator.

But there's no question we need jobs. Fortunately, job growth in the clean energy economy is more than two times faster than the rest of the economy. Every dollar invested in clean energy creates three times as many jobs as every dollar invested in fossil fuel. Rejecting the Keystone XL pipeline and continuing to invest in efficiency, clean energy, and sustainable forms of transportation will create more jobs as demand for these options continues to skyrocket.

A report from the clean energy industry released last month announced that our Nation had more than 78,600 clean energy and clean transportation jobs in 2013.

Solar power generation saw the most growth in 2013, with more than 21,600 jobs added. Other strong sectors included building efficiency and public transportation in 46 states. Rounding out the Top 10 states for the year were: TX, HI, MD, MA, IL, NV, OR, NY and MO. The Top 10 states for the fourth quarter were: TX, AZ, NY, CA, IA, RI, HI, GA, ND and NM.

Let's look at the big picture. What happened to our vision as a country? We shouldn't have to choose between putting food on the table and poisoning our water supply and cooking the planet.

By setting standards through 2025, President Obama is giving automakers the certainty they need to innovate and thrive. Already, automakers have technologies that can help meet these standards—advanced transmissions, start/stop engines, and strong, lightweight materials. The innovation and manufacturing of vehicles as a result of these standards will continue to create jobs—in the auto industry and throughout the economy. The Blue Green Alliance projects that the second round of fuel efficiency standards alone (from 2017–2025) will create roughly 570,000 jobs.

RELATIONS WITH CANADA

Many in Canada have already made clear that they don't want Keystone XL or tar sands oil. In fact, earlier efforts to send this dirty fossil fuel through British Columbia were rebuffed, forcing the industry to look southward for their project that offers all risk and no reward to all of those in its path. So, it is critically important to draw the distinction between the Canadian people—many of whom have already said "no" to Keystone XL—and the Canadian Government.

At the same time, large majorities in the United States are demanding action on climate disruption. Approving Keystone XL would amount to the exact opposite. Canadian Prime Minister Stephen Harper's conservative government hope that the approval of Keystone XL will help them meet their goal of 5.2 million barrels per day by 2030, but U.S. energy policies need to lead by example, not fold to pressure from other countries. While the United States is currently on a path to meet its emissions targets, the additional emissions triggered by Keystone XL over the next 35 years would be roughly equivalent to all the carbon emissions of the United States in 2013. If the United States approves this pipeline it will send a signal to the world that the United States is not serious about its climate commitments, by facilitating the development of the extreme fossil fuel reserves that climate scientists say need to remain unburned.

Canada's Prime Minister, Stephen Harper, has reportedly offered to embark on a plan to reduce Canada's GHG emissions if President Obama approves Keystone XL. This seems unlikely based on Canadian Government's inability to live up to its climate commitments to date. Canada's Federal Government has repeatedly missed its own targets to regulate Canada's oil and gas sector. In fact, it will miss its own 2020 GHG reduction targets, in large part due to tar sands development. Tar sands are Canada's fastest-growing source of greenhouse gas emissions. Even though it has a relatively small population, Canada is already one of the top 10 greenhouse gas-emitting countries in the world. In 2011, the Canadian Federal Government's own peer-reviewed reports forecast that emissions from tar sands would be triple 2005 levels by 2020.

Prime Minister Harper has shown an unwillingness to take serious action on climate change, and he has even actively undermined his own government's climate programs and research. Prime Minister Harper's government drastically cut funding for government research on climate change, ended the government's National Round Table on the Economy and Environment, and cut support for research programs like the Canadian Foundation for Climate and Atmospheric Sciences.

Recent developments make the Canadian Government even less likely to follow through on Harper's supposed plans to reduce Canada's GHG emissions—2016–20 budget cuts to Environment Canada's climate program will cut over 1,000 staff positions. This does not bode well for the creation of more stringent regulations for the oil and gas sectors, or illustrate a serious commitment to joining the United States in fighting climate change.

Good relations between nations requires good faith actions on the part of both—but the Harper Government has proven to be only interested in forcing dirty Canadian fuels on the American people with little to be gained in return.

Question. You have stated in your testimony that you are "deeply worried about potential cyber security attacks on Keystone XL's SCADA system that threaten communities throughout America's heartland." The United States currently has 2.6 million miles of pipeline built. Would constructing one additional pipeline truly present a significant new threat to homeland security?

Answer.

"As you well know, a cyber attack could have the same impact as a well-placed bomb."—Robert S. Muller, Director of the FBI, March 2010

Thank you for the opportunity to further explain why the Keystone XL pipeline would introduce a new and significant security threat for America. While it is true that there are more than 2 million miles of oil and gas pipeline in the United States, Keystone XL presents an increase in cyber security risk far beyond its percentage increase in existing pipeline miles. As with other pipelines that would be considered critical infrastructure, the private sector is expected to proactively put in place cyber security protections. TransCanada has not demonstrated that it has put in place the necessary cyber security precautions and TransCanada's record suggests it cannot be trusted to voluntarily implement an effective approach to managing this risk. There are also risks that are unique to this pipeline because of the political battle that has been waged around approving it, and because many proponents of the pipeline have gone out of their way to publicly promote the notion that this particular piece of infrastructure is essential to America's energy security, thereby enhancing its attractiveness as a target for cyber attack. We further elaborate on each of these issues below, and cite documents to support the level of care that is expected from Keystone XL in this regard, and TransCanada's past record of poor compliance.

The growing threat of cyber attacks on critical infrastructure is a clear security concern for the United States. Within the past year, the Obama administration has issued an Executive order and released a NIST Framework on improving critical infrastructure cyber security, and both houses of Congress have considered bills on this topic.

Concerns over cyber security threats to critical infrastructure reflect the growing threat of cyber attacks. My written testimony to the committee made reference to the Department of Homeland Security's ICS–CERT report on attacks on pipelines within the ONG sector. Specifically ICS CERT reported having assisted 23 oil and natural gas sector organizations with incident response and recovery efforts. DHS highlighted the fact that hackers had succeeded in obtaining information pertaining to the Organizations Industrial Control Systems and Supervisory Control and Data Acquisition (SCADA) systems which would allow remote operations. To be clear, remote operation of a SCADA system could vary from preventing controllers from accessing accurate information about pipeline conditions, to changing pipeline flow and pressure and causing physical harm.

While the risks from a cyber attack on a pipeline's SCADA system can never be fully mitigated, the EO and NIST framework set up a system in which we rely on private organizations to implement highly effective security controls. This voluntary system enhances regulatory requirements in place to ensure pipeline safety. The Pipeline and Hazardous Materials Safety Administration recommended 57 special conditions be imposed on Keystone XL's design, construction, operation and maintenance plans in order to get a Presidential Permit. Nearly half of those conditions referred to Keystone XL's SCADA system.

While the United States currently relies on private sector entities to lead assessing and designing their cyber security protocols, this reliance ought to be based on an expectation of good faith. Though cyber security was included in the FEIS for

Keystone XL, there is not one statement in that section which implies that the company provided any evidence to support its assertions that its cyber security protocols would be adequate to manage risk. The State Department should be very concerned that TransCanada has not given sufficient evidence of its compliance with an industry-designed set of standards and best practices to help organizations manage cyber risk, particularly in light of the fact that TransCanada is not meeting Canadian legal standards around risk. A recent audit by Canada's National Energy Board (Board) found TransCanada "non-compliant" in four of none subelements including:

2.1 Hazard Identification, Risk Assessment and Control;
3.7 Operational Control-Upset or Abnormal Operating Conditions;
4.1 Inspection, Measurement and Monitoring.

This same report goes on to state that "the Board is also investigating certain steel pipe and fittings installed on the Keystone Pipeline with the potential to exhibit lower than specified yield strength." Finally, the Board noted that "a number of the allegations of regulatory noncompliance were identified and addressed by TransCanada only after the complainant's allegations were made and were not proactively identified by the company's management system." The fact that TransCanada cannot be bothered to meet its legal obligations in Canada until a whistleblower reports malfeasance, gives little basis to expect that it will proactively ensure that Americans are protected from risks of abnormal operating conditions such as would exist in the instance of a cyber attack.

Another element of concern is the SCADA system that TransCanada has chosen. In testimony before the South Dakota PUC in 2009, Telvent is identified as the SCADA system that TransCanada has submitted as part of its permit. In September 2012, Telvent Canada was itself the victim of a cyber attack, reportedly by a Chinese hacking organization called Comment Group. Comment Group is said to have targeted a variety of industrial sector companies including chemical and electric companies. Telvet reported that after installing malware, the attackers stole project files relating to the OASyS SCADA product.

The risk associated with Keystone XL can be distinguished from the rest of America's pipeline infrastructure in other ways as well. Unlike the vast majority of existing pipelines, people are highly aware of Keystone XL and the political controversy surrounding it. TransCanada itself reports having already been suffered a denial of service attack which they attribute to Anonymous.

Given all of the above, it is hard to understand how the Secretary of State could determine that Keystone XL is in the national interest without significant additional specific information about how TransCanada is mitigating the risk of cyber attack that could cause harm to American communities along the pipeline's path.

RESPONSES OF DR. JAMES HANSEN TO QUESTIONS SUBMITTED BY SENATOR ROBERT MENENDEZ

Question. Given that a new nuclear power plant would probably cost more than $12 billion, it seems few companies are willing to take the risk to build new plants here. This reluctance occurs despite the fact that new nuclear plants receive a production tax credit, and that the Federal Government has agreed to foot some of the bill in the case of a catastrophic accident.

- What makes you so bullish on nuclear power when other technologies, with less carbon emissions, are attracting much more investment in the United States than nuclear power?

Answer. Your question about cost requires addressing both the cost of current nuclear power and recognition of how we have reached the current high-cost situation.

Frankly, a clean energy future in the United States requires that the Democratic Party recognize that its position on nuclear power, ranging from neglect to outright hostility, is in part responsible for that situation and is a major threat to the well-being of young people and other life on our planet. My criticism of your party is constructive, and I hope you will take it that way.

Today global fossil fuel CO_2 emissions are accelerating rapidly, because the countries that need increased energy have no viable alternative to fossil fuels for base-load electric power. Their energy, to a large degree, is being used to make products for us, people in the West, as much manufacturing has moved to these developing countries.

Why was the world unprepared for carbon-free energy needs, when the threat of climate change has been known for decades? I am compelled to point out the truth of the situation, because I am committed to do as much as I can to minimize undesirable human-made climate change—and providing objective information is the best

thing that I can offer. One of the principal reasons for the world's unpreparedness concerns policies about nuclear power.

Most nuclear power plants operating today are of a technology now about 40–50 years old. Despite that, these power plants have saved an enormous number of lives and reduced carbon emissions to the atmosphere, as my colleague, Pushker Kharecha, and I have quantified.

However, research and development of nuclear power slowed to a crawl in the past few decades, in good part because of decisions made in the Carter and Clinton administrations. Nevertheless, progress was not entirely prevented and it is still possible to minimize the damage that was done.

The enormous growth of coal use in countries such as China and India needs to be replaced with carbon-free energy. "Renewables" can help, but despite large subsidies and mandated use, they provide only a small fraction of energy use, and cannot even match the growth of global energy demand, let alone replace existing fossil fuel use, which is the requirement imposed by climate.

The United States should work together with China and India to develop the safest, most economical nuclear power that today's technologies make possible. Indeed, we have an obligation to do that, because we burned a large part of their carbon budget, and we are now all in the same climate boat. Furthermore, it is an opportunity for us, because these nations must build power plants on a large scale, which allows an opportunity to compare alternatives, gain experience, and produce a sufficient number of power plants to drive down the unit cost.

In this way it will be possible to address one of the two principal reasons that nuclear power plants are now expensive to construct in the United States. I refer to the fact that the time and cost required for construction of a nuclear power plant remains high if each new plant has a new design. In contrast, after the oil embargo of 1973 France made a policy decision to select one design from then-available technology to produce a fleet of reactors. They constructed these reactors in about 15 years. As a result their electricity prices are about half those in neighboring Germany. In addition, unlike Germany and several other European nations, they have much less concern about Russia's potentially fickle willingness to provide fossil fuels.

It is uncertain whether technical progress in nuclear technology resulting from extensive near-term experience in China can then circle back to the United States. If we allow the "antinuke" minority in the United States to dictate policies, there is a danger that the United States will become second rate technically, with substantial damage to our economic well-being. There is no fundamental reason that should happen. We still have the best university system in the world and potential innovation second to no other nation. However, we must foster those capabilities.

The second major reason that the cost of nuclear power plant construction in the United States is high concerns the Nuclear Regulatory Commission. As noted in my written testimony to your committee, reforms of the NRC are badly needed. The NRC does a good job of regulating. They have capable technical staff, and their resident inspectors do a good job at nuclear plants, including reporting on incidents and keeping the nuclear plant operators on their toes.

In contrast, the nuclear reactor permitting process has become a lengthy bureaucratic lawyer-laden paperwork process that causes delays of years and cost growth of billions of dollars. NRC, industry and the public are not adversaries, yet the NRC often is, in effect, acting as such. We must fix the permitting process. This probably requires removing the permitting function from NRC, and starting over with a new organization that is given guidelines and procedures that better serve the Nation's needs.

A sensible energy policy for the United States would not have us blowing through new-found gas resources in a few decades and moving to increasingly polluting and destructive mining. Instead we would honestly treat gas as a transition fuel to a clean energy future. That future would include the improved safe nuclear power that is possible with today's technology. With an effective energy policy the cost of a modern nuclear power plant could be driven down to a fraction of the cost that you quote.

Regarding your specific comment about costs and production tax credit, please note that nuclear power receives much less favorable treatment than renewable energy:

(1) Nuclear production tax credit (PTC) of 1.8 cents/kwhr is not indexed for inflation. PTCs for other low carbon energies are indexed. PTC for wind is 2.3 cents/kwhr.

(2) Nuclear PTC is limited to 8 years, and 6,000 MWe capacity nationwide, so if more than a few nuclear power plants are built the amount of the PTC will be reduced proportionately.

(3) There is a limit on the PTC per facility that will reduce the PTC per kwhr for power plants producing more than 1,000 MWe, a major loss for EPR or APWR (1,600–1,700 MWe each).

(4) Plants must be placed in service before 1 January 2021. Thanks to NRC slowness, that practically eliminates any PTC for new nuclear power.

Regarding your question about investments in renewables, I am surprised that you seem to be unaware of why renewables are generating more investment than nuclear power. Do you know about "renewable portfolio standards"? If government cares about young people and nature, why are these not "carbon-free portfolio standards"? Who pays the hidden cost of such rules? The cost is passed to all electricity users. This is a huge hidden subsidy, reaped by only renewables. There is a complex array of other financial incentives for renewables. Their lobbyists threaten to halt construction if any of these "temporary" incentive programs end. Incentives include the possibility of a 30-percent investment tax credit in lieu of the PTC, providing a large "time-value-of-money" advantage over a PTC spread over 8–10 years, accelerated 5-year depreciation, state and local tax incentives, loan guarantees with federal appropriation for the "credit subsidy cost."

Nuclear power, in contrast, must pay the full cost of an NRC license review, at a current rate of $272 per professional staff hour, with no limit on the number of review hours. The cost is at least $100–$200 million. The NRC takes a minimum of 42 months for its review, and the uncertainty in the length of that review period is a major disincentive.

Your question also includes the false implication that these other technologies have less carbon emissions than nuclear power. Wind is close to nuclear power in low carbon per MWe, but most solar energy technologies have higher carbon emissions per MWhr of electricity produced.

Question. In your testimony, you state that further nuclear cooperation with China is important. From a climate perspective I can understand your argument. However, given China's lack of transparent governance, can we trust that they will adequately oversee nuclear safety and protect the health and safety of the public?

Answer. Are you implying that United States cooperation with China would make China's nuclear reactors less safe?? Are you aware that Russia is more than willing to provide their technology to China? Your question turns reality on its head. If the United States wishes to make Chinese nuclear plants as safe as possible, we should be working with them.

You seem to be implying that you think there would be nuclear accidents in China killing more than 1,000,000 per year. Coal emissions (excluding the present and future damage from climate change) now reduce life expectancy more than 5 years in China, killing more than 1,000,000 people per year, and also make the years prior to death much less healthy and happy.

The technology of presently operating nuclear reactors in the United States is 40–50 years old and would not be built in China. Newer reactors, such as the Westinghouse AP–1000 now being built in China, will shut down in the event of an anomaly such as an earthquake and they can cool themselves for days without any external power. This technology is already a vast improvement over existing power plants in the United States, and still better technologies are possible if we would cooperate in the research, development and demonstration.

Summary

Globally, nuclear power has an essential contribution to make, if the world is to phase off fossil fuels in time to avoid disastrous climate consequences. In the United States, nuclear power is essential if we are to avoid massive expansion of "fracking" and increasingly destructive fossil fuel mining as the industry goes after sources that are harder and harder to reach.

When the history of our planet is written, the United States will stand in stark relief. It remains to be seen whether that bold impression will be positive or negative. At the end of World War II and in years thereafter we stood as a positive leader, with generosity to our foes and generosity to our friends in the rebuilding of their nations.

Are we so blind and selfish that we cannot see what is happening now? We burned more than twice as much fossil fuel as any other nation (including China, even though their population is four times larger). Are we so foolish that we will pretend that renewables provide all the energy the world needs, refusing to admit the obvious conclusion that this locks our children into fracking, that it locks them into tar shale and tar sands, and that it locks the world into coal?

Our parents did not understand that their burning of fossil fuels caused a problem for future generations. On the contrary, they were the great generation respon-

sible for the generosities that I mentioned above. If we continue on our current path, pretending that we do not understand the consequences, what adjective do you think our children will apply to our generation?

RESPONSES OF HON. KAREN ALDERMAN HARBERT TO QUESTIONS SUBMITTED BY SENATOR ROBERT MENENDEZ

Question. During the hearing I was a little unclear on your response to my questions concerning climate change and its causes. You eventually stated that "the climate is warming, without a doubt." Then you added: "It is caused by lots of different things, and you can't say that climate change is only caused by humans. I think the science is what you're pointing to, and we have a robust debate going on in this country, as we should, and those that would say everything is settled sort of undercut the integrity of science. It's an ongoing discussion."

- To clarify, does the U.S. Chamber of Commerce agree with the overwhelming majority of scientists that human activities are the driving force behind climate change? Yes or No?

Answer. The climate is constantly changing, as we have seen since temperatures first began being recorded. We now that since the mid-1800s, the earth's average surface temperature has increased slightly, the concentration of greenhouse gases in the atmosphere also has increased, and some of the increase in temperature is related to the increase in GHGs, though there is a great deal of debate over how much. As the recent IPCC reports show, while our knowledge continues to improve, there is still a great deal we don't understand fully. Moreover, no matter one's view of the issue, it is clear that the United States acting unilaterally, or even in concert with other developed countries, cannot appreciably slow the growth in global GHG emissions because of the rapid increase in emissions from developing and emerging economies, which have shown with very little interest in pursuing policies that limit their energy choices and slow their economic development. It is also important to point out that GHG emissions in the United States have been trending down in recent years at a similar, and in some cases faster, rate than in Europe countries with cap and trade systems. EPA recently reported that gross GHG emissions in the United States dropped 3.4 percent in 2012 from 2011, even as emissions in some European countries increased over the same period.

Question. Your testimony states that "the greater access to Canadian crude oil afforded by Keystone XL would increase the reliability and the diversity of foreign supplies of crude oil the United States will continue to need." Does the United States have any assurances that the fuels derived from the oil sent through the pipeline will stay in the United States and therefore increase our energy security and benefit American consumers?

Answer. Autarky is not a sound energy strategy, and it does not lead to greater energy security or lower energy prices for consumers—usually the opposite, in fact. Increasing the diversity and reliability of energy supplies to and from the United States is a superior approach.

It is important also to consider a few salient facts about the supply and demand balance in the Gulf Coast region (PADD 3). In 2013, refiner petroleum production PADD 3 was a little more than 7.5 million barrels per day (MMbbl/d) while petroleum consumption in PADD 3 was considerably less, 5.3 MMbbl/d. That excess production has to go somewhere, and getting refined products to where they are needed is a very complex undertaking. There is limited capacity to send refined products to the East and West coasts via pipeline, and shipping it by tanker is prohibitively expensive because of Jones Act requirements. In many cases, it makes greater economic sense for PADD 3 refineries to export some of this excess product and for refineries and terminals in other parts of the country to import product from other countries. For example, U.S. refineries in PADD 3 send diesel fuel to Europe (where it is in higher demand than gasoline) and European refineries send gasoline to the Eastern United Sates. By making the most of each refinery sectors comparative advantages, both consumers and our energy security are better served. Forcing refiners to forgo product exports would severely dislocate oil markets here and abroad, leading to higher prices, greater market instability, and less security.

Prohibiting exports of refined product produced from Canadian crude oil also would create a tracking nightmare for refiners. Refiners process many different types of crude oil. Being able to certify that a specific batch of any refined product destined for export was derived entirely from non-Canadian crude oils would be virtually impossible.

It should also be pointed out that any restrictions on exports of refined products would be a clear violation of World Trade Organization rules. Our energy policy should adhere to free trade principles.

Finally, it is odd that some opponents of the Keystone XL pipeline would even consider prohibiting exports of products refined from crude oil from our good neighbor and ally, Canada, while allowing unfettered exports of products refined from crude oil from countries like Venezuela or Russia. The justification for such a self-defeating and clumsy policy is hard to imagine, and it would certainly send the wrong signal not only to Canada, but to other U.S. allies as well.

Restricting exports of products refined from Canadian oil would be bad energy security policy, bad economic policy, bad regulatory policy, bad trade policy, and bad foreign policy—a lose-lose-lose-lose-lose.

Question. The Keystone XL pipeline project is an addition to the existing Keystone Pipeline system that connects Canada's 175 billion barrel oil sands resource to U.S. refining centers. It would increase capacity from 591,000 bbl/d to more than 1.2 MMbbl/d. However, given the size of this oil resource, a push for further pipeline expansion is inevitable.

- ♦ Given that this seems to be an initial step in drastically increasing tar sands production do you think opponents concerns about carbon emissions have merit?

Answer. No. The State Department final report reaffirms what we already knew: Canada views its oil sands as a strategic asset, and they will be developed with or without Keystone XL or any other pipeline. This is not an assumption, as some claim, but an analytical outcome. Canadian oil sands can be produced profitably with a crude oil price between $55 and $65 per barrel. There are only two realistic scenarios where the cost of a barrel of oil could collapse from today's price of around $100 to such a low level (and even these are exceedingly unlikely): (1) a deep worldwide recession, after which oil sands production would resume (if it even stopped) once the price of crude oil recovered sufficiently; or (2) a glut of crude oil appears on the world market, in which case oil consumption everywhere would increase very sharply, whether supplied from Canada or somewhere else.

The Canadian Association of Petroleum Producers forecasts that oil sands production will grow from about 1.8 million barrels per day (MMbbl/d) in 2012 to 5.2 MMbbl/d in 2035. This result does not depend on Keystone XL. Canadian oil producers continue to diversify market access by expanding existing and developing new infrastructure to Canada's East and West coasts, including railway capacity. This will continue whether or not Keystone XL is approved. Therefore, stopping Keystone XL will have no impact on the development of oil sands.

State's report demonstrates that in the context of greenhouse gas (GHG) emissions, approval of the pipeline is the best option. One of the President's stated criteria for approving the pipeline is that it would not contribute to increased greenhouse gas emissions. So what did the report conclude? It found that all of the alternative rail, tanker, and pipeline scenarios it examined have much higher GHG emissions associated with them than the Keystone XL scenario. The report states: "The total annual GHG emissions (direct and indirect) attributed to the No Action scenarios range from 28 to 42 percent greater than for the proposed Project." By the president's own environmental standard, then, Keystone XL should get the green light.

RESPONSES OF HON. KAREN ALDERMAN HARBERT TO QUESTIONS SUBMITTED BY SENATOR BOB CORKER

Question. At the Keystone hearing, and at other times over the past 5 years that the Keystone XL pipeline proposal has been under consideration, the project's opponents have stated that Keystone XL is being built only to transport Canadian oil sands crude to the Gulf of Mexico ports for export. Will crude oil from Keystone XL be exported?

Answer. No. Gulf Coast refineries, which are configured to refine heavy crude oils, already have deals in place to take Canadian crude oil. It would make little sense for a refinery to import crude oil from Canada, turn around and export it to somewhere else, and then import heavy crude oil from somewhere else to replace the Canadian crude oil it just exported.

According to the U.S. Energy Information Agency (EIA), the United States will continue to import large volumes of crude oil and will require petroleum products to fuel our economy for decades into the future. As recently as 2012, 40 percent of the U.S. crude oil supply was imported. (U.S. Energy Information Agency Annual

Energy Outlook 2014 December, 2013.) The United States remains the world's largest market for petroleum products.

U.S. refineries process heavy crude oil such as those from Canada, Mexico, and Venezuela to produce the fuels we need. According to EIA, imports of Canadian oil sands crude are replacing declining heavy oil imports from Mexico and Venezuela at a time that their crude oil production is in decline. (U.S. Energy Information Agency U.S. Imports of Crude Oil by Country of Origin March 14, 2014.) The Keystone XL pipeline is designed to deliver Canadian crude oil to U.S. refineries in the Gulf Coast. The U.S. Gulf Coast has the world's largest concentration of refineries. Many Gulf Coast refineries are specifically configured to handle heavier crude oil such as Canadian oil sands crude.

It makes absolutely no sense for companies to purchase cheaper Canadian crudes, ship these overseas, and then import higher priced crudes oil from the Middle East and Venezuela for refineries. The oil is critical to these refineries—and it will find a way by pipeline or rail to get to those refineries, as demonstrated with the increase in rail traffic and new transportation terminal announcements. Gulf Coast refineries have consistently said that the domestic U.S. market is their largest market expects that the United States will continue to import between 7 and 7.5 million barrels of oil per day through to 2035.

In addition, according to the Department of States' Final Supplemental Environmental Impact Statement (FSEIS), under the current market outlooks, exporting Canadian crude from Keystone XL is unlikely to be economically justified primarily due to transportation costs. Once the Western Canadian crude oil arrives at the Gulf Coast, the refiners there have a significant competitive advantage in processing it compared to foreign refiners, which would have to incur additional transportation charges to have the Canadian crude oil delivered from the Gulf Coast to their location. (U.S. Department of State Keystone XL Final Supplemental Environmental Impact Statement; Section 1.4; January 2013.)

On the issue of crude export from Keystone XL, last fall Transcanada President and CEO Russ Girling stated "Not a drop of this crude oil is going to leave this continent that's moving through our pipeline. I've talked to every one of these refiners. I know every one of these producers and they have no plans to export a drop. It will all go into U.S. refineries and be refined in the United States."

Of course, if we don't approve Keystone XL, Gulf Coast refineries will continue to get deliveries of Canadian crude oil, but more Canadian crude oil will go to markets overseas through alternate routes.

Question. Mr. Brune stated in his testimony that Keystone XL "would deliver [oil] sands to refineries in the gulf that already export most of their refined product, and are planning to increase these export[s]. The State Department's Draft Supplemental EIS acknowledged that Gulf Coast refineries export most of their product." How much refined product is exported from the United States? How much from Gulf Coast refineries? What is EIA projecting about future exports of refined petroleum products from the United States?

Answer. The U.S. Energy Information Administration (EIA) reports that U.S. refineries in 2013 produced just over 19 million barrels per day (MMbbl/d) of refined petroleum products. (Data accessed March 17, 2014.) The same year, U.S. product imports were about 2.1 MMbbl/d and product exports about 3.5 MMbbl/d for a net balance of 1.4 MMbbl/d in product exports. The United States became a net exporter of refined products in 2011.

Refineries in PADD 3 (which includes the Gulf Coast) produced a little more than 7.5 MMbbl/d of refined petroleum in 2013. PADD 3 product exports were a bit more than 2.6 MMbbl/d and product imports were 757,000 bbl/d for a net balance of 1.9 MMbbl/d in product exports from the region.

Total gross product exports from PADD 3 accounted for well less than half (just 35 percent) of PADD 3 refinery output in 2013. The share of PADD 3 refinery output being exported has been trending higher, especially since 2007. PADD 3 refineries, however, have never exported anywhere near half of their output, and are not likely to do so anytime soon.

EIA's "Annual Energy Outlook 2014 Early Release" estimates that the United States will remain a net exporter of refined petroleum products throughout the entire forecast period to 2040, when it is estimated that net product exports will climb to about 1.8 MMbbl/d (with gross product imports of 2.0 MMbbl/d and gross product exports of 3.8 MMbbl/d).

The State Department confirms that the Keystone XL pipeline will not change this trend one way of the other. The section in the Draft Supplemental EIS, to which Mr. Brune refers, states that, "Projections for petroleum product import and export volumes have undergone substantive changes between the 2010 and more

recent AEO reports," with product exports showing an increasing trend. It is important to note that all of the AEO forecasts cited in the Draft EIS do not include Keystone XL, so Keystone cannot be responsible for the increase in refined product exports seen in the AEOs after 2010. The Draft EIS thus reaches the correct conclusion that construction of the Keystone XL pipeline will have no impact on these emerging trends: "It is likely that increasing amounts of WCSB [Western Canadian Sedimentary Basin] crudes will reach Gulf Coast refiners whether or not the proposed Project goes forward (products from this processing will be used in both domestic markets and for export). *As a result, future refined product export trends are also unlikely to be significantly impacted by the proposed Project.* [emphasis added]"

Question. Senator Markey stated that the Energy Department has warned that if we approve one more Liquid Natural Gas (LNG) export terminal, it will cost Americans $62 billion a year. Is that accurate? If so, should we be building more LNG export terminals?

Answer. While it is difficult to evaluate Senator Markey's claim absent any knowledge of his assumptions or analysis, it runs counter to the overwhelming body of economic analysis that has been conducted on the topic. Any price projection relies on determining where supply and demand equalize. Any presumption that exported LNG would increase prices rests on a faulty understanding of the resource base itself, the potential for global demand, as well as the current environment in which producers operate. As natural gas is exported, demand is marginally increased. Absent an increase in supply, the price equilibrium would rise. However, there is more than sufficient supply to keep pace with the marginal increase in demand, thereby keeping the price equilibrium relatively unchanged.

The U.S. resource base totals more than 100 years of technically recoverable natural gas. That is gas that has been conclusively located by geologists and can be extracted with modern engineering practices. The current market glut of natural gas has made significant portions of this resource base uneconomical to develop. Because the glut befell the industry so quickly, there are hundreds of natural gas wells that have been drilled but not yet completed or connected to gathering lines to bring the gas to market. As the price of natural gas gradually climbs from its historic lows of lows of 2012 more gas becomes economical to produce. Additionally, over the past 3 years, we have seen the cost of exploration and production decrease which also makes more of the natural gas resource base economical. Moreover, a liquefaction train is estimated to take upward of 3 years to complete, allowing more than sufficient time for natural gas producers to react to the market signal commencement of construction of a liquefaction terminal sends.

One can conclude natural gas prices will rise dramatically due to exportation if it is incorrectly assumed that global demand is limitless. This is to say that if global demand and global supply never reach equilibrium, there would continue to be a driver for U.S. producers to export incrementally more natural gas. However, global demand is not limitless, and U.S. producers are not the only sources of supply needed to fill it. The current global LNG capacity is approximately 37 billion cubic feet per day (bcf/day). ICF International estimates global LNG demand will climb to 50–65 bcf/day by 2025, producing additional demand for 13–28 bcf/day. ICF estimates that more than upward of 50 bcf/day of new capacity is under construction, planned, and proposed without including any new export capacity from the United States. Once increased demand is filled by contract there is no economic incentive to build additional export capacity. The global demand ensures exports cannot grow unchecked.

It is also worthwhile to put Senator Markey's claim in further perspective. EIA's analysis of his cap and trade bill in 2009 estimated that it would have cost $65 billion to $295 billion (in 2010 dollars) each year from 2012 to 2020. Moreover, EIA estimated that residential natural gas prices would have increased anywhere from about 1 percent to 23 percent, natural gas prices for power generation from 10 percent to 92 percent, and motor gasoline prices from 3 percent to 19 percent. Then-Representative Markey supported all of these added costs to consumers.

RESPONSES OF HON. KAREN ALDERMAN HARBERT TO QUESTIONS SUBMITTED BY SENATOR JOHN BARRASSO

Question. The application for the Keystone XL pipeline has been pending for nearly 5½ years. During this time, the Obama administration has conducted five separate environmental reviews. In your testimony, you state that: "The failure of the Federal Government thus far to grant a construction permit for the Keystone

XL pipeline exemplifies perhaps better than anything the challenges of building energy projects . . . in the United States." You say: "That has to change if we are to . . . put people back to work."

♦ What kind of message is the administration sending to businesses which want to invest in the United States if it cannot permit a pipeline in nearly 5½ years?

Answer. The seemingly endless Keystone XL permitting saga is symptomatic of a much larger problem. It takes an inordinate amount of time to get projects approved in the United States. Our energy sector in particular suffers from a lengthy, unpredictable, and needlessly complex regulatory maze that delays if it does not halt altogether, the construction of new energy infrastructure.

America traditionally welcomed foreign investment. But looking at the gauntlet TransCanada has run through these 5-plus years, foreign investors could be forgiven for asking: "Is America open for business?" Because it is important to signal that America still welcomes foreign investment, approving the pipeline clearly is in the national interest.

♦ Isn't it fair to say that the United States will lose investment and good-paying jobs to other countries if it doesn't start to give businesses more regulatory certainty?

Answer. Yes. Much of our energy infrastructure is increasingly inadequate to meet current and projected demand. Providing energy is a long and capital-intensive undertaking, and new energy infrastructure projects require long lead times and massive amounts—tens of trillions of dollars over the next few decades—of new investment. Some of that investment and the jobs that go with it will never happen or go elsewhere if the regulatory environment under which companies operate is unreliable and inefficient. Regulatory predictability allows business to plan and invest with greater confidence.

Unfortunately, our energy sector suffers from a lengthy, unpredictable, and needlessly complex regulatory maze that delays, and often halts, the construction of new energy infrastructure. Federal and State environmental statutes such as NEPA, state siting and permitting rules, and a "build absolutely nothing anywhere near anything"—BANANA—mentality, routinely are used to block the construction and expansion of everything from transmission lines to power plants to pipelines. And just because a project is "green" does not mean it fares any better. Indeed, it has become too easy for energy projects of any hue to be wrapped up in "green tape."

The failure of the Federal Government thus far to grant a construction permit for the Keystone XL pipeline exemplifies perhaps better than anything the challenges of building energy infrastructure in the United States. This failure to issue a Presidential permit for the project has tarnished America's image as a "can do" country open to foreign investment, a failure that can be difficult to shake from investors' minds.

Question. In your testimony, you explain that: "Efforts to stop crude transportation projects like KXL will have no impact on the development of oil sands." You go on to say that even the Obama administration has concluded that: "approval or denial of any one crude oil transport project is unlikely to significantly impact the rate of extraction in the oil sands." Finally, you state that: "There is no doubt that the oil sands in Alberta will be developed, and the only question is where the oil will go."

♦ Would you please expand upon your comments for the committee?

Answer. The State Department final report is a reaffirmation of what we already knew: Canada views its oil sands as a strategic asset, and their development is not dependent on the Keystone XL or any other pipeline.

Canadian oil sands can be produced profitably with a crude oil price between $55 and $65 per barrel. There are only two realistic scenarios where the cost of a barrel of oil could collapse from today's price of around $100 to such a low level (and even these are exceedingly unlikely): (1) a deep worldwide recession, after which oil sands production would resume (if it even stopped) once the price of crude oil recovered sufficiently; or (2) a glut of crude oil appears on the world market, in which case oil consumption everywhere would increase very sharply, whether supplied from Canada or somewhere else.

The Canadian Association of Petroleum Producers forecasts that oil sands production will grow from about 1.8 million barrels per day (MMbbl/d) in 2012 to 5.2 MMbbl/d in 2035. This result does not depend on Keystone XL.

Canadian oil producers continue to diversify market access by expanding existing and developing new infrastructure to Canada's East and West coasts. There are six pipelines in one stage of planning or another that would link Alberta oil sands with

Canadian and overseas markets. Railway capacity also is growing and can be (and will be) scaled up even further if the need arises.

The State Department's report draws from all of this the correct conclusion that "approval or denial of any one crude oil transport project, including the proposed Project, is unlikely to significantly impact the rate of extraction in the oil sands, or the continued demand for heavy crude oil at refineries in the United States." Therefore, stopping Keystone XL will have no impact on the development of oil sands.

Question. In your testimony, you state that: "Keystone will enhance an already deep trading relationship" between the United States and Canada. You explain that: "For every U.S. dollar spent on Canadian products, Canadians return 89 cents through the purchase of U.S. goods and services." You explain that: "Compared to the 27 cent return that we get from [other] energy trade partners like Venezuela, the benefits of Canadian trade are obvious." Finally, you state that: "Canadian oil sands . . . already support[ ] tens of thousands of American workers in hundreds of companies . . . who are supplying goods and services to oil sands developers."

- Would you please elaborate on how the Keystone XL pipeline will support American workers and American businesses in the long term?

Answer. The Keystone XL will transport safe and reliable energy to help fuel our economy for years to come, and it will increase market access to American as well as Canadian crude oil resources.

The development of Canadian oil sands resources already supports tens of thousands of American workers in hundreds of companies spread throughout the United States. The approval of the Keystone XL pipeline will provide one of many outlets for Canadian oil sands output and increase the flow of trade between our two countries. The Canadian Energy Research Institute estimated that increased and continued investment in oil sands development and related projects can create more than 500,000 new U.S. jobs by 2035, with one job being created in the United States for every two created in Canada.

Many states and local communities will benefit from additional tax revenue from the project that could be utilized to create additional jobs. In states where the pipeline is built, Transcanada estimates that they will pay approximately $5.2 billion in property taxes during the estimated operating life of the entire pipeline (from Montana to Texas). This would include $55.6 million in new property tax revenue that Transcanada will pay during construction in 17 counties along the pipeline route identified in the Department of State's Final Supplemental Environmental Impact Statement (FSEIS, January 2014). A majority of those counties would experience an increase of 10 percent or more in property tax revenue, which could be used to build needed projects like schools, roads, and bridges, and pay for teachers, fire and police services, and recreation programs. The FSEIS also states that the project will contribute $3.4 billion during construction to the U.S. Gross Domestic Product (GDP).

RESPONSES OF GEN. JAMES L. JONES TO QUESTIONS SUBMITTED BY SENATOR JOHN BARRASSO

Question. In your testimony, you state that: "Mr. Putin's incursion in the Crimea is . . . about exercising political power through the control of energy, and about brandishing the threat of energy scarcity to intimidate and manipulate vulnerable populations." You say that: "Energy scarcity is a potent strategic weapon. The greater the gap between global supply and demand, the more destructive the weapons will become." Finally, you explain that "The difference between Mr. Putin and us . . . is that he wields energy as a weapon to achieve his geostrategic goals, while we look to energy flow in free markets as a means of promoting international peace, prosperity, and economic stability."

- Would you please explain how "energy flow in free markets" is a means of promoting international peace, prosperity, and economic stability? Please address international trade in crude oil, refined petroleum products, and liquefied natural gas specifically.

Answer. As I survey the economic and security landscape today, I'm not sure we face an issue with greater influence on international security than energy, and it will remain the flywheel of the international economic system and continue to define the global security landscape over the coming years and decades. Nothing, save improving the quality of our human capital, can do more to promote U.S. competitiveness, create jobs, and generate tax revenue than harnessing the energy abundance we currently enjoy. This is inclusive of the full spectrum of energy resources we have at our disposal, from shale oil and gas to renewable energy, coal, and con-

servation processes. This is because without access to reliable, affordable, and environmentally responsible energy supplies no nation, the United States included, will be able to remain competitive in the global economy of the 21st century.

I am not the only person who believes this; our very own government departments and agencies also see energy abundance as a key driver of global security and prosperity. For example, the U.S. National Intelligence Council's "Global Trends 2030" report refers frequently to "energy" as one of the chief factors slated to drive global security over the next 25 years.

When I speak about the flow of global energy supplies, it is in the context of abundance and the opportunities that it affords us to develop and maintain our status as a world leader and steward of good energy policy. Abundance has significant implications. If we manage this abundance wisely, it will allow us to: improve economic competitiveness by encouraging manufacturing and chemical companies to return from abroad; make us less vulnerable to supply disruptions and price volatility, and; reduce the potential for international friction and conflict.

In the international context, I believe that an abundance and diversity of energy supplies and energy suppliers is critical for bolstering international security, prosperity, and economic stability. The United States learned the hard way in 1973—just as Europe and Japan are learning now—that a lack of diversity of energy supplies or energy suppliers can harm economic growth and weaken diplomatic leverage. Dominant energy suppliers like Russia seek to use their energy abundance and dominance in regional markets to pursue monopolistic practices which distort the prices of energy, limit consumer choice, and even constrain countries' political options. I believe that the North American economies, which are bound together by shared free market values and open economies, can contribute to greater international peace, prosperity, and economic stability by sharing its energy abundance with the rest of the world and offering other countries greater diversity of energy supplies and energy suppliers.

Question. Do you believe that lifting the restrictions on exports of liquefied natural gas and crude oil from the United States would serve as a means of promoting international peace, prosperity, and economic stability? If so, how?

Answer. I do believe that lifting the restrictions of exports of liquefied natural gas and crude oil from the United States would promote international peace, prosperity, and economic stability.

By exporting these abundant resources and sharing them with the world, the United States would contribute to increasing the global supply of crude oil and liquefied natural gas. Given the forecasts for continued rising global demand for energy, particularly in emerging markets, this would put downward pressure on energy prices, which can contribute to the economic prosperity of major energy consuming nations.

Moreover, the exportation of liquefied natural gas could have particularly positive economic and security effects on close U.S. allies like Japan and NATO allies in Central and Eastern Europe. My understanding is that unlike the global oil market, the liquefied natural gas market is not a global market, resulting in price disparities in key regions of the world. Asia faces some of the highest natural gas prices in the world, with Japan in particular struggling with high prices as a result of the energy shortages brought about by the Fukushima nuclear disaster. U.S. LNG exports to Japan would help bolster that country's energy security at a time of crisis, while also perhaps contributing to lowering their high energy import bill, which is harming that country's competitiveness and trade balance.

LNG exports to Central and Eastern Europe would give those allies, which are in some cases entirely dependent on Russia and Gazprom for natural gas, an additional source of energy supply. My understanding of the situation is that U.S. LNG exports would not only offer these countries an alternative energy supply and security in case of a Russian cutoff of natural gas, but would also give these countries greater bargaining power in their negotiations with Russia over natural gas prices.

LETTER FROM THE LABORERS' INTERNATIONAL UNION OF NORTH AMERICA SUBMITTED BY SENATOR ROBERT MENENDEZ

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LiUNA!

March 13, 2014

The Honorable Robert Menendez
Chairman
Committee on Foreign Relations
United States Senate
Washington, DC 20510

Dear Senator Menendez:

On behalf of the 500,000 members of the Laborers' International Union of North America (LIUNA), I would like to thank you for holding this important hearing on the Keystone XL and the National Interest Determination, and for affording me the opportunity to submit this in the record.

As you and the Committee are aware, LIUNA strongly supports this important energy infrastructure project which will move oil from deposits in Canada to existing refineries in Texas and Oklahoma. The politicization of the Keystone XL has dragged out what should have been a relatively straightforward permitting process into a five year ordeal. No infrastructure project should take this long to move through the approval process.

Too many hard-working Americans are out of work, and the Keystone XL Pipeline will change that dire situation for thousands of them. TransCanada has executed a Project Labor Agreement (PLA) with the four construction crafts that are signatories to the National Pipeline Agreement that will cover pipeline construction. This project will create thousands of jobs for members of our unions, who will receive wage and benefit packages that set the standard for the construction sector.

Many of the Pipeline's opponents do not understand the importance of the economic and jobs impact that the Keystone XL Pipeline will have. They hide behind unfounded and unrealistic expectations that if the project is not built, the development of oil shale deposits will cease.

However, refineries in the Gulf Coast will continue to seek supplies of heavy crude oil. The failure to secure a long-term energy supply from our Canadian allies will cause these facilities to continue to rely on oil supplied by unstable foreign regimes where environmental regulations scarcely exist, and oil profits are used to oppose the United States' economic and security interests.

Feel the Power

As the Final Environmental Impact Statement reaffirms, if the Keystone XL is not built, the extraction crude from the Canadian oil sands will continue and other transportation modes will move the product to market. The total annual greenhouse gas emissions (direct and indirect) attributed to the rejection of the Keystone XL range from 28 to 42 percent greater than for the proposed pipeline.

The Keystone XL will be the safest pipeline in the world. The special conditions developed by the Pipeline and Hazardous Materials Safety Administration and the State Department – and voluntarily agreed to by TransCanada – have a degree of safety greater than any typically constructed domestic oil pipeline system under current regulations. Additionally, in order to address environmental concerns about the Nebraska Sandhills and the Ogallala Aquifer, TransCanada agreed to a 195 mile rerouting of the Pipeline.

Construction of this pipeline will also produce needed government revenue at the federal, state, and local levels. These new resources can help our state and local governments protect their communities from harmful budget cuts that have led to layoffs and the elimination of much needed services.

If the opponents of the Keystone XL Pipeline succeed in killing this project, good jobs will not be created and the economic and social benefits of the project will not be realized. No local, state, and federal revenue will be generated by the construction and operation of the pipeline. There will be no additional income to property owners and businesses along the pipeline route. And, critically important to our union, the jobs that will be created by the massive private investment will be lost. LIUNA believes that any fair consideration of the Pipeline would conclude that this project is clearly in the national interest.

Thank you for your consideration.

Sincerely yours,

Terry O'Sullivan

TERRY O'SULLIVAN
General President

PREPARED STATEMENT FROM NATIONAL NURSES UNITED SUBMITTED BY SENATOR BARBARA BOXER

National Nurses United

March 13, 2014

Hon. John Kerry
Secretary of State
U.S. Department of State
2201 C Street NW
Washington, DC 20520

Dear Secretary Kerry,

On behalf of the 185,000 registered nurses of National Nurses United, we are writing to endorse the request by Senators Barbara Boxer and Sheldon Whitehouse for an immediate, comprehensive State Department study on the human health impacts of the proposed Keystone XL pipeline project.

As the State Department must make a national interest determination on whether to approve the pipeline, NNU believes that a project that places the health and safety of Americans at substantial risk cannot possibly be in our national interest.

Therefore, we call on the State Department to issue an affirmative finding, prior to any final decision on the project, that that the Keystone XL pipeline will have no adverse health impact on the U.S.

National Nurses United is the largest U.S. organization with 185,000 members in all 50 states, including those along the proposed path of the pipeline. NNU nurses now care daily for patients with health problems, including asthma, other respiratory disorders, cancer, skin diseases, and other ailments associated with environmental pollution.

Our organization has expressed our opposition to the pipeline, in particular to the health hazards already identified with tar sands oil, including tar sands extraction in Alberta, Canada, tar sands pipeline spills, and the effects of tar sands refining.

Tar Sands Health Hazards

In Alberta's Athabasca region, researchers have linked tar sands pollutants to carcinogens, elevated rates of leukemia and other cancers of the lymph and blood-forming systems. Water bodies within the watershed adjacent to tar sands production have been found to be contaminated with chemicals linked to cancer, genetic damage, birth defects, and organ damage, according to a National Academy of Sciences 2012 study.

Tar sands pipeline spills are a significant concern. The 2010 Kalamazoo River spill in Michigan – the effects of which are still being felt by that community – resulted in inhalation of benzene and other chemicals and more than 150 cases of illness. Michigan's Department of Public Health identified cardiovascular, gastrointestinal, neurological, ocular, dermal and

respiratory impacts. Similarly, following a 2013 spill near Mayflower, Ak. residents reported persistent coughs, headaches, nausea, and respiratory problems for months afterwards.

Refining raw bitumen from the tar sands is also likely to have a negative impact on health. Tar sands contains up to 11 times more sulfur than conventional crude oil with high levels of sulfur compounds linked to serious ailments of the nervous and respiratory systems. Residents of South East Texas, particularly refinery towns like Port Arthur and Houston, already live in known 'cancer zones.' Refining raw bitumen from the tar sands threatens to make a bad situation worse.

Further, the petroleum coke byproduct of tar sands refining dumped in large "petcoke" piles contains high concentrations of mercury, lead, arsenic, chromium, vanadium, and nickel. Black dust clouds from petcoke piles in Detroit and Chicago have led to neighborhood evacuations amidst concerns about acculumation in homes and areas where children play. The EPA has said the particulate matter in the dust contributes to such health effects as heart attacks, decreased lung function, asthma and premature death.

Climate Change and Health

NNU is also concerned about the long term contribution that tar sands oil and the Keystone pipeline will make to the global rise on greenhouse gas emissions and the climate crisis.

In its Fourth Assessment Review (2007) the Intergovernmental Panel on Climate Change has made a direct connection between global warming and climate instability to a wide range of negative health outcomes.

Higher air temperatures can increase bacteria-related food poisoning, such as salmonella, and animal-borne diseases such as West Nile virus. Ground level ozone contaminants can damage lung tissue, reduce lung function, and increase respiratory ailments. Pediatricians have said they are already witnessing a rise in vector-borne diseases including diarrhea, cholera, gastroenteritis, typhoid, and hepatitis due to environmental factors and the effects of climate change.

For several years NNU has been dispatching teams of RN volunteers to provide disaster relief in response to weather disasters, such as Hurricanes Sandy and Katrina, and most recently Typhoon Haiyan in the Philippines, all of which many experts believe are fueled by climate change. Our members have provided care for thousands of patients who have suffered serious injuries as well as the loss of family members, their homes, and their livelihoods.

We need a change of course.

NNU concurs with Senators Boxer and Whitehouse that what is known today about the health hazards associated with the expansion of the tar sands could well be just a sampling of a much larger set of significant risks to human health. NNU believes that the health consequences of Keystone XL have been substantially ignored in State Departments FEIS, and needs to be addressed as a matter of urgency.

Nurses and their families are also affected by environmental pollution, and the increased harm associated with Keystone XL, greater tar sands operations, and the climate crisis. It is for our patients, our members, our families, and our communities, that we speak out, and urge you order an immediate health impact study and not authorize a pipeline that will harm our planet and our health.

Sincerely,

Deborah Burger, RN

Karen Higgins, RN

Jean Ross, RN

Council of Presidents
National Nurses United

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