S. HRG. 111–45

ENERGY DEVELOPMENT ON PUBLIC LANDS AND THE OUTER CONTINENTAL SHELF

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

TO

CONDUCT AN OVERSIGHT HEARING ON ENERGY DEVELOPMENT ON PUBLIC LANDS AND THE OUTER CONTINENTAL SHELF

MARCH 17, 2009

Printed for the use of the
Committee on Energy and Natural Resources

U.S. GOVERNMENT PRINTING OFFICE

50–774 PDF WASHINGTON : 2009

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
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ENERGY DEVELOPMENT ON PUBLIC LANDS AND THE OUTER CONTINENTAL SHELF

TUESDAY, MARCH 17, 2009

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 10:08 a.m. in room SD–366, Dirksen Senate Office Building, Hon. Jeff Bingaman, chairman, presiding.

OPENING STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO

The CHAIRMAN. I'd like to welcome everyone to our hearing, especially Secretary of Interior, Secretary Salazar on this important topic of energy development on public lands and in the Outer Continental Shelf, more specifically. Our Nation has abundant energy resources, a good portion of which are found on our onshore public lands and in the Outer Continental Shelf. These resources are owned by all the people of the United States.

Their management is entrusted to the Federal Government. That's why we're particularly pleased to have our new Secretary of Interior here to tell us about his vision for the development of our energy resources both onshore and offshore. Secretary Salazar has important decisions to make. Decisions that may prove essential to our Nation's energy security and economic well being, but also decisions that will impact upon the landscape and environment for generations to come.

I look forward to hearing about the administration's plans in this regard. I hope Secretary Salazar can share with us his vision of how we can determine the best places for energy development. In the OCS how we can move forward to get more energy production both oil and gas and renewables in a safe and environmentally sound manner from the Outer Continental Shelf.

I know the Secretary is interested also in our onshore oil and gas leasing program and recognizes the contribution of that program to our energy supply. I hope under his leadership the BLM can resolve any resource conflicts up front so that this important program can run smoothly and efficiently. To this end it's important that the inspection and enforcement programs there in the BLM be well funded.

Finally the administration is clearly committed to renewable energy. I know Secretary Salazar is. The development of the Department of Interior and the Forest Service have a key role in the citing of generation and transmission facilities for wind and solar en-

ergy. I know Secretary Salazar has undertaken initiatives to bring about more renewable energy production on Federal land.

We also have a very distinguished panel of additional experts today who will come forward as a second panel after Secretary Salazar testifies and we've had a chance to ask questions.

So, Senator Murkowski is on her way and is not here yet. I'm sure she'll have an opening statement when she arrives and some comments to make. But why don't we proceed with your statement, Secretary Salazar. We look forward to hearing your perspective on these important issues.

[The prepared statement of Senator Bunning follows:]

PREPARED STATEMENT OF HON. JIM BUNNING, U.S. SENATOR FROM KENTUCKY

Thank you Mr. Chairman. I would like to welcome all of our witnesses here today especially Secretary Salazar. Ken, it is good to see you again.

At a time when our nation's energy needs are continuing to grow the Department of Interior will play a unique role in shaping and administering policy that will develop our domestic public resources.

We have the capacity with the large amount of natural resources on our public lands to make an important step forward in achieving energy independence.

Thanks to American entrepreneurship we also have the technology to develop these resources in a way that is mindful of our environment and our National parks.

I hope that as a nation we will be able to grow our domestic energy portfolio and develop these resources as opposed to stifling growth through strict federal environmental mandates and climate taxes.

I have long said that I support clean energy but I support all forms of clean energy. The Department of Interior is in a position to support these efforts through demonstration projects such as ones that will sequester and capture carbon.

These types of projects combined with efforts from the private sector can spur on the development and expansion of our energy portfolio while creating American jobs.

I would also like to see the Administration move forward and develop a comprehensive plan of action for our oil and gas resources on our Outer Continental Shelf. OCS restrictions are a relic of the past—especially when our economy is struggling, unemployment is rising and state economies are suffering.

Now is the time to show the nation that we are serious about meeting our energy needs by supporting the production of American energy from American waters.

Thanks you Mr. Chairman and I look forward to hearing our witnesses' thoughts on the many energy related issues that face our nation.

STATEMENT OF HON. KEN SALAZAR, SECRETARY, DEPARTMENT OF THE INTERIOR

Secretary SALAZAR. Thank you very much, Chairman Bingaman and to all the members of the committee to Senator Dorgan, Senator Landrieu, Senator Udall and Senator Barrasso, Senator Bunning, Senator Bennett. Thank you all for being here this morning to engage in this conversation on this very important issue for the future of our Nation and our world. Thank you for being here as well, Senator Bayh.

Let me first say that this is my first hearing in front of the Senate Energy Committee since I came before this committee for its blessing in my confirmation process now, almost it seems I guess, about a month or so ago, maybe 6 weeks ago. I'm delighted to be back here because many of the issues that I'm working on in the Department of Interior are issues which you, in this committee are very interested in and will obviously play a major role in defining the future of how this Nation resolves these issues.

Let me say at the outset from the point of view of President Obama from the time of the campaign through his leadership as President of the United States. He believes that we need to move

forward with a comprehensive energy plan. When he speaks about comprehensive energy plan he talks not only about the whole future of renewable energy and the new energy economy. But he also talks about our conventional fuels including oil and gas and clean coal technologies and the like.

So my instructions as I run the Department of Interior for the United States of America is to do what I can to implement that comprehensive energy vision that President Obama has brought to the Nation. I think it is important to note that even though this issue has been something which many of you have worked on for a very long time. But perhaps this time is a little different than it was in the 1970s and the 1980s when there was passing attention paid to this issue, but really, not much happened.

We continue to become more and more dependent on the foreign oil to the point where we are now importing close to 70 percent of our oil from foreign countries. So breaking the chains of our over dependence on foreign oil is a central tenant of what we are attempting to do. In addition making sure that we're addressing the issues of climate change which are affecting the entire globe are important.

Finally that the hundreds of billions of dollars that flowed to other places across the world are moneys that actually could be spent here in the United States as we move forward with our economic development and economic opportunities here at home. So those are some of the key tenants of the President's vision with respect to how we move forward with energy development. Let me make two other quick points. Then I'd be happy to take just some questions.

First of all I know that from the perspective of some it seems like we are rolling back many of the initiatives that were taken by the prior administration with respect to oil and gas development. I've heard comments in the press and other places that perhaps we are anti-development. But the fact is that much of what we are still doing is continuing to develop oil and gas here in the United States both onshore and offshore. It is very much a part of our energy future. It is something which I will address industry officials at several meetings as the week moves on.

Just a couple of concrete examples so you all will know some of the work that we have been doing in this area. Just in the last several weeks we have approved seven major oil and gas lease sales on the onshore of the United States of America. Those seven lease sales have raised a total of $33 million. They have included over a million acres of land that has been in fact leased for oil and gas development within the onshore of the United States.

In addition the offshore continues to be an important place for us to look for possibilities for oil and gas development tomorrow. I will be in New Orleans serving as an auctioneer since I've served as Senator and Secretary of Interior, tomorrow I'll serve as auctioneer with respect to part of lease sale 181 South as we move forward into the Gulf of Mexico. That's 34.6 million acres. 34.6 million acres in the Gulf Coast that will be subject to this oil and gas lease sale tomorrow in New Orleans.

Senator Landrieu, thank you so much for inviting me to go to Louisiana to participate in this. I look forward to seeing you down

there again soon as we deal with other issues relating to the offshore. The lease sale tomorrow itself will also include about 4.2 million acres that are within what we call Lease Sale 181 and as many members of this committee will remember that debate and the legislation that was enacted in that time.

One of the things that Senator Alexander and others, Senator Landrieu were involved in was the creation of a permanent royalty for conservation. The first permanent conservation royalty of its kind that was included in that legislation which was crafted by this Congress now 2 years ago. So that will be implemented tomorrow.

So I finally will say with respect to development of oil and gas resources that we are committed to having a complete process with respect to hearing from affected stakeholders throughout the country with respect to the future of the Outer Continental Shelf. So in the weeks ahead we will be holding meetings and hearings in Anchorage, Alaska, San Francisco, California and New Orleans, Louisiana and Atlantic City, New Jersey. As we hear from Governors, Senators, Congressman and other stakeholders about the importance of the resources in the offshore.

We will try to indentify where the holes are with respect to information that we need. We will be releasing a report which is currently being prepared by the United States Geological Survey and the Minerals Management Services with respect to the information that they have in the Outer Continental Shelf that will be all of what we will be doing in those hearings. I am hopeful that many of you will be participating with us in those hearings around the country. I know Senator Landrieu and Senator Murkowski in their respective states will be participating in those hearings.

I have two more quick points if I may, Mr. Chairman. I know I've run past my 5 minutes. But I will try to be very brief on these two final points.

I want to spend just a few minutes talking about renewable energies and how important those renewable energies are to the United States of America. We have within the Department of Interior formed a working group, a task force, that's looking at developing renewable energy.

We have a group of members of the Cabinet including Secretary Chu, Secretary Vilsack and Chairman Wellinghoff, the Chairman of FERC and others working to help us do two things with respect to renewable energy. Those two things are first of all, trying to create a zoning process where we actually identify those zones where we might be able to cite renewable generation facilities across the country both onshore as well as offshore. Second of all, looking at the difficult issue which many have been struggling with and that is the issue of transmission. How do we get the electrons that are generated from these renewable energy sites to the places that they are going to be consumed?

If I can take you through some quick maps* and I was hoping—I think we may have brought some copies of this. But if not, I think you'll be able to see what I'm trying to demonstrate here.

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*The following graphics have been retained in committee files: Solar Energy Potential, Wind Energy Potential, Geothermal Energy Potential, a Table Showing Renewable Energy Potential of Federal Lands in the West, California Desert District Showing all Lands With Solar Potential, California Desert District Showing all BLM Lands with Solar Potential, California Desert

First of all this first chart just shows where the renewable energy potential is of the United States of America. These are maps that you have seen. The National Renewable Energy Lab have produced. But it shows the great potential for solar energy within the Southwest.

The second map is one that shows the wind energy potential of the United States of America. As you will see the wind energy potential is very, very large for the United States right from the Great Plains and the Dakotas all the way down the middle of the country. On also in the areas on the Atlantic, most of the Atlantic is very rich in terms of the possibility of offshore wind as well as some areas off of the Pacific. So that shows where some of the potential is for huge wind energy production.

Next, geothermal energy. If you will look at the geothermal energy potential there is huge potential, especially in the Western part of the United States. Many of those geothermal properties are located on public lands run either by the BLM or by the Forest Service in the Department of Agriculture.

The next chart will show, it's a quick table that shows what the renewable potential energy is from some of these sites. But if you look at the assessment has been done by a number of different people. The essence of what you will do is if you go through a renewable energy citing process you can identify the number of megawatts that can be produced from these different streams of renewable energy.

So the approximate portion of renewable energy on Federal lands that can come just from solar energy itself is estimated at being somewhere in the neighborhood of 42,000 watts, that's 42,000 watts. Most of it located in the Southwest. It can be produced just from solar energy itself.

The wind part that is located on Federal lands is approximately 51,000 megawatts of power that can come from this wind energy. Much is, Senator Barrasso in Wyoming, much is located, Senator Dorgan up in North Dakota and so we know that there's a lot that can be done with respect to the development of this energy because it's already out there. These are technologies that are already proven. They're not technologies that are 10 or 15 years away.

Now let me walk through with you with three visuals that demonstrate the kind of energy, renewable energy zoning process that the Bureau of Land Management, working with a number of stakeholders has gone through in Southern California. The first of those charts is a chart that indicates all the location of lands in Southern California which are prime sites for the location of renewable energy sites. The reality is though that there are overlays that have to go on top of those sites which have high energy potential including the location of Federal facilities, the location of places where we have endangered species such as the Desert Tortoise and the like.

So the next chart will show what happens when you then take that set of acreage and you put the overlay with respect to other lands that might be available. So what we've done here is we've taken off national parks, national monuments, all the Department

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District Showing BLM Lands, except those with Special Designation, and the Electron Super Highway.

of Defense lands, which are huge in Southern California. You see that the number of acres that would be available for solar development then is significantly less.

The final chart then that we will put up will show what happens when the stakeholders, the State of California, the utilities, environmental groups and others have gone through and said. What we have done here is to identify the areas in Southern California which are on public lands, which are the best places for us to site solar energy facilities. We are in the process of trying to do that around the country.

It's going to take us a little more time to get it done. But at the end of the day what we're trying to do with this planning process, it's no different than the land use planning process that a local government would go through is to be proactive in planning where the placement of these renewable energy facilities will ultimately go. What has happened in the past is that we essentially have had a helter skelter kind of approach to where we site solar facilities.

Today we have 200 applications for solar energy power plants that are located in Bureau of Land Management properties across the country. There is no program or no planning that has gone into how we process those applications. We also have about 20 applications that are pending before BLM with respect to wind projects.

But again, there has been no process in how we move forward. So we hope that working with our sister agencies in the Federal Government that we'll be able to move forward and create these energy zones for the United States of America. So that's my No. 1 with respect to renewables.

The second point I want to make illustrated by this chart is that in the Western parts of the United States we are already significantly along the way of trying to figure out where the transmission corridors should go for the United States of America. What this map will show through the black lines as well as the grey lines that are on that map, are approximately 6,000 miles of new transmission to built in the Western part of the United States. About 5,000 of the miles that are designated in that map are located on Bureau of Land Management properties. About 1,000 of those miles are located on Forest Service lands.

There are places along those corridors that we still need to figure out how we're going to connect them up. But it seems to us that if we can figure out a way of creating this transmission grid in the West. We can then work with our sister agencies including DOE and FERC. We can do this for the entire United States of America.

So Secretary Chu, myself, Secretary Vilsack, FERC and others are working to try to come up with this map for your consideration and for the consideration of President Obama as we move forward with respect of that. At the end of the day, hopefully, what we will have is working with all of you, a super electron highway for the United States of America that will get us into the electronic grid of the 21st century.

The last and final point, Chairman Bingaman and Senator Murkowski and members of the committee is that there has been a jurisdictional feud that has gone on for quite a while unresolved between FERC and the Department of Interior, MMS relative to the citing of renewable energy facilities in the Outer Continental Shelf.

We've had several meetings with FERC. I'm proud to let you know this morning that as of late last night we signed a memorandum of understanding between the Department of Interior and FERC that will allow us to move forward with the citing of renewable energy facilities in the OCS.

There is no dispute here with respect to wind energy and how we move forward with wind energy in the Outer Continental Shelf. So our intention is that as we continue together input on the future of the OCS that we'll be able to move forward to finality with respect to the rules that apply to wind energy off the offshore. There are States like Delaware, New Jersey, many others, Massachusetts that have asked us to try to expedite the rulemaking with respect to wind energy in the offshore. I believe that we will be in a position where we'll be able to do that in the several months ahead.

With that I would be happy to take questions from the committee.

[The prepared statement of Secretary Salazar follows:]

PREPARED STATEMENT OF HON. KEN SALAZAR, SECRETARY, DEPARTMENT OF THE INTERIOR

Thank you, Chairman Bingaman, Senator Murkowski, and Members of the Committee, for giving me the opportunity to come before you today to discuss energy development on public lands and the Outer Continental Shelf (OCS) under the Department of the Interior's jurisdiction. This is my first hearing before you since my confirmation as Secretary of the Interior and it is an honor to be here.

President Obama has pledged to work with you to develop a new energy strategy for the country. His New Energy for America plan will create a clean energy-based economy that promotes investment and innovation here at home, generating millions of new jobs. It will ensure energy security by reducing our dependence on foreign oil, increasing efficiency, and making responsible use of our domestic resources. Finally, it will reduce greenhouse gas emissions.

During his visit to the Department for our 160th anniversary celebration two weeks ago, the President spoke about the Department's major role in helping to create this new, secure, reliable and clean energy future. The vast landholdings and management jurisdiction of the Department's bureaus, encompassing 20 percent of the land mass of the United States and 1.7 billion acres of the Outer Continental Shelf, are key to realizing this vision through the responsible development of these resources.

These lands have some of the highest renewable energy potential in the nation. The Bureau of Land Management has identified a total of approximately 20.6 million acres of public land with wind energy potential in the 11 western states and approximately 29.5 million acres with solar energy potential in the six southwestern states. There are also over 140 million acres of public land in western states and Alaska with geothermal resource potential.

There is also significant wind and wave potential in our offshore waters. The National Renewable Energy Lab has identified more than 1,000 gigawatts of wind potential off the Atlantic coast, and more than 900 gigawatts of wind potential off the Pacific Coast.

Renewable energy companies are looking to partner with the government to develop this renewable energy potential. We should responsibly facilitate this development. Unfortunately, today, in BLM southwestern states, there is a backlog of over 200 solar energy applications. In addition, there are some 20 proposed wind development projects on BLM lands in the west. These projects would create engineering and construction jobs.

To help focus the Department of the Interior on the importance of renewable energy development, last Wednesday, March 11, I issued my first Secretarial Order. The order makes facilitating the production, development, and delivery of renewable energy top priorities for the Department. Of course, this would be accomplished in ways that also project our natural heritage, wildlife, and land and water resources.

The order also establishes an energy and climate change task force within the Department, drawing from the leadership of each of the bureaus. The task force will be responsible for, among other things, quantifying the potential contributions of renewable energy resources on our public lands and the OCS and identifying and

prioritizing specific "zones" on our public lands where the Department can facilitate a rapid and responsible move to significantly increased production of renewable energy from solar, wind, geothermal, incremental or small hydroelectric power on existing structures, and biomass sources. The task force will prioritize the permitting and appropriate environmental review of transmission rights-of-way applications that are necessary to deliver renewable energy generation to consumers, and will work to resolve obstacles to renewable energy permitting, siting, development, and production without compromising environmental values.

Accomplishing these goals may require new policies or practices or the revision of existing policies or practices, including possible revision of the Programmatic Environmental Impact Statements (PEISs) for wind and geothermal energy development and the West-Wide Corridors PEIS that BLM has completed, as well as their Records of Decision. The Department of Interior will work with relevant agencies to explore these options.

We will also, as I have said before, finalize the regulations for offshore renewable development authorized by section 388 of the Energy Policy Act of 2005, which gave the Secretary of the Interior authority to provide access to the OCS for alternative energy and alternate use projects. This rulemaking was proposed but never finalized by the previous Administration.

For these renewable energy zones to succeed, we will need to work closely with other agencies, states, Tribes and interested communities to determine what electric transmission infrastructure and transmission corridors are needed and appropriate to deliver these renewable resources to major population centers. We must, in effect, create a national electrical superhighway system to move these resources from the places they are generated to where they are consumed. We will assign a high priority to completing the permitting and appropriate environmental review of transmission rights-of-way applications that are necessary to accomplish this task.

Developing these renewable resources requires a balanced and mindful approach that addresses the impacts of development on wildlife, water resources and other interests under the Department's management jurisdiction. I recognize this responsibility, and it is not a charge I take lightly.

At the same time, we must recognize that we will likely be dependent on conventional sources—oil, gas, and coal—for a significant portion of our energy for many years to come. Therefore it is important that the Department continue to responsibly develop these energy resources on public lands.

In the past 7 weeks, the Department has held seven major oil and gas lease sales onshore, netting more than $33 million for taxpayers. And tomorrow I will be in New Orleans for a lease sale covering approximately 34.6 million offshore acres in the Central Gulf of Mexico. This sale includes 4.2 million acres in the 181 South Area, opened as a result of the Gulf of Mexico Energy Security Act. Continuing to develop these assets, through an orderly process and based on sound science, adds important resources to our domestic energy production.

Based on this approach, I announced last week that I would be hosting four regional public meetings next month in order to gather a broad range of viewpoints from all parties interested in energy development on the OCS. In addition, I directed the Minerals Management Service and the U.S. Geological Survey to assemble a report on our offshore oil and gas resources and the potential for renewable energy resources, including wind, wave, and tidal energy. The results of that report will be presented and discussed with the public.

The meetings will be held in Atlantic City, New Jersey, New Orleans, Louisiana, Anchorage, Alaska, and San Francisco, California, during the first two weeks in April. These meetings are an integral part of our strategy for developing a new, comprehensive, and environmentally appropriate energy development plan for the OCS. I have also extended the comment period on the previous Administration's proposed 5-year Plan for development by 180 days. We will use the information gathered at these regional meetings to help us develop the new 5 year plan on energy development on the OCS.

Similarly, again based on sound science, policy and public input, we will move forward with a second round of research, development, and demonstration leases for oil shale in Colorado and Utah. While we need to move aggressively with these technologies, these leases will help answer the critical questions about oil shale, including about the viability of emerging technologies on a commercial scale, how much water and power would be required, and what impact commercial development would have on land, water, wildlife, communities and on addressing global climate change.

We are also proceeding with development onshore, where appropriate, on our public lands. As I noted above, the responsible development of our oil, gas and coal resources help us reduce our dependence on foreign oil, but this development must

be done in a thoughtful and balanced way, and in a way that allows us to protect our signature landscapes, natural resources, wildlife, and cultural resources.

We also need to ensure that this development results in a fair return to the public that owns these federal minerals. That's why the President's 2010 Budget includes several proposals to improve this return by closing loopholes, charging appropriate fees, and reforming how royalties are set. Of course, I'll be happy to discuss these in more detail after the Administration's full budget request is released in the coming weeks.

Implementation of the President's energy plan will ultimately focus the nation on development of a new green economy and move us toward energy independence, and I and my team are working hard to put that plan into place.

Mr. Chairman, I know you and the Committee, along with the Majority Leader and others in Congress, are working hard on these issues. I believe we are being presented today with an historic opportunity to enhance our economy, our environment, and our national security. Too much is at stake for us to miss this opportunity.

Thank you, Mr. Chairman and Members of the Committee. I am happy to answer any questions that you may have.

The CHAIRMAN. Thank you very much. Before we go to questions let me defer to Senator Murkowski for any comments or opening statement she'd like to make.

STATEMENT OF HON. LISA MURKOWSKI, U.S. SENATOR FROM ALASKA

Senator MURKOWSKI. Mr. Chairman, thank you. In the interest of time seeing as how many members are here today I don't want to make an opening statement. I will submit mine for the record.

[The prepared statement of Senator Murkowski follows:]

PREPARED STATEMENT OF HON. LISA MURKOWSKI, U.S. SENATOR FROM ALASKA

Good morning. Thank you all for being here today. And thank you to Chairman Bingaman for convening this hearing on the timely topic of energy production from public lands and the Outer Continental Shelf.

Our nation is blessed with abundant energy resources—both on land and beneath the surfaces of our lands and waters. We're eager to develop our vast wind and solar resources, particularly in the West, and we are excited about the enormous hydrokinetic energy potential along our coasts. In Alaska our tides can run over 20 feet, and it's fascinating to consider the raw energy behind that.

At the same time, let's remember that the purpose of this hearing is not limited to renewable energy, just as our nation's energy policy cannot be limited to renewable energy. Today, over 80% of the nation's total energy consumption comes from conventional sources like coal, oil, and natural gas. In terms of what we can access, transport, and convert into the most energy at a price Americans can afford, renewable energy has a lot of catching up to do.

I believe the Energy Committee understands this issue. The good news is that we don't have to develop one form of energy at the exclusion of another. A terrific example is legislation we're working on right now with Chairman Bingaman's staff to make use of the geothermal energy that comes up as a byproduct of mature oil and gas wells.

The bad news is that some D.C. policy makers appear to have declared a war on oil. Raising taxes on energy companies or excluding areas from oil and gas exploration have historically resulted in higher energy bills for American families. Increasingly, those bills must be paid to foreign state run oil companies. We cannot allow our domestic oil and gas production to be shut down in favor of increased dependence on foreign oil.

The promises of renewable energy from public lands and the OCS are many but our purpose today must be to establish realistic goals. How many kilowatts, how many barrels of oil equivalent, how much energy can we count on from the various sources given the vast acreage at the federal government's disposal?

On Alaska's own Outer Continental Shelf, I'm told that the Chukchi Sea represents oil and gas resources comparable to another Gulf of Mexico. Further south, we know that North Dakota is embracing its new nickname as the Saudi Arabia of wind energy. And still further south, solar panels in the desert Southwest region hold significant potential.

One challenge with any of these energy sources is their remoteness to the country's major population centers. That is an issue I really want to focus on today—how energy developers can find cost effective ways to produce and deliver their product for customers who are very far away. We move oil, gas, and coal with trucks, trains, ships, and pipelines. However, the deployment of wind, solar, and hydrokinetic resources have an associated learning curve—we need to determine where to place transmission lines; what kind of lands they need to cross over to get there; and what sorts of new impacts we can expect on public lands and oceans.

I'm interested in discussing Secretary Salazar's announcement last week regarding "renewable energy zones." I think it's increasingly understood and accepted that intermittent renewable resources will require huge supplies of baseload natural gas for those periods when the wind isn't blowing or the sun isn't shining. If we aren't careful to maintain conventional energy supplies in close proximity to a "renewable energy zone," it might be more aptly called an "intermittent energy zone."

I'd like to thank all of our witnesses for joining us today. I know many of you have traveled from out West to be here. I look forward to hearing your testimony and getting your thoughts on the challenges and expectations I have outlined. Mr. Chairman, thank you again for convening this important hearing.

Senator MURKOWSKI. But I do appreciate Secretary Salazar, your consideration of the comments that some of us have made. I most certainly, about the concerns that I have about where the administration may be going when it comes to our oil and gas and our more traditional resources. We need to make sure that those resources are not closed off as we seek to develop more in terms of our renewables.

With that I will end my remarks. But I do have to take this opportunity, maybe it's because my leg is bound up and I'm getting around very well. But there are a few things that irritate me more than maps of the United States of America that do not include that great northern State. I will include Hawaii as well.

[Laughter.]

Senator MURKOWSKI. Our renewable energy resources are wonderful and vast. We look forward to the time that you will come up to visit them. But we do encourage the Department of Interior to make sure that all 50 States are represented on the map.

[Laughter.]

Senator MURKOWSKI. Thank you and welcome back to the committee, Secretary Salazar.

Secretary SALAZAR. That's a point well taken. Alaska is so important that it merits a map all to itself.

[Laughter.]

Senator MURKOWSKI. You're right. You're right. Thank you.

The CHAIRMAN. Let me start with a few questions. Can you tell us what your time line is for finalizing a new 5-year plan for oil and gas leasing in the Outer Continental Shelf? What your intention is with regard to consultation with coastal States in the development of that 5-year plan?

Secretary SALAZAR. Senator, being that our meetings will actually take place during the month of April. We have extended the comment period for 180 days on the revised 5-year plan. So sometime within the year after those comments are all in I hope that we are then able to have a comprehensive plan with respect to the future of the Outer Continental Shelf.

I think the renewable energy part of it frankly is probably going to be easier than the parts that we'll deal with additional production in the offshore. But as President Obama has said he is not opposed, the administration is not opposed to production in the off-

shore. But we want to make sure that it's part of a comprehensive energy plan.

It has to include what we have to do with respect to efficiency, with respect to renewable energy, respect to climate change. We want to try and bring it all together. So we will be working on that in the months ahead.

The CHAIRMAN. Let me ask about onshore. How do you see your responsibility and authority with regard to the citing of transmission lines as compared with as it relates to the Federal Energy Regulatory Commission? With the citing of these lines across public lands what should your role be as distinguished from FERC's authority?

Secretary SALAZAR. Chairman Bingaman, I believe the Department of Interior should have a robust role in the citing. But I also do not believe that we should let bureaucratic silos stand in the way of us getting the job done. So that is why we have pulled together as a team including FERC to try to figure out how we move forward on this agenda.

Certainly the Department of Interior has huge resources and knowledge relative to our public lands and the protection of sensitive areas within our public lands, our scientists both within the U.S. Geological Survey as well as within our land resource agencies can provide tremendous input into where we are going to cite these transmission lines. Our scientists from the Fish and Wildlife Service will also be involved. So I believe that we ought to have, you know, a robust role in terms of making the decisions with respect to where these corridors actually will ultimately go.

I will say this, Mr. Chairman, I believe that the work that has gone on in the Western part of the United States has moved as far as it has gone in large part because it's been an effort that has been inclusive and has included the Governors of the Western States. In fact much of what we see with respect to the Western grid which is half of the Continental United States. Much of that work is where it is today because of the leadership of the Western Governors.

The CHAIRMAN. The Land and Water Conservation Fund has been on the books now for several decades. As you know we have had great difficulty getting the funds appropriated that were contemplated to go into that Land and Water Conservation Fund when it was first set up. Do you think it would be helpful to have a dedicated source of funding for the Land and Water Conservation Fund? Is that something that you and the administration would support?

Secretary SALAZAR. We have not yet made any final decisions about matters that will relate to where budgeting issues and where some of this money is going to go.

I have a personal point of view on that. That is that we ought to be looking at the designation of money in trust for land and water conservation. I believe it could be very much a part of a treasured landscape agenda for the 21st century.

I think that in the Gulf Coast legislation that we passed several years ago where we included the first permanent conservation royalty in it. That was a good first step in terms of trying to fund land and water conservation funds. When one looks at the numbers that

we currently are investing they really are miniscule relative to what was envisioned in the past.

I think when John Kennedy first announced the Land and Water Conservation Fund he felt that it was going to be a robust set of funding for us to protect our land and water and wildlife resources of the United States of America as we continue to grow. In 1977, I believe, the Atlanta Water Conservation Fund was at that point funded at some $900 million. If you adjust that for inflation it should be funded today at some $3.4 million.

Yet the truth of the matter is that we, every year, end up funding only a very small fraction of that amount. That's something that I think we need to address. I think that as the country continues to grow and we look at American citizen owned resources that are being developed and the revenues that come from those resources that we should invest some of that money in the great landscapes of this country.

The CHAIRMAN. Senator Murkowski.

Senator MURKOWSKI. Thank you, Mr. Chairman. Secretary, I'm very pleased to hear your announcement this morning about the memorandum of understanding with FERC and MMS. That's very, very important.

I'm curious as to what you anticipate the timeline will be in the Cape Wind project has been out there since 2001 undergoing regulatory scrutiny. It seems like every interested party has had an opportunity to provide comment both under State and Federal law. How much longer would you anticipate that a project like this that has been out there for as long as it has been and the review it's gone under? How much longer do you think we wait until a decision is made on Cape Wind or any other offshore projects?

We had a hearing a few weeks back where we had a representative from New Jersey—it was a wind project off of New Jersey. They're looking very, very aggressively to having offshore wind off their coast within a very, very short period of time. How do you anticipate we will move forward with these offshore wind projects?

Secretary SALAZAR. First Senator Murkowski let me say that what we have with FERC that we completed last night that I signed off on is an agreement on how we move forward. It essentially makes a statement that the Department of Interior and MMS under the laws of this Congress has the authority with respect to offshore wind. So that allows the rulemaking process which had been held up essentially to move forward.

We also note, recognize we have some additional work to do. But the Chairman and I are committed and the members of the Commission as well to help us move forward to conclusion in what's going to be a broader MOU. We don't want to be tripping over each other as we're dealing with ocean, tidal or wave energy. At the same time we're moving forward with offshore wind.

The fact of the matter is, and the science will tell us all that we are very ready to move forward with offshore wind. The technology is there. We proved it on the onshore.

We have many projects in the offshore that are in the making. So we ought not to let the jurisdictional disputes with respect to ocean, tidal, wave energy essentially get in the way of us moving

forward with that. So we will work out something that will be satisfactory to both FERC and to us.

With respect to Cape Wind itself and how we move forward with that. You know, obviously there has been approval given by numerous agencies. There is still litigation that is ongoing. We would hope that we would be able to move forward with a decision on that particular project sometime in the next several months.

Let me get to, I think, what is your more fundamental point. That is when will we be ready to move forward with rulemaking in the offshore, to put it into final form with respect to wind energy development and to be able to start harnessing all this potential wind energy in the offshore? We could be ready to move forward within probably 2 months from now after we have our hearings around the country to move forward with the finalization of those rules.

It may be necessary. We will do it in consultation with this committee and the Congress and obviously the President and the White House. Whether or not there are changes that we want to make to those rules, if that decision were to be made then it may postpone by several months when we get the final rulemaking. But we're working on it as fast as we can.

Senator MURKOWSKI. Let me ask you about a statement that Interior released saying that it will be taking a closer look at the energy development that is slated for the Chukchi. Can you give me a better understanding as to what you mean by closer look and whether or not Interior has actually begun on this process? Then also there was a statement released, I guess just this morning from the Department that touched on leasing in the National Petroleum Reserve Alaska.

But my question is, is the commitment from the Department to the 5-year leasing sale up in Beaufort, the Chukchi, the North Aleutian. You've indicated and we're pleased that you are coming to Alaska in April for those hearings. But can you just give me a quick update on where we are with Chukchi and what you mean with a closer look?

Secretary SALAZAR. We are looking at everything out in the Outer Continental Shelf. Obviously Alaska has huge resources both onshore as well as offshore. We have spoken, Senator Murkowski, often about the Alaskan natural gas pipeline and your interest in that and how we might be able to be of assistance in moving that forward.

We are in a learning process on the Outer Continental Shelf. That's part of what we are doing with these hearings including my visit to Alaska. I know there nothing in Alaska is very easy and there's lots of conflict relative to development in the four areas that are subject to the current 5-year plan in Alaska itself.

So we are in the process of learning more about it and making decisions about how we are going to move forward. But we haven't made any specific decisions with respect to any of the offshore areas in Alaska other than to say this, Senator Murkowski, is that as we look at the offshore what we want to do is we want to make sure that it fits in with a comprehensive energy program.

One of the parts of a comprehensive energy program will be the development of our oil and gas resources within the country. So let

me leave it at that at this point in time. I think after we come back from Alaska we'll have more of a sense of each of the areas that you have spoken to me about.

Senator MURKOWSKI. We do appreciate that. We recognize that this potential offshore is quite impressive. The planning that has gone into the offshore for these four areas has been relatively extensive.

The administration has pushed it off, a shorter term delay. But we would hope that that commitment would be there to look very seriously at that potential offshore. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Landrieu.

Senator LANDRIEU. Thank you. Welcome, Secretary Salazar. I'm looking forward to your visit to New Orleans tomorrow. You're going to be a wonderful auctioneer.

They'll be as these things go about 1,000 individuals and businesses that are there really anxious to see what the bids are going to be in the Gulf of Mexico for a new area that you actually helped to open up when you were a Senator. I want to really commend you for your extraordinary leadership joining with so many of us, both Democrats and Republicans to open up some additional acres of drilling that had been shut off to development. As you know, Mr. Secretary that moratoria stayed in place from the first Bush administration through the Clinton administration almost all the way through the end of the former administration with only 5 months left.

That moratoria, you know, set our country back in so many ways in terms of us now being very rusty, if you will, when it comes to smart development of offshore resources. So I'm looking forward to tomorrow. I think you'll get a real sense of the energy and excitement that is in the Gulf of Mexico from Texas to Louisiana to Alabama to parts off the shore of Alabama for, you know, for this lease sale.

Let me second say, before I get into my question. As I've said this before to you privately and publically. I don't believe the President could have made a better choice if he had looked all over the world, seriously, for a person to lead this Department than you.

I have and the people that I represent have a great deal of confidence in your ability to strike the right balance between moving aggressively to grasp the possibilities of renewables but also using so much more smartly the natural and traditional resources that we have. Senator Murkowski mentioned the great contributions that Alaska has made as you know. I don't need to tell you what Texas and Louisiana have done over the years to produce oil and gas.

I think your approach to a more rational plan is something that I most certainly will support and looking forward to these four hearings. One of which will be in South Louisiana as you mentioned one in California, one in New Jersey and then I think, one in Alaska.

My question is actually following up on what Senator Bingaman said. As you know I worked with you and Lamar Alexander to fashion potentially a dedicated source of revenue for the Land and Water Conservation Fund. But would you care to comment about maybe a path forward, not just in terms of the inventory for where

we need to look for offshore resources and how we might go forward on that, but also establishing a smart partnership with the States in terms of sharing revenues from these offshore developments as is currently the law today.

Do you see the benefit of that? How is that figuring into maybe your plans, you know, for the future? The importance of having that sort of partnership established with the States so it really is everybody has got their oars in the water, moving in the same direction. There's not this conflict between the need for the Federal Government to develop these resources and the lack of appropriate support for the communities that are serving as the platform for those resources.

Could you just comment generally about that? The inventory, how we might move forward with an updated, modern inventory of our offshore lands and how important do you think this partnership between the Federal Government and States and the local communities actually is to achieve your goal of energy security for our Nation?

Secretary SALAZAR. Thank you very much, Senator Landrieu. Thank you for the complements. I do hope that I can be a problem solver in the time that I serve as Secretary of Interior on behalf of the Nation and its people.

First of all let me just say that with respect to the inventory. One of the realities of the offshore is that there are some places where we do have tremendous information. The Gulf of Mexico is a perfect example where the geologic seismic information tells us a lot about the Gulf of Mexico.

On the other hand the information that we have off the Atlantic is very old and very incomplete. So sometimes I think the debate that takes place here with respect to development on the offshore of the Atlantic is a debate that is taking place of respect to a phantom because nobody knows what's out there. So it makes great political theater for everybody involved to have a big debate about it. But that will be one of the key questions.

So where are we on information in the Atlantic? What kind of additional information needs to be developed? It seems to me that if we were a private landowner that we'd want to know what the best information is so that we can make cogent, logical decisions about how to move forward.

So there is, frankly, an information derth in much of the Outer Continental Shelf. I expect that that's one of the things that we will be seeing when in the report that is put together by USGS and MMS. Although I'm not prejudging what that report will say, I know they're working on it very hard. I very much look forward to the report.

On a very important question that you raise on the revenue sharing, it is an important question for the United States of America. You remember the very tough debate where not everybody on this committee, including our wonderful chairman, frankly are all in the same view of what kind of a revenue sharing program might exist. That's all part of the discussion and dialog that I believe we need to put on the table.

It may be time. As I said in my earlier comments, for us to take a look at the Land and Water Conservation Fund and to get it per-

manently funded so it doesn't become part of the annual appropriations fight that essentially has funded probably 2 percent of the vision of John Kennedy when he announced that the Atlanta Water Conservation Fund was important. If we're going to get it done to make sure that we're investing in the treasured landscapes of America. Then we ought to figure out a way of getting it done.

I know the debate between the offshore and onshore formulas is something that will move forward as you all consider an energy bill here. We do not have a position on that at this point in time. But look forward to listening and working with you on that agenda.

Senator LANDRIEU. Thank you, Mr. Secretary.

The CHAIRMAN. Senator Bunning.

Senator BUNNING. Secretary Salazar, welcome back to the Energy Committee.

At a time when our Nation's energy needs are continuing to grow, the Department of Interior will play a unique role in shaping and administering policies that will develop our domestic resources. While I recognize greater public input in the regulatory process I was disappointed by your decision. Thirty-two of us signed a letter to the President expressing that frustration on the Outer Continental Shelf and the delay which you said you solved this morning, a delay to move forward on energy development while leasing on the Outer Continental Shelf.

Congress made the American people wait nearly 30 years to address our immediate energy challenges. Yet you have told the American people they must continue to wait. On top of this initial 60 day comment period, if that is correct, this brings the total comment period to 240 days lasting until September. Is that correct?

Secretary SALAZAR. If you're talking about the new 5-year plan that was prematurely proposed.

Senator BUNNING. Yes.

Secretary SALAZAR. The answer is yes. I will respond more in my opportunity comes up.

Senator BUNNING. The draft plan already received a record 120,000 comments from the States, environmental groups, industry, labor groups and members of the public with 87,000 of those comments supporting expanded and expeditious deployment. After September do you envision any additional regulatory delays? By that time you will have prepared a comprehensive 5-year program for oil and leasing.

Secretary SALAZAR. Senator Bunning, let me step back and just say there was no need to reopen the 5-year plan. We had a 5-year plan that was in place for a 5-year period until 2012. The 5-year plan was——

Senator BUNNING. It was just delayed.

Secretary SALAZAR [continuing]. Essentially opened up. Opened up by my predecessor before it had to be opened up. The fact of the matter is that the Executive branch, Presidential Moratorium as well as Congressional Moratorium expired just within the last year.

I think it is important for the United States of America to take a look at the Outer Continental Shelf in the most comprehensive way that we can because we're talking about 1.75 billion acres in the Outer Continental Shelf. I think for us to make sure that we're

moving forward in a methodical and appropriate way and taking the time to do it in that kind of fashion is an appropriate way. So, you know, the time that we have chosen, I think gives us ample time to engage with you and members of the Senate and the House of Representatives to figure out a way forward for the Outer Continental Shelf.

As President Obama has said that he believes the Outer Continental Shelf ought to be part of what we deal with in terms of a comprehensive energy plan. We hope to be able to work with the stakeholders, listen to the Governors, listen to the Senators, listen to others and to try and figure out a good way forward on this 1.75 billion acre asset of the American public.

Senator BUNNING. Tomorrow you said you're going to New Orleans to be an auctioneer on 181, section 181, in the Gulf. How long do you think it would take before the rules are in place to have some type of exploration in section 181?

Secretary SALAZAR. I mean the rules are already in place for offshore leasing and in the Gulf of Mexico. So we'll just move forward with the regular process that has been established which we already deal with extensively in terms of the offshore leasing. The 34 million acres that are being put out to lease tomorrow, we'll see what the response is in terms of those who are interested in leasing those properties on the Gulf Coast.

But it is a very extensive lease sale of the area in the Gulf Coast where there are known reserves of oil and gas, significant reserves of oil and gas. So I think that will move forward in regulatory.

Senator BUNNING. My basic question is when do we see the first rig in the Gulf and 181?

Secretary SALAZAR. As you know Senator Bunning, you know, the oil and gas companies will go ahead and provide their bids tomorrow. The oil lease is hopefully for whatever is leased upon ultimately will be finalized and it will fit in within the exploration and development program of the oil and gas company that acquires the lease.

Senator BUNNING. Thank you.

The CHAIRMAN. Senator Dorgan.

Senator DORGAN. Mr. Chairman, thank you. Mr. Secretary, I think the subject of this hearing is very important. I think we need to maximize the potential for renewable energy in our country. That includes the potential to develop renewable sources on public lands.

We need to develop a transmission capability in order to maximize and then move renewable energy where it's needed. That means citing transmission lines across the country and also on public lands. We also need to maximize the potential to produce oil and gas here at home.

Senator Bingaman, Senator Domenici and I, along with then Senator Talent, were the four that initiated the legislation to allow for oil production on Lease 181 in the Gulf of Mexico. I think much more of the Gulf should be open. I understand your point that you want to find out what is there.

But I think we're not too many months away from the drill, baby, drill bumper sticker which was then a political campaign when oil went to $147 a barrel in day trading. But the notion of being able

to use more of our domestic resources and I'm speaking of oil and gas and renewables is a very important element of an energy program.

So let me ask you a question philosophically if I might about what you and the administration think about offshore drilling generally. Are we headed toward a kind of a different culture in taking a look at these with the understanding that we need to be able to produce oil and gas as a part of an energy strategy going forward? We understand most of that production, additional production capability is in the Gulf of Mexico, not exclusively but there's a substantial amount of it there.

So tell me your philosophy and what you think the administration's philosophy is with respect to drilling?

Secretary SALAZAR. Senator Dorgan, as I indicated just in the last several weeks on the offshore there have been seven major oil and gas lease sales. No one from the administration has said don't move forward with those oil and gas lease sales. Tomorrow we're moving forward with 34 million acres of additional area in the Gulf to be auctioned off for lease.

I think actions should speak very loudly here in terms of wanting to make sure that our onshore and offshore resources are in fact made available to meet the energy needs of the Nation. As President Obama said during the campaign and as he has said since then, he, you know, wants us to have a comprehensive energy plan. It's in that context that the OCS has got to be a part of that comprehensive energy plan.

But for it to be comprehensive in nature, you know, we need to do the things that he has talked about. The things that were included in the stimulus package. The great initiatives that we have underway for renewable energy and to try and update the electrical grid so we're not dealing with the Thomas Edison electrical grid but really update it to the 21st century.

So lots of different challenges that we have ahead of us as we deal with putting together a comprehensive energy plan. We hope to move with that with all deliberate haste.

Senator DORGAN. Secretary, we understand U.S. Geological Survey estimates there's somewhere around a half a million barrels of oil a day under Cuban waters, 50 miles off the shore of Florida. The Spanish are interested in drilling there. Canada and I believe China is also taking a look at it. Under the current embargo, our American oil companies are not permitted to be involved there. Do you think they should be?

Secretary SALAZAR. I do not know what the administration's position on that issue is. I know that it is a very difficult and a very emotional issue for people. I do know that the geologic information is there from USGS in terms of what the availability is.

But it does take us down the path of what has been a very difficult geo-political issue which this Senate and this Congress and prior administrations have dealt with. So that would probably be something that you might want to ask Senator Clinton or Secretary Clinton.

Senator DORGAN. Alright. I understand your point. Let me just make an additional point that's also important.

Those of us that believe we need to be able to maximize renewable energy, solar energy in the South across the South and West—wind energy from Texas north to North Dakota in the Heartland. In order to maximize the production of these resources you have to be able to move it where it's needed. Produce it here, move it there where it's needed.

That means that we must, we absolutely must find a way to produce or develop this interstate highway of transmission capability that connects America. It seems to me that a significant part of that is planning, citing and pricing and part of that is citing on public lands.

So we had people here last week talking about green energy lines or X amount being renewable transmission lines. The fact is electrons are color blind. Whatever you put on a line is going to move no matter where it comes from, coal fired generating plants or wind energy.

So I want to finally make the point to you that it's very important for the production or the creation of an energy bill that the public lands piece be resolved with respect to transmission as well. I appreciate the work you're doing. We've a lot to do together and in a hurry to get this right in my judgment. Thank you, Mr. Secretary.

Secretary SALAZAR. If I may, Mr. Chairman, just a comment on that. You know I think that I always, I said this to President Bush probably two or three that I thought this whole question of energy had the potential to unify the country, you know, the need for energy independence, economic opportunity here at home, address the issue of climate change, not to be a Republican or a Democratic issue. I remember helping with some of you on this panel put together the Set America Free Coalition including conservatives like my good friend, Senator Sessions and Senator Brownback and a whole host of other people.

I do think that this is an area where we can figure out a way of moving forward together on one of the signature issues of the 21st century. I do hope with all fervor that it is a bipartisan way forward.

The CHAIRMAN. Senator Bennett.

Senator BENNETT. Thank you, Mr. Chairman. Mr. Secretary, welcome. I echo the wisdom of the President in choosing you as the Secretary. I'm delighted to have a fellow Westerner in that slot who understands the issues relating to public land States and States where the Federal Government is the primary landlord.

I'm glad that you want to move forward with another round of leases in Colorado and Utah. But you're aware that I'm still very concerned about the 77 leases that you canceled a few weeks ago. I raised that issue with Mr. Hayes.

He said it's not firm yet. You're just reviewing them. They are not canceled. They're postponed. I'm glad to hear that.

But I've submitted some questions to Mr. Hayes about the lease sale. I'm going to need answers to those questions before I can feel comfortable about moving forward on his confirmation. So I hope that the Department can sit down with me and Senator Hatch and others to discuss the status of these.

You say you want to unify. This early action has done more to divide, at least in my State than maybe anything that's been done. So I hope we can get that behind us and get it resolved.

I was interested in your charts. You showed the tremendous amount of solar, potential solar energy in my State and in the Southwest. Then when you got to California you started blocking out large chunks of land because they were used for other reasons and would not be available for solar panels.

You're aware that there are proposals before the Department. They've been incorporated into legislation offered that would create 9.8 million acres of wilderness in Utah. Now I'm trying to resolve the wilderness problem in Utah.

I think the 9.8 million acres is excessive. But if you overlay the maps of what you say is available there in solar energy with the maps coming from some of these groups saying that all of this should be wilderness. You recognize immediately that if the folks that are arguing for the large acreage of wilderness are successful those lands will not be available for renewable energy because acres of solar panels or large numbers of windmills are clearly not compatible with the wilderness experience.

Have you looked at this? Do you have any idea about how you might reconcile these competing views?

Secretary SALAZAR. Senator Bennett, I appreciate the question. Let me take your second question first. That is what we've done in Southern California is frankly go through a process where we've tried to identify those areas that are sensitive.

We do not believe every acre of BLM lands, for example that has tremendous solar potential should be developed as part of a solar power plant. So that's why we go from the large availability of public lands down to those areas where it would be best suited for us to put the solar energy power plants. It's that kind of planning I think that is important for us to do as a——

Senator BENNETT. I applaud you for that. I'm just pointing out in Utah you're going to have a real problem as far as the wilderness folks are concerned.

Secretary SALAZAR. When we get to Utah and I mean we have a task force that's actually working on this. We will take a look at those overlays. See where those energy zones make the most sense.

It's really an effort on our part, Senator Bennett, to make sure that we're being proactive in our planning. As opposed to the helter skelter which we currently have underway which essentially is anybody coming in, filing and application. There's really no plan in place.

We have 200 pending solar power plant applications. But really no strategic plan in how we're going to process them or how they're going to be cited or how close they're going to be to transmission and the like. Let me say this with respect to the Utah lease sales. I appreciate your letters to me. I appreciate your strong sentiment with respect to those 77 lease parcels.

It was my view as I reviewed that particular set of 77 parcels is that there were some that were just too close to some very, very important ecological values for Utah and for the Nation including Arches National Park. So I think we need to move forward and take a review of those 77 lease parcels and look forward to working

with you and the people of the State of Utah on how we move forward.

We will happily respond to the questions that you submitted to David Hayes. But let me also say I would ask the members of the Senate, the members of this committee to help us get people into place so that we can get the government doing the job that it has to do. Frankly in the Department of Interior with 67,000 employees, with 20 percent of the land mass of the U.S., with 1.75 billions in the Outer Continental Shelf of acreage. I am, today the only person who has been confirmed by the U.S. Senate.

So we need to get some of our other people in place so that we can be more responsive to the issues that this committee has to helping with this committee in terms of moving forward with the energy legislation that this committee has been working on.

Senator BENNETT. I want to help you get them in place too. There's a way to do that. Thank you.

Secretary SALAZAR. Thank you.

The CHAIRMAN. Senator Sanders.

Senator SANDERS. Thank you, Mr. Chairman. Welcome, Secretary.

Secretary SALAZAR. Thank you, Bernie.

Senator SANDERS. I sit on both the Environmental Committee and the Energy Committee. On both committees we hear that the prognosis regarding global warming is even worse than we had thought just a couple of years ago which I think raises the understanding that we have got to be extremely aggressive in terms of moving toward energy efficiency and sustainable energy. I applaud the direction in which you are moving and have moved in the last couple of months since you've been in office. Thank you for what you're doing.

I am a great proponent of solar energy. Last summer I was at Nellis Air Force Base. I don't know if you've been there where they now have the largest installation of photovoltaics, I believe, in the United States.

They did a very good job. They did it on budget. They're providing 25 percent of the electricity to a very large base just on photovoltaics.

I was also when I was in Nevada visited I think it's called Solar One which is a solar thermal plant outside of Las Vegas as well. They are very quietly supplying electricity to I believe 17,000 households. I have talked to people. I think you have as well who believe that the Southwest of this country has unbelievable potential in terms of solar energy that we have not begun to tap.

I am a strong proponent of solar thermal plants. I've talked to people who have on the drawing board, plants that could provide 500 megawatts of electricity. So my question to you is how soon are we going to see the establishment of solar thermal plants which can in fact provide electricity to millions and millions of homes in this country without emitting any greenhouse gas emissions?

Secretary SALAZAR. Senator Sanders, I believe that we should move forward as quickly and as expeditiously as we can. Because I, too believe as you do that harnessing the power of the sun has huge potential for us in terms of dealing with the issue of global warming. That's why we have started this effort to try to create re-

newable energy zones around the country to try to identify those areas where it's best suited for us to place solar power plants.

Also to deal with ultimately what will be the Achilles heel of the renewable energy revolution which you so much believe in. That is if we are not able in some way to move forward with the chokehold on the unavailability of transmission we can study the potential of solar and wind and geothermal until the cows come home. It's not going to get done.

So we just need to move forward. In my view, aggressively in building the super electronic highway which President Obama has spoken about so eloquently. We need to do it together.

Senator SANDERS. No, I agree. I was very pleased that in the Stimulus package many billions of dollars are being devoted to energy efficiency and sustainable energy. I think that's a huge step forward.

I think what would be really extraordinary is if the day would come within the next few years where you and the President could be cutting the ribbon for a solar thermal plant without any greenhouse gas emissions providing electricity to hundreds and hundreds of thousands of people. I think it would show the whole world the seriousness of what we believe in and our ability to go forward. Do you have any idea when we may be able to see our first large solar thermal plant in the Southwest?

Secretary SALAZAR. I think it certainly should and will happen during the next several years. I know there are plans on the board to actually construct solar power plants.

Senator SANDERS. There are a number of very serious proposals out there. I just think financing is often the problem as well. I'm sorry.

Secretary SALAZAR. I agree with you Senator Sanders. I think we have the potential of moving forward with solar power plants that can produce from 250 to over 500 megawatts of power. I think that's what's in our reach in the next several years.

I think it's up to us to be aggressive as you were in the Stimulus by providing the more than $11 billion to help with upgrading the grid for America. It's up to this Congress and up to the administration as well to move forward aggressively in terms of making the solar and renewable energy dreams a reality. We cannot wait.

Senator SANDERS. So what I'm hearing from you is solar thermal is high up on your priority list. You see the possibility of moving forward within the next couple of years.

Secretary SALAZAR. Indeed. I have put together, as I said in my opening statements, Senator Sanders, the task force within the Department of Interior to help us move forward with renewable energy. Much of it is located on the public lands.

We are working together interdepartmentally with a number of my colleagues on the Cabinet to put together the renewable energy zones for the Nation and also dealing with the transmission challenges that we face. Instead of trying to put everything in silos and——

Senator SANDERS. Right.

Secretary SALAZAR [continuing]. You now have a jurisdictional dispute going on with FERC about what FERC's role is and isn't. FERC is at the table with us.

Senator SANDERS. Good.

Secretary SALAZAR. Helping us draft what these energy corridors will look like.

Senator SANDERS. Thank you very much, Mr. Secretary. These are enormously important issues. It sounds like you are moving in the right direction. Thank you.

The CHAIRMAN. Senator Sessions.

Senator SESSIONS. Thank you, Mr. Chairman and Mr. Secretary, welcome back to our committee. We're proud of your service. I congratulate the President for nominating you.

I know you're going to do a great job. You understand the issues and understand this Senate which is helpful too.

You know, but I know the White House, the administration is under a lot of pressure. Senator Bennett talked about leases that have been delayed that have been worked on for 7 years in Utah. Then still haven't come forward.

So it has a chilling effect on investors if they don't feel like when they comply with things they can get it done. It's going to be another delay, another delay and another delay. So that's really what I was concerned about in the Gulf.

Alabama has some frontage on the Gulf. I've been out to some of the oil rigs. They're spotless out there.

But mostly when I visit an oil rig it's when I'm going fishing. We fish under and around the rigs. There's not the slightest sheen of oil on the water where those rigs are pumping large amounts of oil.

So I guess, tell me about your delay. You asked for MMS, Mineral Management Service report within 45 days. Then you're going to conduct regional meetings to discuss this.

We need at some point to get this thing done. Those of us who've watched the issue for a long time get nervous because when you can never seem to close the deal it never seems to get closed. So what are our prospects of actually getting this opened, getting bids done and actually seeing production from some of these acreage of President Bush opened before he left office?

Secretary SALAZAR. You know, Senator Sessions, I appreciate the complement and also the question. My view is we are moving forward in terms of providing huge amounts of acreage for production. We see production as being very much a part of a comprehensive energy equation for the United States of America.

President Obama talked about that reality during his campaign. He has given me that direction as I move forward as Secretary of Interior. The seven lease sales that we have conducted onshore actually made available some 1.2 million acres.

There's no problem with respect to the development of the oil and gas within those lands. But because of the seismic market realities and geo physical information available to companies that are leasing these properties. Only, I think, 250,000 acres are actually leased.

Tomorrow we're in New Orleans trying to lease 34,000 or no, 34 million acres. Who knows how much of that acreage will ultimately be leased? So there is no doubt that we are moving forward with a production part of what we're trying to do with respect to energy.

Now with respect to your question on the MMS and how we move forward. We're dealing in a relatively new reality with re-

spect to an absence of a congressional moratoria and an executive moratorium on the OCS. It's my view that as we move forward with this huge American citizen asset that we need to be thoughtful about how we craft a plan forward.

That's why we're taking the kind of time that we're taking in moving it ahead. Part of the reason that I'm going to New Orleans tomorrow is we want to send a loud and clear signal that when we talk about a comprehensive energy program for the Nation that we recognize that oil and gas are going to be a part of that comprehensive energy program.

Senator SESSIONS. I think that's good. I would just say to you that when the delays don't seem to have an end it causes a lot of nerve wracking. Maybe reduces investment. So I worry about that.

You know I'd like to ask you to think about this. Secretary Chu was calling on the Arabs I believe recently, OPEC countries to produce more oil. But at the same time we're not producing all the oil and gas from oil shale and our coal and coal to liquids that we could produce.

You and I worked together to see energy as a national security issue. I guess my time is up. Mr. Chairman, I'll just wrap up.

But we worked together to see this as a national security issue. I know you understand that it's far preferable for us to produce more oil and gas keeping that money and wealth at home than to be dependent on foreign nations to increase their production of oil and gas. You might want to briefly comment on that.

But I do think that to me the energy question is national security.

No. 2, pollution, keeping this country and world clean.

No. 3 is the economy and having a realistic price for our oil and gas and not driving it up unnecessarily.

So all of those are factors I think we must consider in each decision we make. Any brief comment?

Secretary SALAZAR. If I may, Chairman Bingaman?

The CHAIRMAN. Go right ahead.

Secretary SALAZAR. You know I think your concluding comment with respect to the values that drive us here to try to do the right thing on energy really is what has a potential of bringing this country together around these issues. There's no one that cares more about the national security of the United States than President Obama and the members of this committee. There's no one that cares more about making sure that we deal with the issues of emissions and global warming than President Obama.

There's no one who has been working harder and more fervently since becoming President and even before that on the whole economic crisis that our country faces in a large part because of the energy issues in America. So I think on those values that you articulate, Senator Sessions, I think there is a good opportunity for us to come together as Democrats and Republicans as we move forward.

The CHAIRMAN. Senator Wyden, did you have——

Senator LANDRIEU. Mr. Chairman, yes. I just had a comment very, very briefly to follow up with Senator Sessions'. Senator Wyden has allowed me 30 seconds.

First of all it might be good to note for the record and Secretary Salazar that domestic production is expected to increase this year for the first time in the United States since 1991. I'd like this to be included in the record. That's in 19 years and in large measure because of the rigs coming online in deep offshore, off of your shore, Senator, in mine.

No. 2, the acreage that the Senator is speaking about or the Secretary is speaking about, 34 million. To put it in comparison the current acreage leased, Mr. Chairman is 41 million acres in the offshore. 34 million, I believe, Tom, is it 34, is going to be available tomorrow? It's a significant lease sale.

So it answers both. There's more oil being produced for the first time in 19 years in America in large measure because of offshore. It's 34 million acres is nothing to sneeze at.

The CHAIRMAN. Senator Wyden.

Senator WYDEN. Thank you, Mr. Chairman. It's good to have the Secretary here. I want to thank the Secretary first for the very strong message you sent about ethical priorities at the Department.

You said you were going to do it. You did it right out of the box. We appreciate that.

I'm also glad that we're headway now in terms of renewable energy development on public lands. I want to start Mr. Secretary, by talking about a problem. I know you're familiar with in the West.

We have this huge backlog in terms of hazardous fuels on the forest floor. It's really the byproduct of neglect. All this dead material has just piled up and it becomes a huge risk of fire.

I think you know, we've talked about it. Some of these fires that we're seeing in the West are infernos. They aren't natural ones. They come about as a result of neglect.

I and others want to get that material and use it as a source of biomass, as a source of clean energy that we think will put people to work, and will, at the same time, make our forests healthier. The problem is that the 2000, you know, Energy Act included a definition of renewable biomass that essentially excluded all the biomass including slash and thinning byproducts from Federal lands.

So what you've got now is you've got people in the forest products industry, environmentalists, scientists, all ready and anxious to use, you know, biomass. It's a win/win/win situation. Reduce the risk of fire, green up the environment and put people to work making clean energy.

We've haven't been able to do it because of this policy with respect to Federal lands. Now I introduced legislation to amend the Clean Air Act to modify the definition of renewable biomass contained in the renewable fuel standard so that biomass from national forests and BLM land is eligible as a fuel source. Would you be willing to work with all of us on this?

I think there will certainly be bipartisan support for it. You might recall that when we tried to do it before then Chairman Bingaman and Senator Domenici went off and tried to get it started with a good definition. We got it here in the committee and then along the way support for it evaporated.

So I think there will be bipartisan support for it. Can we have a commitment from you and your office to work with us on getting

this biomass definition right so we can get this woody byproduct off the Federal lands and as a clean energy source?

Secretary SALAZAR. The answer is yes. We would be happy to work with you. You know, I have always seen biomass as being one of those great opportunities with respect to the renewable energy.

Indeed because of the Stimulus package there is money in there for hazardous fuels reduction for whatever reason the BLM was not treated as generously as the Forest Service. So we have taken it upon ourselves to work closely with Secretary Vilsack so that we have a concerted approach to how these dollars are spent. There are moneys that were included in there with respect to grants for biomass facilities.

So, not into the Department of Interior but in the Department of Agriculture and so we're hoping to see some of these projects sprout out.

Senator WYDEN. Let's get this definition right so that we can get some of the woody biomass off Federal lands. We're barred from doing it. There's a way to do this so that forest products, industries, environmentalists who are concerned about old growth.

They'll come together. We saw that we were able to do it with Senator Domenici and Senator Bingaman. I think working with your office we'll be able to get that definition correct.

Let me ask you about one other one very quickly. During your public announcement last week you mentioned the potential for wave energy. But the actual order didn't do that.

Wave energy didn't get into the order. Can we work with you to make sure that it makes its way into the actual order and the list of energy priorities? It might have just been an oversight.

Secretary SALAZAR. It is, you know, in the portfolio of renewable energies. I think when you look at current and tidal energy they need to be very much on the table. But we must also be cognizant of where we are with respect to the technologies.

We know that we have the technology ready and available and already deployed with respect to wind energy. We know the same thing is there with respect to solar even though it's not quite as far along as it is with wind. The technology around ocean and tidal and wave energy is a little further removed from becoming a reality.

But it is something that is on the table. It is something that we will work on in concert and together with FERC because there is jurisdiction that they do have that we will try and work on this issue as part of our renewable energy portfolio.

Senator WYDEN. My time is up. I would only say, Mr. Secretary, I think making sure that wave energy gets the attention it warrants would fit perfectly at page two of the order. If I can work with you that would be great.

Thank you again for getting out of the gate, particularly on ethics in such a strong fashion. That message sunk in around the country. I appreciate your doing it. Thank you, Mr. Chairman.

Senator BENNETT. Mr. Chairman?

The CHAIRMAN. Senator Bennett?

Senator BENNETT. May I intervene for 30 seconds? Wave energy may be behind. But tidal energy is not.

I have visited the tidal facility in Laurence, France that is producing tidal energy. They've been doing it for 40 years. They're making money at it. It is absolutely reliable.

I've talked to the Secretary of Energy about this. I'll be happy to talk to you about it if you have an interest in it.

Secretary SALAZAR. Thank you very much.

The CHAIRMAN. I believe Senator McCain is arriving. Let me ask if he would like to ask some questions of Secretary Salazar before we go to the second panel. Oh, I see Senator Menendez, he arrived too.

So why don't we first——

Senator MCCAIN. I would be glad to yield to the Senator from New Jersey.

The CHAIRMAN. We'll go ahead with you Senator McCain since we went with Senator Wyden. We'll come back to Senator Menendez.

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

I did not have an opportunity to publicly say congratulations Senator Salazar. We are very proud and pleased that you've agreed to serve in this very important position. I look forward to continuing the bipartisan and nonpartisan way you have addressed issues that are critical to the future of this country and especially, obviously the West where the Federal Government owns so much of our land in Arizona and Colorado as well as other States.

I was very interested in your comment that was carried in the media about offshore—about ANWR. I guess my question is do you believe that the technology is there today to do the kind of exploitation of reserves in ANWR that you were discussing?

Secretary SALAZAR. Senator McCain, what I said in my statement. I think in a press statement that I made yesterday is that the technology with the oil and gas industry has significantly changed over time. Ten years ago no one would have ever thought that horizontal drilling would be a possibility at all in the way that it is today where you can go out many distances from where you actually have the wall pad.

So I understand the technology has significantly improved. Having said that the position of the administration and my own position is that ANWR as a national refuge needs to be absolutely protected and I have not seen the information other than what I have seen in news reports about the ideas that my good friend Senator Murkowski and others have about horizontal drilling. So our position as an administration has not changed at all with respect to ANWR.

Senator MCCAIN. Maybe when you get a chance to get briefed and researched on it you could provide the committee with information as to whether you believe that technology is there or not. Because obviously if we don't believe the technology is there that there's not going to be the kind of exploitation of those reserves that many advocate. As you know I have not supported drawing in ANWR. But if the technology is there I certainly feel strongly that we ought to—and so that we don't disturb this pristine area that we should certainly pursue it.

What's your view and position on offshore drilling at this time?

Secretary SALAZAR. Senator McCain with respect to offshore drilling we are continuing programs with respect to offshore drilling as Senator Landrieu and others in the testimony this morning has indicated. We're moving forward with the sale tomorrow of some 34 million acres in the Gulf Coast of Mexico. So we continue to look at it.

President Obama's position on this has been I think very clear. That is that he looks at the offshore as part of a comprehensive energy program. How we put together the pieces of this comprehensive energy program is something that we're looking forward to working with you and members of the Senate and Congress on.

Senator MCCAIN. Perhaps you could provide for the record, if you could, exactly what areas do you think that could be leased, what areas you think should not. I mean, again, as in ANWR the devil is in the details. We'd appreciate that additional information as to what areas offshore are ready to be leased and can be explored and exploited and which should not be.

We'd appreciate that very much.

Finally, Mr. Secretary I'd like to have your views on nuclear power. The administration and the Secretary of Energy has said we won't use Yucca Mountain. They've also opposed reprocessing.

You can't develop nuclear power, energy, in this country if you don't reprocess and you do not use Yucca Mountain as a repository for spent nuclear fuel, so I'm wondering what your position is. They basically killed nuclear power in the foreseeable future for this country. To hear the argument that somehow reprocessing can't be done in the United States of America flies in the face of the fact that Japan, the British and the French all reprocess.

By the way I did quote to Secretary Chu the Department of Energy report that by 2050 solar, which all of us strongly support, would only provide 5 to 10 percent of our renewable fuel requirement. I see no way of achieving energy independence and the price of oil will go back up because our economy will recover—that nuclear power can't be part of the equation.

Right now it seems to me we are at a dead stop.

Secretary SALAZAR. Let me first of all say, Senator McCain, I appreciate the leadership that you have brought to the Senate on so many issues including the issue of climate change and energy. I very much look forward to working with you as we tackle those issues.

On your first statement on the OCS and wanting to have places where we can drill and we can't. We do have those places mapped out. In fact we are moving forward in the Gulf of Mexico tomorrow is a place where we know is absolutely open.

There are lots of places in the OCS that we don't know very much at all about. You know, much of the debate that's taken place here over the last several years has been with respect to the Atlantic coast. The information that we're dealing with on the Atlantic coast is information that is more than two decades old. The seismic information still needs to be developed.

So we're having a conversation about areas where we really don't know a lot about. We have tried to put forward what's going to be a process that includes a 45-day report which is due in the next several weeks from MMS and USGS that will tell us more on the

OCS. We will move forward with a thoughtful agenda to try to develop a comprehensive plan on the Outer Continental Shelf.

Nuclear. You know, that obviously is an area where Secretary Chu is very involved. All I know is from my conversations with him is that it's very much an issue that is on his agenda. As you know from President Obama's own comments relative to nuclear energy, he sees that as a part of our energy future.

It was in this committee under the 2005 Energy Policy Act that in a very bipartisan way. I think 82 votes on that bill that came out of here. We included a chapter in there that with respect to nuclear energy.

Having said that the fact is that there are some difficult technological issues. Yes, we can learn a lot from what has happened in France and other places. But there are people like Secretary Chu who I know are very much on top of trying to figure out what our next steps are with respect to that part of our energy equation.

Senator MCCAIN. Thank you. I thank you for the time, Mr. Chairman. I just want to say again, Mr. Secretary, we are very proud to have you serve in this important position.

I know you have an in depth knowledge of the needs and requirements for our national parks, for our public lands, for BLM, for a broad variety of issues that are important to the future of this Nation. Thank you again for your willingness to serve. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you. Senator Menendez.

Senator MENENDEZ. Thank you, Mr. Chairman, Mr. Secretary. Happy Saint Patrick's Day. I know you're a big celebrant of it, so.

I want to start off by commending you, Mr. Secretary for acting quickly to extend the public comment period on President Bush's administration's hastily constructed 2010/2015 year OCS oil and gas leasing program. I look forward to joining you in New Jersey when you come to hear from people along the New Jersey shore about what drilling off the Outer Continental Shelf would mean to them in their lives, in the economy of the State and in coastal States like New Jersey. So we appreciate that you're going to be there.

While we now have more time to consider that plan, we're still dealing with the current 5-year plan for the Outer Continental Shelf. That plan allows for example, for a special lease sale off the coast of Virginia. The proposed site may be off the coast of Virginia, but as we know the ocean does not respect State borders. Any spill caused by a hurricane or an accident is likely to wash up in New Jersey less than 100 miles away.

As I have mentioned in many previous hearings. When you were a member of this committee if drilling were to begin in the Atlantic, New Jersey could suffer extreme economic consequences even when a minor spill or leak occurs. In the late 1980s medical waste washed ashore on several of our beaches.

It was quickly contained and cleaned up. But 22 percent of all of the tourism to the shore that year dropped just from that one incident and that resulting in about the loss of $800 million, so I don't want to imagine what an oil spill could do.

I know that everybody talks about how the new technology is such that that's unlikely. If you look at the pictures that I've exhib-

ited on the Senate floor from the U.S. Coast Guard about the oil spills that took place in the Gulf as a result of the hurricanes. We know that it is not foolproof by any stretch of the imagination.

Second I want to introduce into the record, Mr. Chairman an article from the New York Times, dated March 15, 2009. The New York Times reported just 2 days ago that the number of oil and gas rigs set up to drill for new energy supplies has plummeted to less than half of what existed last summer from 2,400 to less than 1,200 today. If oil and gas companies are not using the leases they have now, I'd like to know why they need more leases in environmentally and economically sensitive areas.

So I'd ask consent to have that included in the record, Mr. Chairman.

The CHAIRMAN. It will be included.

Senator MENENDEZ. Also you know, let me get to one or two questions, Mr. Secretary. I see the fact that you took this job and you often talked about the energy moon shot as one of the things that you hoped to be able to achieve. I think that is desirable.

You know the Energy Information Agency estimates that the United States has approximately 3 percent of the world's proven oil and natural gas results. Given that fact and considering it takes an estimated 8 to 12 years to develop a new oil or gas field offshore. Does it really make sense to open areas where there is no existing oil and gas infrastructure?

If we're taking that energy moon shot it seems to me we'd be better focused on developing the renewable energy sources that we want. That's question No. 1.

Question No. 2. It's clear that the level of scientific knowledge needed to proceed with rational decisions about the plan OCS leasing on the Atlantic coast in my view are sorely lacking. How does your agency propose to manage to catch up with these glaring data gaps with respect to economically important fisheries, coastal economic and ecological conflicts, undersea biological resources? Those don't seem to get the type of data information necessary in making a decision.

So my question is would you support a plan that would ensure that the National Research Council of the National Academy of Sciences would provide studies to the Department before they made a determination better understanding the potential impacts of drilling on ocean and coastal ecosystems?

Finally, you know, my understanding is that the Department's 5-year OCS drilling plan does not consider the potential economic impact on a State's tourism industry, for example or its fishing industry. So if that's the case why wouldn't the Federal Government evaluate incompatible uses of land or water the same way, for example that we would do in other zoning determinations?

Those are some of the policy questions that I'd like to see the Department think about. I'd like to get your initial reactions to some of those.

Secretary SALAZAR. Thank you very much, Senator Menendez. Let me first say thank you for being a part of making a statement that the Department of Interior really is more than just the Department of the West because as you indicated when you led the effort to take us to the Statue of Liberty and to Ellis Island there

are important functions of this Department that touch on every State, including all the national icons of this great country. So I thank you for your efforts in that regard.

Let me try to respond to a couple of your questions. With respect to the OCS and the development along the Atlantic which I know has been a near and dear issue to your heart from the first day that I met you. It is an issue that requires, I think, the putting together of the scientific and knowledge foundation for us to be able to make rational decisions going forward.

The fact is that when you look at the Atlantic most of the information with respect to oil and gas is at least 25 years old. So sometimes we end up fighting about something. But we really don't have the knowledge base to even be engaged in the fight.

So I'm expecting this report from MMS and USGS will give us an overview of the information that we do have. As importantly what it should do is to give us the knowledge about the information that we do not have. So I'm looking very much forward to that report.

Now I do not expect the report to be, in 45 days, to be as comprehensive as perhaps you and others might want it to be. But it will be the beginning of the discussion of some of the issues which you raise. I do think that one of the things that is important as we move forward with putting together a plan on this very important national asset, 1.75 billion acres of land in the Outer Continental Shelf, that we make sure that we are listening to the stakeholders.

Indeed that was part of the problem that I had with Secretary Kempthorne's order. Notwithstanding the fact that I have great respect for him as a person, I did not feel that there had been appropriate opportunity for the stakeholders to comment on a reopening up of the 5-year plan for the OCS. So our time now and our time in the months ahead will be spent hearing from people like you as well as others who are concerned about the future of the OCS so we can make rational decisions on how to move forward.

The CHAIRMAN. Let me——

Senator MENENDEZ. Thank you, Mr. Chairman.

The CHAIRMAN [continuing]. Indicate Senator Barrasso has indicated for the good of the cause he's willing to submit his questions for the record so we can have the second panel come forward.

They've been extremely patient in waiting. We have a very distinguished second panel. So we will conclude your testimony at this time. Thank you very much, Secretary Salazar. We will be in touch. Some questions Senator Barrasso will have a few questions in addition to the ones that others have mentioned. Thank you very much.

Secretary SALAZAR. Thank you very much, Mr. Chairman. For you and Senator Murkowski and all the members of the committee, you honor me with the opportunity to appear before you today. Thank you.

The CHAIRMAN. Thank you very much. Would the second panel please come forward? While they are coming forward I will introduce them.

First is the Honorable Philip Moeller who is the Commissioner with the Federal Energy Regulatory Commission. We thank you for being here.

Joanna Prukop is Secretary of Energy, Minerals and Natural Resources for the State of New Mexico. We appreciate Joanna being here.

Dr. Dan Arvizu who is the Director of the National Renewable Energy Laboratory in Golden, Colorado. Thank you very much for being here.

Robert Bryce, who is an author and energy journalist from Austin, Texas, thank you for coming.

George Cooper is a President and CEO of the Theodore Roosevelt Conservation Partnership here in Washington.

Mr. Steve Kopf is a partner with Pacific Energy Ventures, LLC out of Portland, Oregon.

So thank you all for being here. If you could each take 5 minutes and give us the main points we need to understand about this set of issues. We would be anxious to hear your point of view.

Commissioner Moeller, why don't you go right ahead?

STATEMENT OF PHILIP D. MOELLER, COMMISSIONER, FEDERAL ENERGY REGULATORY COMMISSION

Mr. MOELLER. Thank you, Mr. Chairman and members of the committee. My name is Phil Moeller. I'm a member of the Federal Energy Regulatory Commission.

Today I appear before you to represent my views as well as those of Acting Chairman John Wellinghoff regarding energy development on public lands and the Outer Continental Shelf. Citing of needed energy infrastructure both onshore and offshore is important to meet our Nation's energy needs and decreasing our reliance on carbon emitting energy resources. The Commission has been citing energy infrastructure for over 85 years.

Under the Federal Power Act the Commission has been charged with citing, licensing and overseeing the operation of the Nation's non-Federal, hydro power projects and accompanying transmission lines since the 1920s.

Under the Natural Gas Act the Commission has for 65 years issued certificates of public convenience and necessity authorizing the construction of natural gas pipelines.

Although most electric transmission citing is done by State and local authorities the Energy Policy Act of 2005 gave the Commission the authority, in limited circumstances, to permit interstate electric transmission facilities within national interest electric corridors designated by DOE. While we have not yet been called upon to exercise this authority, the Commission and eight other Federal agencies executed a memorandum of understanding on early coordination of Federal authorizations and related environmental reviews required in order to cite these facilities. Based on decades of experience in hydro power projects and natural gas pipelines the Commission has developed comprehensive, efficient processes that provide for the public notice and extensive public participation including participation by affected Federal agencies, Indian tribes and States.

We're guided by six principles of energy infrastructure development.

They are a pre-filing process that allows and encourages all affected stakeholders to identify issues and resolve conflicts.

Designating us as the single lead agency to make the overall public interest determination.

Allowing that agency, us, to establish a schedule for all actions related to a proposed project.

Building one Federal record including one environmental document on which decisions are made.

Providing for expeditious judicial review in a single United States Court of Appeals.

Once a Federal decision has been made, authorizing the permitee to use Federal eminent domain to acquire the property needed.

Now in recent years the Commission has received applications for preliminary permits and licenses for hydrokinetic projects which we define as projects that generate electricity through the motion of waves or the unimpeded flow of tides, ocean currents or inland waterways. An EPRI study has found that the estimate of our potential for wave and current power in our Nation's oceans to be a full 10 percent of our energy portfolio. Under our FPA authority to license hydroelectric projects, the Commission has issued about 170 preliminary permits representing 10,000 megawatts of potential generation to entities studying hydrokinetic projects.

The Commission has also been asked to determine whether its long standing FPA authority to license hydroelectric projects applies to hydrokinetic projects on the OCS or whether such authority resides in the Department of Interior's Mineral Management Service. The Commission determined that it has authority over such projects. But that it can exercise such authority in a way that does not conflict with the authority of the MMS over other OCS activities.

The staffs of the two agencies, 2 years ago, developed the language for a memorandum of understanding pursuant to which MMS would continue to exercise its general authority over activities on the OCS. The Commission would issue licenses for OCS hydro power projects. Under this agreement the Commission and MMS could work together just as we've done for decades with the Forest Service when we issue licenses and permits within National Forests, with Interior when we issue licenses and permits on Indian reservations, on BLM lands and on Bureau dams and with a Corps of engineers when we issue authorizations for projects at a Corps facility.

The memorandum has not yet been signed. But we envision it would result in all hydrokinetic projects whether onshore, in State waters or on the OCS being subject to a uniform licensing and oversight regime. It would permit exercise of the Commission's expertise in citing the primary transmission lines connecting hydrokinetic projects to the electric grid which would not be the case if the Commission has no jurisdiction over the underlying projects.

Finally the Commission's jurisdiction over hydrokinetic projects on the OCS would not hinder in any way the timely development of associated wind facilities subject to MMS regulation on the OCS.

As Secretary Salazar mentioned today I'm thrilled to also note that both he and our Acting Chairman Wellinghoff have agreed on a principle to move forward with developing this memorandum of understanding. I personally, as a proponent of this industry, want to commend the leadership of both of them in moving forward on this subject so that we can get this resolved and move forward. Thank you again for giving me the opportunity to appear before you today. I'll be happy to answer questions when appropriate.

[The prepared statement of Mr. Moeller follows:]

PREPARED STATEMENT OF PHILIP D. MOELLER, COMMISSIONER, FEDERAL ENERGY REGULATORY COMMISSION

Mr. Chairman, and members of the Committee: My name is Philip Moeller and I am a member of the Federal Energy Regulatory Commission (Commission). Today I appear before you to represent my views as well as those of Acting Chairman Jon Wellinghoff regarding energy development on public lands and the outer continental shelf (OCS). Siting of much-needed energy infrastructure, both onshore and offshore, is important to meeting our Nation's energy needs and the goal of decreasing our reliance on carbon-emitting energy sources. Energy development on public lands and the OCS will play an important role in meeting this goal and I appreciate the opportunity to discuss the challenges and opportunities associated with it.

The Commission has been siting energy infrastructure for over 85 years. It has been responsible for siting hydroelectric facilities and accompanying transmission lines since the 1920's and has sited natural gas pipelines since the 1930's. In exercising these long-standing responsibilities our agency has worked closely with other Federal agencies, including working with federal land management agencies in siting energy infrastructure on federal lands. We stand ready to ensure that this successful coordination continues and that Federal agencies work closely in the timely siting and permitting of necessary infrastructure, including the transmission and hydrokinetic energy facilities that will be needed to take us through the 21st century.

THE COMMISSION'S EXPERIENCE IN SITING ENERGY INFRASTRUCTURE ON PUBLIC LANDS AND THE OCS

The Commission is well-versed in reviewing and authorizing critical energy infrastructure projects, and in establishing a regulatory regime that encourages the development of appropriate energy projects, while at the same time protecting the interests of consumers and safeguarding the environment.

Based on its decades of experience in hydropower projects and associated transmission lines, as well as siting natural gas pipelines, the Commission has developed comprehensive, efficient processes that provide for public notice and extensive public participation, including participation by affected Federal agencies, Indian tribes, and states. These processes ensure the early identification of issues and any study needs (and where possible, consensual resolution of them), development of a thorough environmental analysis, and decisions based on a complete record and consideration of the public interest. We have also learned that a single federal agency having the responsibility and the authority to make siting decisions with regard to projects that affect the national interest is clearly the most efficient way to site major energy projects. In a typical infrastructure proceeding, the Commission involves, from the prefiling process forward, federal and state resource agencies (as well as other relevant federal agencies, such as the Department of Homeland Security and the Department of Transportation), Indian tribes, local government, and private citizens, to assist in the early identification of issues and the development of the record. After gathering input from these sources, the Commission crafts a decision that comports with all aspects of the public interest.

PRINCIPLES FOR SITING ENERGY INFRASTRUCTURE FACILITIES

The following principles of energy infrastructure development have worked well in the disparate infrastructure siting disciplines under the Commission's jurisdiction: 1) a pre-filing process that allows and encourages all affected stakeholders to identify issues and any study needs early; requires working on environmental review and a project application simultaneously; and involves common efforts to resolve conflicts and to identify an acceptable environmental alternative; 2) designating a single lead agency to make the overall public interest determination, while

respecting the roles of other federal and state agencies; 3) allowing that agency to establish a schedule for all actions related to a proposed project, thus ensuring that agencies act in parallel and that the public can rely on predictable milestones; 4) building one federal record, including one environmental document, on which decisions are made; 5) providing for expeditious judicial review in a single United States court of appeals (either in the circuit where the proposed facility is to be sited or in the District of Columbia Circuit), based on the record developed by the lead agency; and 6) once a federal decision has been made, authorizing the permittee to use federal eminent domain to acquire the property needed for a project that has been determined to be in the public interest. The Commission has applied these principles across the areas it regulates, as I review below. Of particular note, the Commission has a long history of working together with federal and state agencies to site energy infrastructure in the public interest.

HYDROPOWER LICENSING

Since 1920, the Commission has been charged with licensing and overseeing the operation of the Nation's non-federal hydropower projects. Today, the Commission regulates over 1,600 projects with the capacity to produce over 54 gigawatts of clean, renewable electric energy, which represents more than half of the nation's approximately 100 gigawatts of hydroelectric capacity, and over five percent of the electric generating capacity in the United States. Further, under existing authority in the Federal Power Act (FPA), the Commission has sited thousands of miles of primary electric transmission lines related to these projects that have helped deliver this power to the nation's consumers.

A number of the hydropower projects regulated by the Commission are located, in whole or in part, on federal lands, for the most part within national forests managed by the Department of Agriculture's (Agriculture) U.S. Forest Service; on lands managed by the Department of the Interior's (Interior) Bureau of Land Management (BLM); at dams operated by Interior's Bureau of Reclamation; on Indian reservations under the jurisdiction of Interior's Bureau of Indian Affairs; or at dams operated by the U.S. Army Corps of Engineers. The Commission has worked successfully with these entities to ensure that the hydropower licenses issued by the Commission appropriately balance all aspects of the public interest, including the development of power, environmental protection and enhancement, recreation, flood control, water supply, and irrigation.

The Commission has executed a number of memoranda of understanding (MOUs) with other agencies with regard to the hydropower licensing process. These include MOUs with the Bureau of Reclamation and the Corps ensuring that Commission licensing actions appropriately recognize those entities' jurisdiction, an MOU with the State of Oregon regarding the licensing of offshore projects, and a series of agreements with a variety of agencies developed by the Interagency Taskforce on Hydropower Licensing.

In addition, the Commission developed, through a process of extensive interagency cooperation and negotiation, its integrated licensing process, designed to streamline the licensing process through the early identification of issues, the development of consensus regarding the gathering of environmental information, and the coordination of action by agencies with jurisdiction to issue necessary authorizations. This effort was premised on the understanding that dependable and affordable hydropower requires a licensing process that is efficient and fair.

While the FPA vests in the Commission the ultimate authority to license hydroelectric projects that are in the public interest, the act recognizes the need for the managers of public lands to have an important voice in the process. For example, the Commission regularly works with federal land managers pursuant to section 4(e) of the FPA, which, with respect to licenses issued within reservations of the United States, as that term is defined in the FPA, reserves authority to the Secretary of the department managing the reservation to impose as license conditions whatever measures the Secretary deems necessary for the protection and utilization of the reservation. Thus, hydropower development on public lands occurs with the concurrence and assistance of these agencies.

NATURAL GAS PIPELINE CERTIFICATION

Under the Natural Gas Act, the Commission has for over 65 years issued certificates of public convenience and necessity authorizing the construction of natural gas pipelines. Under the Commission's oversight, the country has developed a robust, comprehensive pipeline grid that moves natural gas supplies from producing areas to consuming regions. Since 2000, the Commission has approved over 13,000 miles of new pipeline, with a capacity of nearly 95 billion cubic feet per day of natural

gas. In total, there are nearly 215,000 miles of interstate natural gas pipeline in service that cross multiple states.

Natural gas pipelines often cross public lands, typically national forests or lands managed by BLM. In such cases, the Commission works with the Forest Service or BLM (which generally serve as cooperating agencies for the preparation of the Commission's environmental documents) to identify land management issues and to develop appropriate conditions to protect federal lands. Typically, the Commission requires natural gas companies to satisfy all of the federal land managers' concerns before allowing pipeline construction to begin.

The Commission has executed memoranda of understanding with a number of agencies with regard to their respective duties concerning natural gas facilities. These include:

- Interagency Agreement Among the Federal Energy Regulatory Commission, United States Coast Guard and Research and Special Programs Administration for the Safety and Security Review of Waterfront Import/Export Liquefied Natural Gas Facilities, February 2004; and
- Memorandum of Understanding Between United States Army Corps of Engineers and the Federal Energy Regulatory Commission Supplementing the Interagency Agreement of the Early Coordination of Required Environmental and Historic Preservation Reviews Conducted in Conjunction with the Issuance of Authorizations to Construct and Operate Interstate Natural Gas Pipelines Certificated by the Federal Energy Regulatory Commission, June 2005.
- Memorandum of Understanding Between the Department of Transportation and the Federal Energy Regulatory Commission Regarding Liquefied Natural Gas Facilities, April 1985;
- Memorandum of Understanding Between the Department of Transportation and the Federal Energy Regulatory Commission Regarding Natural Gas Transportation Facilities, January 1993;
- Interagency Agreement on Early Coordination of Required Environmental and Historic Preservation Reviews Conducted in Conjunction with the Issuance of Authorizations to Construct and Operate Interstate Natural Gas Pipelines Certificated by the Federal Energy Regulatory Commission, May 2002;
- Memorandum of Understanding Related to the Licensing of Deepwater Ports Among the U.S. Department of Commerce, U.S. Department of Defense, U.S. Department of Energy, U.S. Department of Homeland Security, U.S. Department of the Interior, U.S. Department of State, U.S. Department of Transportation, U.S. Environmental Protection Agency, Federal Energy Regulatory Commission, Council on Environmental Quality, May 2004; and
- Memorandum of Understanding on Coordination of Environmental Reviews for Pipeline Repair Projects, June 2004.

SITING INTERSTATE ELECTRIC TRANSMISSION FACILITIES

Electric transmission lines, particularly in the Western part of the United States, may need to cross federal lands to bring energy to market. Timely permitting by federal land agencies can be critically important to ensuring sufficient transmission infrastructure, including transmission needed to move location constrained resources such as wind power to interconnect with the interstate transmission grid and reach consuming regions. Most electric transmission siting is done by state and local authorities. However, the Energy Policy Act of 2005 gave the Commission the authority, in limited circumstances, to permit interstate electric transmission facilities within national interest electric transmission corridors designated by the Department of Energy (DOE). While the Commission has not yet been called upon to exercise this authority, the Commission and eight other Federal agencies, including DOE, Interior, Agriculture, the Environmental Protection Agency, the Department of Commerce, the Council on Environmental Quality, the Department of Defense, and the Advisory Council on Historic Preservation, in July 2006, executed a memorandum of understanding on early coordination of federal authorizations and related environmental reviews required in order to site electric transmission facilities. This should ensure cooperation among the signatory agencies with respect to the siting of interstate electric transmission facilities.

With respect to its transmission siting authority, the Commission also has in place procedures that involve extensive information-sharing and consultation with state and federal agencies, members of the public, and other stakeholders. The Commission staff is currently working with one potential applicant under these regulations, using the prefiling process to provide information regarding necessary data and analyses.

HYDROKINETIC PROJECTS

In recent years, the Commission has begun to receive applications for preliminary permits and licenses for hydrokinetic projects, which are projects that generate electricity through the motion of waves or the unimpounded flow of tides, ocean currents, or inland waterways. An Electric Power Research Institute (EPRI) study has estimated the potential for wave and current power in our nation's oceans to be over 350 billion kilowatt hours per year, which could increase hydropower production from its current 10 percent of our energy portfolio to 20 percent. Under its FPA authority to license hydroelectric projects, the Commission has issued and pending about 170 preliminary permits representing 10,000 megawatts of potential generation to entities studying hydrokinetic projects.

The Commission has responded to the prospects for this new form of renewable energy in a number of ways, including:

- Issuing a declaratory order with respect to the Verdant Project in New York City, concluding that short-term testing of new technology for projects that are not connected to the interstate electric grid may not require a Commission license.
- Issuing a policy statement with respect to the issuance of preliminary permits for hydrokinetic projects, designed to encourage competition.
- Developing a program to issue, on an expedited basis, short-term pilot licenses for hydrokinetics projects with limited environmental impacts, to provide for the testing of new technology and the gathering of environmental information, while ensuring environmental protection.
- Issuing the first license for a hydrokinetic project, for the Makah Bay Project, off the coast of Washington State.
- Issuing a license amendment authorizing the installation of the first instream hydrokinetic project, in the Mississippi River, in Minnesota.

The Commission's consideration of hydrokinetic projects has required the Commission to consider and resolve a number of legal and policy issues. For example, the proponents of the Makah Bay Project initially asked the Commission to declare that an offshore project was beyond the Commission's jurisdiction. The Commission concluded, however, that because section 23(b) of the FPA requires the licensing of project works located across, along, or in any of the navigable waters of the United States" and the FPA defines "navigable waters" very broadly, as "those parts of streams or other bodies of water over which Congress has jurisdiction under its authority to regulate commerce with foreign nations and among the several States," an offshore project within U.S. waters was required to be licensed.

Ultimately, the applicant, after initially filing a petition for judicial review of the Commission's order, concluded that the Commission's unified licensing regime was preferable to seeking authorizations from various agencies in separate proceedings, and filed for, and, following a public process involving extensive participation from federal and state agencies, an affected Indian tribe, and other stakeholders, was granted a license to test its technology.

The Commission has also been asked to determine whether its long-standing FPA authority to license hydroelectric projects applies to hydrokinetic projects on the OCS or whether such authority resides in the Department of Interior's Mineral Management Service (MMS). The Commission determined that it has authority over such projects but that it can exercise such authority in a way that does not conflict with the authority of the MMS over other OCS activities. The staffs of the two agencies two years ago developed language for a memorandum of understanding pursuant to which MMS would continue to exercise its general authority over activities on the OCS, and the Commission would issue licenses for OCS hydropower projects. Under this agreement, the Commission and MMS could work together, as the Commission has for decades done with the Forest Service when it issues licenses and permits within national forests; with Interior, when it issues licenses and permits on Indian reservations, on BLM lands and on Bureau of Reclamation dams; and with the Corps of Engineers, when it issues authorizations for projects at Corps facilities.

This memorandum has not been signed but the type of framework it uses would rely on a well-established, successful scheme of regulation with respect to hydropower projects located on the OCS. It also would result in all hydrokinetic projects, whether onshore, in state waters, or on the OCS, being subject to a uniform licensing and oversight regime. Moreover, it would permit exercise of the Commission's expertise in siting the primary transmission lines connecting hydrokinetic projects to the electric grid, which would not be the case if the Commission has no jurisdiction over the underlying projects. Finally, the Commission's jurisdiction over

hydrokinetic projects on the OCS would not hinder in any way the timely develop of associated wind facilities (subject to MMS regulation) on the OCS.

The process used by the Commission for reviewing proposed hydrokinetic projects provides a procedure that is collaborative, comprehensive, and well-suited to addressing new technologies; has been designed, based on pre-existing, time-tested procedures and through public comments and lessons learned from experience, to foster the orderly, timely development of hydrokinetic projects; and offers all affected federal agencies a role in determining license conditions for projects within their areas of interest. I am pleased to report that Acting Chairman Wellinghoff and Secretary of Interior Salazar have begun active discussions regarding coordination of Interior and FERC jurisdiction related to the OCS and the expeditious resolution of an MOU between the two agencies.

CONCLUSION

The Commission has for many years successfully sited energy projects on different types of federal lands, working cooperatively with the agencies that manage those lands. I believe that this can continue in the future with respect to all of the types of energy projects the Commission sites, including hydropower projects located on the OCS. It is in our national interest that all government agencies join in taking whatever steps we can to ensure that the nation has a secure energy future. We must jointly overcome obstacles, as the Commission has a long history of working with its sister agencies to do, rather than stumbling over them.

Thank you again for giving me the opportunity to appear before you today. I would be happy to answer any questions you may have.

The CHAIRMAN. Thank you very much.

Secretary Prukop, go right ahead.

STATEMENT OF JOANNA PRUKOP, SECRETARY, NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT, SANTA FE, NM

Ms. PRUKOP. Good morning Chairman Bingaman, Ranking Member Murkowski and members of the committee. I'm Joanna Prukop, Cabinet Secretary for Energy, Minerals, and Natural Resources in New Mexico.

As Chairman Bingaman said last year in a speech at MIT about the energy challenge we face, we need to overhaul the existing energy infrastructure on which we all depend. While we do not usually think of our public lands as infrastructure, these lands, both State and Federal are the foundation of the infrastructure for much of America's energy development and are essential infrastructure for the deliver or transmission of energy whether through pipelines or over wires.

New Mexico, like most States in the West has huge reserves of fossil fuel and royal class locations for renewable energy resources. We have experienced unprecedented development of these resources in the last few years. The speed and intensity of development has stressed the land managers and regulators abilities and capacities to adequately evaluate proposals and permit applications in order to protect equally important resources like drinking water.

We must first keep in mind that the development of each resource has its own complications. For example, commercial scale solar operations with their blanketing effect will eliminate livestock production on public lands, require the withdrawal of minerals for leasing, eliminate recreational use of the land and will significantly disturb wildlife habitats and wildlife populations. Currently we make decisions about these public land resources in a somewhat haphazard or disjointed manner.

Decisionmaking would work better if there was an integrated system wide process in which State and Federal agencies worked together to address natural resource and stakeholder needs. Here are two examples we can learn from.

First, consider the recent Federal effort to designate west wide energy corridors. The designated corridors followed existing power lines and pipelines from fossil energy sources. These are entirely on Federal land and completely ignored the status and use of adjoining non-Federal lands.

The corridors do not focus on developing renewable energy resources and are not useful for the new energy infrastructure as they could be. New Mexico and others suggested that the corridor designation process be delayed slightly until the Western Governors Association completed its work on identifying the best areas for renewable resource development as part of the Western Renewable Energy Zones Initiative, known as WREZ. The request was ignored and the final decision was made at the end of the last administration. If they had waited just 2 months they could have utilized the information gathered to create the Western Renewable Energy Zone maps and information from their related WGA wildlife corridors initiative report.

Second, energy development and transmission on public lands is a reactive process both at the State and Federal level. Often based on requests from private developers and on outdated resource management plans, the land managers are trying to make good decisions. But they have limited personnel and resources to wrestle with these complicated land use decisions. Developers and others are pressing them to move quickly.

Let me describe what happened in New Mexico when we did not have a significant involvement in this process. Otero Mesa is an area in Southern New Mexico that contains the last remnants of the ecologically fragile Chihuahuan Desert found in the United States. BLM issued its final environmental impact statement and resource management plan that included some environmental protections for Otero Mesa. But the State executive branch felt that the proposed protections weren't strong enough.

The matter went to court. The State did not get everything it wanted in that process. But one issue the Federal judge addressed was the need for additional environmental review before leasing takes place in this area, an outcome we fully supported as the State.

These two examples demonstrate the need for Federal and State agencies to work together to create integrated system wide processes that include all public lands. Early and frequent coordination between State and Federal land managers and other agencies and stakeholders will make public lands work better for all of us.

I close by urging you to consider the following.

First, continue funding the BLM pilot offices and add more State personnel with environmental and wildlife expertise.

Continue and expand support for landscape conservation initiatives like Restore New Mexico, a healthy lands initiative under the BLM.

Build on the data collected by the WGA, WREZ and wildlife corridors process.

Fund State and Federal jointly constructed natural resource data bases.

Support creation of integrated State and Federal decision support systems that use technologies like GIS mapping of spatial data layers to inform decisionmaking early on.

Focus new studies on information gaps in available data rather than duplicating existing analyses.

Finally support recurring funding for these proposals perhaps from energy development fees instead of using discretionary funds.

Thank you very much for allowing me to appear today.

[The prepared statement of Ms. Prukop follows:]

PREPARED STATEMENT OF JOANNA PRUKOP, SECRETARY, NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT, SANTA FE, NM

Chairman Bingaman, Ranking Member Murkowski and members of the Committee, my name is Joanna Prukop. I am the Secretary of the New Mexico Energy, Minerals and Natural Resources Department. The Department regulates oil and gas production, mine reclamation, and timber harvesting, all of which may result in energy production. We also have an energy conservation division in which we aggressively promote energy efficiency and renewable energy. And we have a Parks division, because we all have to relax sometime. I also serve on the New Mexico Renewable Energy Transmission Authority, an independent entity created by the state to promote renewable energy by developing transmission and storage facilities to assist in getting the clean energy to new markets. I am a regulator of traditional energy resources, a promoter of renewable resources and energy efficiency, and a participant in land management decision making.

My education and experience before becoming cabinet secretary concentrated on working with wildlife. I currently serve the Association of Fish and Wildlife Agencies (AFWA) as Chair of the Energy and Wildlife Policy Committee.

I have had the opportunity to represent New Mexico on several committees organized by the Western Governors' Association (WGA). I am on the Steering Committee for the Western Renewable Energy Zones Project to identify and promote areas in the west that have the best resources for renewable energy development and transmission investment. I am a member and past chair of both the Western Interstate Energy Board and Western Interstate Nuclear Compact; and a member of the Western Interconnection Regional Advisory Body.

I want to thank each of you for inviting me to talk about a most important subject, Energy Development on Public Land. As Chairman Bingaman said in a speech a year ago at the Massachusetts Institute of Technology about "The Energy Challenge We Face," we "need to overhaul the existing energy infrastructure on which we all depend." If we are going to overhaul the infrastructure then we need to work from the ground up. While we do not usually think of public lands as infrastructure, these lands, both federal and state, are the foundation of the infrastructure for much of America's energy development, both for fossil fuels and renewable energy sources, and are essential infrastructure for the delivery or transmission of energy whether through pipelines or wires.

New Mexico, like most states in the West, has huge reserves of oil and gas, coal and uranium. There are also world class locations for the development of solar and wind resources within the state. We have experienced unprecedented development of these resources in the last few years. The Bureau of Land Management (BLM) reports 14 solar applications pending in New Mexico, proposing to use nearly 55,000 acres of land. BLM wind applications total nearly 300,000 acres. Oil and gas applications for permits to drill (APDs) submitted to BLM have dropped from highs of 1,300 a year to something closer to 1,000. The New Mexico State Land Office is working on option agreements for more than 21,000 acres for utility scale solar power plants, 115,000 acres for wind power and 56,000 acres for biomass. Statewide, the New Mexico Oil Conservation Division processed more than 2,300 APDs in each of the last two years, but expects only 1,600 this year. The speed and intensity of the development plans have stressed the land managers' and regulators' human resources to adequately evaluate the proposals and permit applications in order to protect equally important resources such as drinking water. With fewer requests for APDs for oil and gas and for exploration permits for uranium, the current economic downturn may have given us just a minute to develop a better approach from the

bottom up. Let us consider where we are now in developing energy from and energy infrastructure on public lands.

First, we must keep in mind that the development of each resource has its own complications. For example, commercial-scale solar operations with their blanketing effect will eliminate livestock production on the public land, require the withdrawal of minerals for leasing, eliminate recreation use of the land and will significantly disturb wildlife habitat and populations. Wind farms may interrupt grazing, create significant surface disturbance for construction and maintenance, and potentially impact air force training activities. We are already familiar with the impacts of oil and gas development, but we need to think of the impacts on that industry as we consider carbon sequestration. At this time it is not even completely clear who owns the pore space below the surface in which carbon might be stored. Generally we think the pore space ownership belongs to the surface estate, but there are a number of exceptions. New Mexico and other states are starting to define that ownership and other related issues. Transmission corridors (power lines and pipelines) also create substantial surface disturbances from construction and maintenance and impact wildlife resources, visual landscapes and other uses.

Currently we make decisions about these public land resources in a somewhat haphazard or disjointed manner. Consider the recent federal efforts to designate Westwide Energy Corridors. For the most part the designated corridors follow existing power lines and pipelines from fossil energy sources, are entirely on federal land, and completely ignore the status and use of adjoining non-federal lands. The corridors do not focus on developing renewable energy resources and as a result they are not as useful for the new energy infrastructure as they might be. New Mexico and others suggested that the corridor designation process be delayed slightly until the Western Governors' Association made significant progress on identifying the best areas for renewable resource development as part of its Western Renewable Energy Zones (WREZ) initiative. The request was ignored and the final decision was rushed at the end of the last administration and completed just two months before the WREZ maps were produced. The process also did not use the WGA's work included in the Wildlife Corridors Initiative Report. Both WGA initiatives developed information on a landscape scale to be used in making future land use decisions. Making such complex decisions without utilizing the best available information is self-defeating and contrary to fostering actions that help meet our nation's energy independence goals.

Currently, leasing public lands for energy development and transmission is driven more by developers than by sound land use decisions. For the most part, it is a reactive process, both at the state and federal level, based on requests from private developers. Land use managers then make decisions, too often relying on out-dated resource management plans. The land managers are trying to make good decisions, but they have limited personnel and resources to wrestle with these complicated land use decisions and developers are pressing them to move quickly. It is no wonder that many decisions are successfully challenged on appeal. Decision making could work better if there were a system-wide process to bring state and federal agencies together to work with all interest groups.

In making this suggestion I am in full agreement with goals of the energy and climate change task force recently announced by Ken Salazar, the Secretary of Interior. He wants the task force to identify zones on public lands where his department can facilitate rapid and responsible large-scale solar, wind, geothermal and biomass energy production and work with other federal agencies, states and Tribes on transmission issues. Speaking for New Mexico, we are eager to work with Secretary Salazar and his task force. This important work must be built on a well-informed decision making process involving the states.

Some say the states are not fully committed to energy development on public lands. This is not the case. In New Mexico we have to be. A substantial part of our economy depends both directly and indirectly on energy production. The oil and gas industry directly employs more than 20,000 people in the state, provides nearly 90 percent of the capital funding for schools, and contributes nearly 20 percent of the state's general fund. Renewable energy projects also bring in jobs and economic growth. The small town of Mountainair that has a new 100MW wind farm under construction reports dramatic increases in gross receipts revenues, work for local contractors, full rentals and motels, crowded restaurants, grocery stores with longer hours, and other evidence of an improving local economy. However, the State of New Mexico is reducing its spending, largely due to the decrease in anticipated oil and gas revenues. As oil and gas production declines we must diversify our revenue base. We must meet the state's economic challenges with energy resource development, especially given the advent of the new Clean Energy Economy.

It appears Secretary Salazar is planning to use his task force to remove obstacles to renewable energy permitting, siting, development and production. I hope he welcomes a system-wide process that includes the states in a way and in a role that we have not seen before. Let me describe what happens when a state like New Mexico does not have significant involvement in the process. My administration took over shortly before the BLM issued its Final Environmental Impact Statement and Resource Management Plan for an area in southern New Mexico that includes Otero Mesa. The plan proposed some environmental protections for the area, but the State Executive Branch did not consider those to be sufficient protection for an area containing the last remnants of the ecologically fragile Chihuahuan Desert in the United States. The Governor objected to BLM's plan because it was not consistent with state law and policies and offered his own plan, as allowed by law. His plan was not accepted and ultimately the matter went to court. The court did not agree with everything we wanted, but one issue the judge specifically addressed is the need for additional environmental review before leasing takes place in the area, which we fully support. We see this as an opportunity to do things better in the future and hopefully, avoid other lawsuits. The New Mexico BLM agrees that the pre-leasing environmental review process allows for: 1) a fresh look and chance to reassess the eligibility of each parcel, 2) an opportunity to consider new information and impacts to other resources, and 3) an opportunity to attach meaningful requirements, such as avoidance areas or specific stipulations, to protect those resources.

For the future we need to create an integrated system-wide process that includes all public lands, and considers current and future uses of adjoining lands. Early and frequent coordination between state and federal land managers and other agencies and stakeholders will create the likelihood of positive results. For example if Secretary Salazar intends to promote renewable energy development by identifying the best resource areas and initiating environmental reviews, then the process is hastened by working with the states. As discussed above the WGA WREZ initiative is already working to identify the best zones throughout the West. What is the next step? Consider the possibility of using the BLM pilot office approach for more than speeding the review time for APDs and increasing the number of field inspections. This program in New Mexico has been highly successful on that level. The program could be expanded so that other state personnel are embedded in BLM offices to work on issues related to the reviews required under the National Environmental Policy Act (NEPA). State natural resource and environmental personnel could bring many state policy issues to the BLM's attention as BLM evaluates alternatives and selects the preferred approach. These individuals could bring the state perspective and state-developed information, such as wildlife management plans, to the federal planning process in the very first stages. It is appropriate to include state representatives who have broad trustee or police powers over natural resources. State personnel could also include State Land Office officials because in our state, and in other states, development and siting decisions are likely to include both state and federal lands. This level of coordination is virtually a requirement for transmission corridors because there will be a complete mix of land ownership in almost every project. The focus needs to be on a landscape scale and this means a substantial sharing of information and policy is needed to make the best decision. Also if the decisions are made by the state and federal agencies working together we will avoid actions similar to the Otero Mesa litigation I described earlier.

Placing state personnel within federal agency offices to work on planning and environmental issues is a step beyond the cooperating agency status now available as part of the NEPA process. It ensures the communication and constant interaction other arrangements frequently fail to achieve. The arrangement serves to underscore that public lands deserve the best decision-making process available and that an integrated, system-wide process will result in decisions using the best information available. It will ensure that planning is done at a landscape scale, if not on a statewide or regional scale.

Embedding state personnel in federal land management offices will also help address areas of continued shortfall—monitoring, evaluation and reclamation efforts. Jointly developed monitoring protocols will result in consistent data gathering as a measure of progress and the information will guide any adaptations that may be needed to achieve the management goals. For instance, if the goal is to restore habitat in a part of New Mexico, it is important to consider all public lands in the area on a landscape level and what joint efforts in reclamation work can be done to assist in improving the area. The species management plans prepared regularly by state wildlife agencies could be the starting point for such restoration efforts. The interagency, inter-disciplinary Candidate Conservation Agreements for Lesser Prairie Chickens and Sand Dune Lizards in New Mexico, the multi-state Sagebrush Conservation Initiative and the Wyoming Landscape Conservation Initiative all serve

as examples of significant collaborative efforts that could be used for all energy development.

CONCLUSION AND SUMMARY

Federal and state agencies working closely together will make public lands work better for all of us—we can make those energy infrastructure changes we all need. I close by urging you to consider the following:

- Continue to fund the BLM Pilot Offices and add more state personnel with environmental and wildlife policy experience to fully deliver the promise of interagency cooperation,
- Continue and expand support for landscape conservation initiatives like Restore New Mexico to reclaim degraded grasslands, watersheds and wildlife habitats to offset impacts from development (like wildlife habitat fragmentation) and use this model for all energy development,
- Build on the data collected for the WGA initiatives for identifying the best renewable energy zones and wildlife corridors and habitats,
- Fund state and federal jointly constructed databases with environmental information collected on natural resources, before the need for a specific data collection arises, such as revisions to a resource management plan or a specific permit application,
- Support creation of integrated state and federal decision support systems that use new technologies like GIS mapping (spatial data layers) to inform decision making early on,
- Focus any new studies or information gathering efforts on gaps that may exist in studies already completed rather than duplicating existing analysis, and
- Support continuing funding for these proposals, perhaps from energy development fees, instead of using discretionary funds.

Thank you.

The CHAIRMAN. Thank you very much for your testimony.

Dr. Arvizu, we're glad to see you again. Please go right ahead.

STATEMENT OF DAN ARVIZU, DIRECTOR, NATIONAL RENEWABLE ENERGY LABORATORY, GOLDEN, CO

Mr. ARVIZU. Thank you, Mr. Chairman. Chairman Bingaman, Ranking Member Murkowski, thank you for this opportunity to discuss renewable energy development on public lands and the Outer Continental Shelf. I'm the Director of the National Renewable Energy Laboratory in Golden, Colorado. NREL is the U.S. Department of Energy's primary laboratory for renewable energy and energy efficiency.

I'm honored to speak with you here today. I've submitted a more comprehensive report of my spoken remarks for the record.

As our Nation moves toward a clean energy future it's become increasingly clear that Federal lands are one of the keys to realizing the true potential of the vast resources of renewable energy. Wind, solar, biomass, geothermal, water, ocean energy resources are in abundance across the Nation's millions of acres of Federal lands and offshore regions. Our laboratory has produced maps which graphically show the renewable energy resource potential of public lands and a map of the overall renewable resource potential on Federal lands is part of my written testimony.

Senator Murkowski, I'll point out that I have also omitted Alaska and Hawaii. But I will provide those for the record. Note that we have a great partnership with both Alaska and Hawaii in developing renewable energy in your States.

If we take a quick look at the renewable resource potential in the 48 continental States and make an assumption about 10 percent of that being developable. I'll note that this is a very coarse average.

In fact we've done some work for Western Governors that would offer a much broader range that's potentially available.

But we can readily see that the public land is really significant.

One hundred and forty gigawatts, that's 140,000 megawatts of energy generated from photovoltaic solar; 400 gigawatts from concentrating solar power; 80 gigawatts from wind; 0.3 gigawatts from biomass and that's just residual type of waste biomass.

For geothermal we don't know the full potential. But we in fact know that there are at least 20 gigawatts of suitable, developable resource.

If you take a look at all of that what you'll find is that's about 640 gigawatts. if you further assume that for the variability that we find both in wind and in solar, that the capacity of factor for that would be roughly 35 percent. What that equals is one half of the total generating supply of electricity in the United States.

So it's a significant amount. we can go with various assumptions about how much that is. But that gives you an order of magnitude sort of volume or quality of the renewable energy resource.

As Federal lands gear up to meet the national demands for renewable energy they will be confronted with new issues from the emerging wind, solar and other renewable industries. The economic drivers of wind power, for example are fundamentally different from those of oil and gas. There's a long history of leasing and resource development on Federal lands in these more traditional resources.

The process of permitting renewable energy development in electric transmission projects on public lands should focus on two goals.

First, find sites where the most economical renewable resources can be developed.

Second, among those sites selected, those that can be developed with minimal environmental impact.

In addition to energy generation projects Federal lands have a major role in improving and moving electricity from remote sites to where national population centers are. Regional planning and consideration of the economies of scales are essential in factoring and in routing the transmission lines across Federal lands. In our opinion, one supersized transmission line poses less harm and delivers more benefit than a proliferation of a number of smaller lines.

NREL has been working with the Interior Department in the renewable energy access to public lands since 2002. We've helped with the Bureau of Land Management develop permitting policies and environmental assessments for solar and wind. We'll continue to do that as part of the American Recovery and Reinvestment Act in 2009.

A good example of multi-agency cooperation is the solar reserve pilot project which is included in S. 539. The provision calls for the Energy Department and the Department of Interior and other relative agencies to work together to cite and facilitate utility scale power on Federal lands.

For my final point I want to stress that the need for ongoing technology refinement is crucial. The wind industry, for instance, will not be able to take full advantage of the offshore opportunities without development of second generation technologies, systems

and concepts. The same need for continuing R and D is equally true of PV solar and concentrating power geothermal and biomass and fuels as well.

In all of these instances there's tremendous opportunity in the innovation cycle. I think we need to continue to support those as we deploy first generation technology. This concludes my opening remarks. I look forward to answering some questions.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Arvizu follows:]

PREPARED STATEMENT OF DAN ARVIZU, DIRECTOR, NATIONAL RENEWABLE ENERGY LABORATORY, GOLDEN, CO

Mr. Chairman, thank you for this opportunity to discuss energy development on public lands and the Outer Continental Shelf. I am the director of the National Renewable Energy Laboratory, the Department of Energy's primary laboratory for research and development of renewable energy and energy efficiency technologies.

As our nation moves toward a clean energy future, it is becoming increasingly clear that federal lands are one of the keys to realizing the true potential of our vast array of renewable energy resources. Wind, solar, biomass, geothermal, water and ocean energy resources are in abundance across the nation's millions of acres of federal lands and offshore regions. While the immense clean energy potential of public lands is clear, much work remains to fully characterize each of the resources contained therein, to identify the optimum sites and timeframes for deployment, and to put in place the best systems for making these lands available for commercial development.

RESOURCE POTENTIAL ON PUBLIC LANDS

As part of my testimony, I have provided the Committee with maps our Laboratory has assembled which graphically show the renewable energy resource potential of public lands. These maps detail the resource potential on a county-by-county basis. At this stage, the maps do not account for variable factors such as development cost, access and existing land use applications.*

If we take the overall renewable resource potential on public lands in the 48 Continental states, and we assume that 10 percent of it could be developed, the possible contribution to the nation's energy needs is significant. For photovoltaic (PV) solar, 10 percent development of resource potential is estimated at 140 GW; concentrating solar power (CSP), 400 GW; wind power, 80 GW; and, biomass, (forest and primary mill residues only), 0.3 GW. For geothermal we considered only known, suitable development sites, and found a potential for 20 GW. (See technical notes following this text for a detailed explanation of methodology).

Considering the collective potential of all of these renewable energy resources, again assuming 10 percent development of wind, solar and biomass, and 100 percent development of known geothermal, we found a potential contribution of approximately 640 GW. One caveat to keep in mind is that wind and solar are intermittent, and thus produce less energy over time than their full generation capacity would suggest.

However, given that total U.S. electrical generation capacity is 1,088 GW, you can begin to see the significance of renewable resources on public lands.

Most all federal land areas have some renewable energy potential; many areas can support multiple renewable technologies. The resource potential on federal lands is concentrated in Western states, where the bulk of federal lands are located. Concentrating solar power dominates in the southwest; wind in the upper Great Plains, and photovoltaics in the remainder of federal lands. For geothermal, the best quantifiable information is available for specific sites that have been evaluated; the total geothermal potential may be significantly larger than these existing figures suggest.

When the potential for federal lands to contribute to our nation's transportation fuel needs is considered, we found that the leftover residue material from logging and milling operations could produce enough cellulosic ethanol to displace 8% of gasoline consumption. This assessment does not include harvesting of standing trees for energy use; also excluded are the extensive resources that might be available as

*Maps have been retained in committee files.

a result of pine-beetle devastation throughout forests in western North America. Cellulosic ethanol technology is still under development.

Other national assessments of renewable energy potential likewise envision a major role for public lands. The 20% Wind Scenario developed by NREL and DOE is the most comprehensive accounting of the longer term potential for wind power in the U.S. Of the 300 GW that were projected to be needed to meet the 20 percent threshold of U.S. electricity needs in 2030, the study found that 54 GW would come from offshore wind. Another 33 GW is projected from wind farms located on public lands onshore.

As federal land agencies gear up to meet the nation's demands for renewable energy, they will be confronted with new issues from the emerging wind, solar, and other renewable industries. The sensitive economic drivers of the wind power industry, for example, are fundamentally different than those of the oil and gas industry, which has a long history of leasing and resource development on federal lands. That fact is further complicated by the varying levels of maturity for each of the respective renewable technologies, and the disparate costs of energy produced by each.

Any process for permitting renewable energy development and electric transmission projects on public lands should have at its heart the twin goals of finding sites where the most economical renewable resources can be developed, with the least harm to the environment. The quality and cost of wind, solar, geothermal, and other renewable resources varies geographically, as does the fragileness of terrain and wildlife habitat. Balancing the two requires a transparent, public dialogue between federal land managers, private land owners, environmental interests, industry, state authorities and technical experts.

Federal lands in particular are expected to have a major role in the transmission of electricity from remote wind, solar and geothermal projects to the nation's population centers. Regional planning and consideration of the economies of scale are essential factors in routing transmission lines across federal lands. One super-sized transmission line poses less harm and delivers more benefit than a proliferation of smaller lines.

Targeting a multi-billion dollar investment in a major transmission corridor requires careful planning because it needs to mesh with the grid that is already serving customers throughout the region. This comprehensive planning process needs to locate concentrations of high-quality renewable resources, identify the demand centers that will receive the power, and ensure that both can be connected in a way that maintains essential grid reliability. A broad consensus early on about where transmission lines should go will reduce the potential for delay and litigation later, when specific lines are reviewed.

BARRIERS TO DEVELOPMENT

Unduly burdensome fees and regulations in a leasing program could stifle development of the very clean energy resources that we as a nation are striving to encourage. It is essential that the unique economic and business considerations that are fundamental to the successful development of renewable resources are fully understood, and reflected in the leasing procedures and regulations for public lands.

The pending rules by the Minerals Management Service regarding leasing of offshore resources are designed to be conducive to our broader federal energy goals. The American Wind Energy Association and the Ocean Renewable Energy Coalition submitted extensive comments on the proposed MMS rules; NREL, in its role to support the growth of renewable energy industries, has reviewed and generally supports these recommendations.

Within those recommendations are some useful, broader principles for guiding future renewable energy access programs for public lands. To ensure timely development, the process should first and foremost minimize any opportunity for administrative delay and have in place workable timelines for project approvals. The process should also safeguard against misuse of the leasing system. Land management agencies should work with regional transmission planning entities, utilities and state regulators to ensure that federal leases for renewable energy development are awarded to those who are likely to build wind, solar or other renewable generation capacity, and not to those who intend to artificially increase the cost or limit the development of renewable resources by withholding their leased federal lands from development.

Finally, revenue collection mechanisms in the process should be structured in ways that protect the federal treasury, without deterring publicly beneficial renewable energy projects.

A related area of importance is the need for R&D sites in the field for testing marine energy systems. Separate and distinct from the commercial leasing program,

such sites could be utilized for testing offshore wind turbines, wave energy systems and ocean current turbines. We urge that such a program be created in the near term to facilitate expected needs for prototype testing of new ocean energy systems.

Some history is in order to explain how the renewable energy development program has evolved for public lands. In July of 2002, the Bureau of Land Management, DOE Golden Field Office and NREL signed an agreement to begin joint work on renewable energy technology expertise and project development on public lands.

A year later, NREL completed the study, "Assessing the Potential for Renewable Energy on Public Lands," for BLM, which covered solar, concentrating solar power and photovoltaics, wind and biomass (http://www.nrel.gov/docs/fy03osti/33530.pdf). BLM's initial objective was to identify the BLM lands with the highest renewable resource potential, and to begin prioritizing and planning renewable energy development in those areas. One unexpected result of that study was a dramatic surge in the number of wind industry Right-of-Way (ROW) applications to BLM Field Offices in Western states for wind farm development on public lands.

In response to the flood of wind industry applications, BLM worked with NREL and the wind industry to develop a first-of-its-kind application process. The result, in October of 2003, was the BLM Wind Development Policy Memorandum, which guides BLM Field Offices regarding wind industry applications.

To date, more than 70 wind project development applications have been approved for wind resource monitoring, and several applicants have moved forward with development plans and environmental studies for commercial scale wind farm development. Of particular note is the proposed 2000-2500 MW wind farm planned near Rawlins, WY.

In 2004, BLM began work with NREL to develop solar development policies for public lands, similar to those developed for wind power. Those policies were released in October, 2004. So far, BLM has received more than 200 applications for solar power project development, in California, Nevada, Arizona, New Mexico and Colorado. Typical projects are in the 400 MW-500 MW range.

A significant challenge for both BLM and renewable energy industry applicants is the time and cost of the compliance requirements in the National Environmental Policy Act. An Environmental Impact Statement and other compliance procedures can cost applicants more than $1 million and take 18 months or more to complete.

To support the renewable industry and its own field offices, BLM engaged NREL and Argonne National Laboratory to develop a Wind Programmatic EIS (PEIS), which analyzes the environmental impacts of wind development in 11 Western states. The Wind PEIS was completed in June 2005 and adopted by the BLM as a way to streamline the permitting process. Currently, NREL and Argonne are helping develop a joint BLM-DOE solar Programmatic EIS, scheduled for completion in late 2010. The Solar PEIS, like that for wind power, is planned to be adopted by BLM Field Offices to support solar power plant development.

To overcome the limited experience BLM field offices have had with renewable energy technology, the agency has contracted with NREL for technical support with wind and solar development inquires, and for BLM staff training on wind and solar technology and development issues.

DOE and the Interior Department recently began a joint effort to accelerate the processing of solar applications on BLM lands in the Southwest. Additionally, the DOE Solar Program has launched an effort with NREL and Sandia National Laboratories to deliver technology expertise and technical support to BLM Field Offices to handle energy land leases in light of the energy tax and investment provisions in the American Recovery and Reinvestment Act.

As for renewable energy on federal lands beyond those controlled by BLM, NREL conducted a study for USDA-USFS, "Assessing the Potential for Renewable Energy on National Forest Service Lands," January 2005. (www.nrel.gov/docs/fy05osti/36759.pdf) NREL also conducted a study for DOE's Office of Legacy Management, "Assessing the Potential for Renewable Energy Development on DOE Legacy Management Lands," February 2008. www.lm.doe.gov/documents/NREL41673.pdf

A COORDINATED APPROACH

One point that cannot be underestimated is the need for a robust, multi-dimensional, and multi-agency federal approach to renewable energy development on public lands. A good example of cooperative efforts is the Solar Reserve Pilot Project, which is included in Senate Bill 539. This provision calls upon the Energy Department, the Department of Interior and other relevant agencies to work together to site and facilitate utility scale solar power projects on federal lands.

THE ROLE OF R&D

The need for ongoing technology refinements likewise is crucial. The wind industry, for instance, will not be able to avail itself of new offshore opportunities without the development of the new technologies, systems and concepts that will be required to operate in the marine environment.

Cost also is a determining factor for renewable energy technologies. Each of the renewable energy industries places a major emphasis on continuing efforts to reduce the costs of their commercial products, so they can compete on an even playing field with conventional energy systems. Of course, reducing the cost and increasing the efficiency of these technologies is the primary focus of NREL and the DOE programs it supports.

Some of the necessary reductions in costs will come as a result of the economies of scale that are achieved as these industries mature, and grow into higher levels of manufacturing and production. Even so, much of the cost and efficiency gains that are still needed can only come from innovation, and that innovation can only come from an ongoing commitment to research and development.

Continuing R&D by federal research institutions, universities and private sector is crucial to the long term, successful build-out of renewable energy systems on public lands, as it is for clean energy deployment generally.

And while renewable energy industries have enjoyed considerable growth in recent years, there remains a lot of room for technology improvement. The increasing size of wind turbines well illustrates the point. As wind turbine manufacturers seek to capture maximum efficiencies, the size of the machines continues to grow. Where turbines under 1 MW dominated the market only a few years ago, machines in the 1.5 MW to 3 MW range are today the dominant force. With attention turning to the unique opportunities presented by offshore wind resources, there are now even proposals for 10 MW turbines.

Conceptually, these giant turbines could undercut the dramatically increased costs of placing supporting structures in the ocean, by greatly increasing the power produced by each turbine. The problem that exists today is that there is no commercial pathway to producing a 10 MW wind turbine, and many industry observers say it won't happen at all without a serious new commitment to research and development. We believe it will be possible to produce turbine blades nearly two football fields across, like those required of a 10 MW machine, but we don't know how to do it today.

Ongoing innovation for increased efficiency and lower energy costs is essential if we are to fulfill the promise of other renewable technologies as well.

For wind, solar, geothermal and other industries, it will be the second and third generations of technology that will ultimately boost deployment to the speed and scale the nation needs to meet our long term clean energy goals on federal lands, and beyond.

TECHNICAL DETAILS OF NREL CALCULATIONS FOR RENEWABLE RESOURCE POTENTIAL ON PUBLIC LANDS

1. PV potential calculated with no exclusions. Installed capacity estimated assuming 10% coverage by PV systems with a 10% conversion efficiency. Solar resource data is 2007 NSRDB/SUNY satellite modeled data for 1998-2005, fixed flat plate with tilt = latitude.

2. CSP potential calculated with exclusions in the southwestern U.S. only; eliminating areas with slope >1%; federal protected lands including parks, wilderness areas and wildlife refuges; urban, wetland and water features; resource areas <6.0 kWh/m^2/yr; and remaining areas <1km^2 in size. Installed capacity estimated assuming 50 MW/km^2. Solar resource data used is 2007 NSRDB/SUNY satellite modeled data for 1998-2005, direct normal solar radiation.

3. Wind potential calculated with standard exclusions: federal protected lands including parks, wilderness areas and wildlife refuges; urban, wetland and water features; a 3 km area surrounding all of those excluded areas except water; exclusion of 50% of the remaining U.S. Forest Service and Dept. of Defense lands; exclusion of 50% of non-ridgecrest forested areas; and exclusion of areas with slope >20%. Note 50% exclusions are applied only once to a given area, they are not cumulative. Installed capacity estimated assuming 5 MW/km^2. The wind resource data used was that produced for the 20% Wind Vision Report.

4. Biomass potential calculations used installed capacity estimates assuming 1 dry ton/hr/MW (20% efficiency industry average). Biomass data from Geographic Perspective on the Current Biomass Resource Availability in the United State (Milbrandt, 2005).

5. Geothermal potential (hydrothermal and convective EGS) calculated with no exclusions. Installed capacity estimated for each individual location, accounting for already developed capacity. Geothermal resource data used was provided by Gian Porro in Jan 2008 (Site Geothermal Data—Hydro and Conv EGS—Tech Potential.xls).

The CHAIRMAN. Thank you very much.

Mr. Bryce, go right ahead.

STATEMENT OF ROBERT BRYCE, AUTHOR AND ENERGY JOURNALIST, AUSTIN, TX

Mr. BRYCE. Yes, hi. Good afternoon. America depends on cheap, abundant energy. But over the past few years it appears to me and particularly over the past few months, it appears that Congress is intent on making energy scarce and expensive.

Before going further let me make it clear that I'm here only speaking for myself. I'm not a Democrat. I'm not a Republican. I'm a member of the disgusted party.

I'm not a scientist or an engineer, not a billionaire like Boone Pickens. I'm a journalist. But I know how to use a calculator. When formulating energy policy it seems to me that the most important skill that Congress must apply is basic mathematics.

I am, before I go further, I'm fully in favor of renewable energy. I have solar panels on the roof of my house in Austin, Texas. I'm very much in favor of solar power.

But no matter how you do the calculations renewable energy by itself cannot, will not replace hydrocarbons over the next two to three decades. That's a very conservative estimate. Furthermore, the transition away from hydrocarbons, I think will be delayed due the ongoing global slowdown spending on new cars, new more efficient cars and investments in new energy technologies has drastically been slowed by the global slowdown.

Alternative energy discussions always hinge on the matter of scale. Last month I visited a coal mine, an underground coal mine in Western Kentucky, the Cardinal Mine. They mine coal, bituminous coal 600 feet underground.

This one mine produces about 15,000 tons of bituminous coal per day. That's the raw energy equivalent of about 66,000 barrels of oil. That is nearly equal to, again in raw energy terms, to the entire output of all the solar panels and windmills in America which have a combined total output of 76,000 barrels of oil equivalent per day.

Here's another essential number, 47.4 million barrels of oil equivalent per day. That is America's total primary energy use on an average day counting nuclear power, coal, natural gas, wind, solar, hydro and everything else. Thus when you calculate the returns on wind and solar, they provide less than two-tenths of 1 percent of the entire primary energy needs in the United States.

We can double solar and wind power. We can double them again. We can double them again. I think that we should. That will help.

But the obvious point here is that Congress must take a balanced approach on developing energy policy. That means we have to continue drilling. We have to continue using hydrocarbons.

The congressional leadership, I guess from me personally since I've written a lot about the Energy Independence issue. To me personally, one of the most disappointing aspects of the energy discussion in America over the past few months has been the continuing

use and promotion of this delusional concept of energy independence that we hear from the Democratic leadership in Congress and from the White House. The same rhetoric is coming out while the White House and Congress are simultaneously promoting policies such as reduced access to Federal territory and cutting tax incentives for drillers that will, without a doubt, make the U.S. more dependent on imported energy.

I mean talk about natural gas for a moment. Thirty years ago Congress fretted that the U.S. was running out of natural gas and passed laws restricting its use, particularly for electricity generation. Today thanks to new drilling technologies and particularly completion technologies the natural gas industry has assured that the U.S. will have abundant supplies of natural gas likely for decades to come.

We now have a glut of natural gas. Gas should be seen and has not been discussed at all this morning that I can tell. Gas should be seen as a bridge fuel that is low carbon complement that can be a very logical and agreeable source of power that can combine with the intermittent nature of solar and wind.

Regarding the Outer Continental Shelf, some opponents contend there's not much oil to be found out there. That is false. Any cursory scan of the energy headlines in the energy trade magazines show that Tupi discovery off shore Brazil and the Jack discovery, just to name two.

Offshore Louisiana will likely yield tens of billions of barrels of oil. That is tremendous resource available in the offshore deep water. It should be pursued.

The U.S. now has something on the order of 250 million motor vehicles as well as millions of recreational boats and tens of thousands of aircraft. We cannot run them all on sun juice and sails. We can't run them on ethanol.

The fact is and people don't like to admit this. The fact is we need oil. The world needs oil and we have to drill for it.

Senator McCain asked about this, nuclear power. If the Congress is serious about reducing carbon and really serious, we need to be serious about pursuing nuclear power. Pursuing it right darn quick.

Rather than accept these realities though, what I see is Congress dallying and promoting and expanding programs like the corn ethanol scam which I think is an obscene, immoral boondoggle that does nothing to reduce this country's dependence on oil. The fact is the corn ethanol scam increases our food prices, worsens our air quality, perverts our Presidential selection process. Yes, I'm talking about the Iowa caucuses.

The fact is Congress must choose between rhetoric and reality. I favor cheap, abundant energy. But I fear that what the actions that are being taken in the House and the Senate and what the White House is talking about will only make energy scarce and expensive.

Thank you.

[The prepared statement of Mr. Bryce follows:]

PREPARED STATEMENT OF ROBERT BRYCE, AUTHOR AND ENERGY JOURNALIST, AUSTIN, TX

Good morning.

America depends on cheap abundant energy. But over the past few years, and particularly over the past few months, it appears that Congress is hellbent on making energy scarce and expensive.

Before going further let me be clear that I am here speaking only for myself. I am neither Democrat nor Republican, I'm a member of the Disgusted Party.

I'm not a scientist or an engineer. I'm a journalist. But I know how to use a calculator. And that skill—basic mathematics—is the skill that Congress must apply when creating energy policy.

I am fully in favor of renewable energy. But no matter how you do the calculations, renewable energy by itself, can not, will not, be able to replace hydrocarbons over the next two to three decades, and that's a conservative estimate. Furthermore, the transition away from hydrocarbons will be substantially delayed due to the ongoing global recession. It has cut the amount of capital available for new energy technologies and drastically slowed the sale of new, more efficient cars.[1]

Alternative energy discussions always hinge on scale. Last month, I visited an underground coal mine in western Kentucky called the Cardinal mine. It's the 35th-largest mine in the U.S., producing about 15,350 tons of bituminous coal per day.[2] That's the raw energy equivalent of about 66,000 barrels of oil.[3]

That's nearly equal to—in raw energy terms—the total amount of energy now being produced by all of the solar panels and wind mills in the U.S., which produce the energy equivalent of about 76,000 barrels per day.[4]

Here's another essential number: 47.4 million barrels of oil equivalent per day. That is America's total primary energy use—coal, oil, natural gas, nuclear, and everything else.[5] Thus, wind and solar now provide less than two-tenths of 1% of America's total energy needs.[6] We can double these sources. And again and again. That will help.

But the point is obvious: Congress must take a balanced approach to energy policy that includes hydrocarbons.

The Congressional leadership and the White House are promoting the delusion of "energy independence" while simultaneously promoting policies—such as reducing access to federal territory and cutting tax incentives for drillers—that will make the U.S. more dependent on imports.

The ability of American energy companies to produce enormous quantities of natural gas from coal beds and shale beds may be the single most important development in the American energy business in the past two decades.

Thirty years ago, Congress fretted that the U.S. was running out of natural gas and passed laws restricting its use.[7] Today, thanks to new drilling techniques, America is assured of abundant supplies of low-cost natural gas for the foreseeable future if Congress doesn't mess it up.[8] Gas should be seen as a bridge fuel to the future and as a logical, low-carbon complement to the intermittent energy provided by wind and solar.

Regarding the Outer Continental Shelf, opponents of drilling contend that there is not much oil to be found in this region. That is false. Two recent deepwater off-

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[1] Ed Wallace, "The Boomers Stop Buying," Business Week, February 26, 2009. Available: http://www.businessweek.com/print/lifestyle/content/feb2009/bw20090226_384582.htm. For the slowdown in capital investment, see: Anthony Fiola, "U.S. Downturn Dragging World Into Recession," Washington Post, March 9, 2009, A1. Available: http://www.washingtonpost.com/wp-dyn/content/article/2009/03/08/AR2009030801216.html?nav=hcmodule

[2] Personal communication with mine manager, Eric Anderson, February 20, 2009, at the mine offices, Madisonville, KY. In 2008, the mine produced 5.6 million tons of coal. That's 15,342 tons per day.

[3] A barrel of oil contains approximately 5.8 million Btu. E.I.A. data. Available: http://www.eia.doe.gov/kids/energyfacts/science/energy_calculator.html

[4] Obviously, this isn't an exact comparison. It doesn't account for the huge energy losses that occur when converting hydrocarbons to electricity. The pile of black rocks from the Cardinal mine doesn't equal the highly ordered electricity that comes from the solar panels. But even if you cut the actual energy output from the mine by two-thirds, to 22,000 barrels of oil equivalent, it provides a good metric.

[5] BP Statistical Review of World Energy 2008. Available: www.bp.com

[6] Actual number is 0.16%.

[7] The Powerplant and Industrial Fuel Use Act of 1978, prohibited the use of natural gas for electricity generation. EIA data. Available: http://www.eia.doe.gov/oil_gas/natural_gas/analysis_publications/ngmajorleg/repeal.html

[8] In 2008, U.S. gas production was 26 trillion cubic feet—the highest level ever recorded. E.I.A. data. Available: http://tonto.eia.doe.gov/dnav/ng/hist/n9010us2a.htm

shore discoveries—the Tupi in Brazil and the lower tertiary trend offshore Louisiana—likely contain tens of billions of barrels of oil.[9]

The U.S. now has some 250 million motor vehicles, as well as millions of recreational boats and tens of thousands of aircraft.[10] We cannot run them all on sun juice and sails. We need—the world needs—oil. And if Congress is truly serious about cutting carbon emissions, then it's equally obvious that it needs to get serious, and right quick, about nuclear power.

Rather than accept these realities, Congress dallies, and continues the expansion of the corn ethanol scam—an obscene boondoggle that does nothing to reduce our oil consumption. Instead, it increases food prices, worsens air quality, and perverts our presidential selection process, and yes, I'm talking about the Iowa Caucuses.[11]

Congress must choose between rhetoric and reality. I favor cheap, abundant energy. I fear the actions of the House and Senate—intentionally or not—will only make it scarce and expensive, and they will do so at the worst possible time for our country.

Thank you.

Note: Robert Bryce is the managing editor of Energy Tribune.[12] His latest book is Gusher of Lies: The Dangerous Delusions of "Energy Independence."

The CHAIRMAN. Thank you very much.

Mr. Cooper.

STATEMENT OF GEORGE COOPER, PRESIDENT AND CEO, THEODORE ROOSEVELT CONSERVATION PARTNERSHIP

Mr. COOPER. Mr. Chairman, thank you very much. Ranking Member Murkowski, Senator Bennett, thank you. Thanks for inviting me here today to testify on behalf of the Theodore Roosevelt Conservation Partnership regarding responsible development of renewable and non-renewable resources both on public lands and the Outer Continental Shelf.

The TRCP is a coalition of hunting, angling and conservation groups, labor unions and individual grassroots partners that works together to guarantee all Americans quality places to hunt and fish. The impact of expanding energy development on fish, wildlife, hunting and angling has become a top concern of our community in recent years. Historically American sportsmen-conservationists have demonstrated understanding of the need to extract and harvest resources from our public lands and waters. We certainly recognize that need today when it comes to energy.

We also believe that these activities can and must be conducted in a manner guided by science that sustains fish and wildlife and ensures quality outdoor opportunities for generations to come. We believe with foresight and planning resources can be developed in our public spaces while assuring future hunting, fishing and other outdoor pursuits. As we sit here today we find ourselves on the heels of an oil and gas boom in the Rocky Mountain West and on the front end of a new push to expand renewable and conventional energy development onshore and offshore.

At this particular juncture we believe it is vital for Congress and the administration to address lessons learned from the oil and gas development push we've seen in the West and proceed with new ex-

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[9] See Bryce, Gusher of Lies, 39-40, 172-175.

[10] Bureau of Transportation Statistics. Available: http://www.bts.gov/publications/national_transportation_statistics/html/table_04_09.html

[11] Robert Bryce, "Ethanol Bankruptcies Continue, 14 Studies Have Exposed the High Cost of Ethanol and Biofuels," Energy Tribune, February 4, 2009. Available: http://www.energytribune.com/articles.cfm?aid=1281. Regarding air quality and the presidential primaries, see Bryce, Gusher of Lies, 145-99.

[12] For more see: www.robertbryce.com, or www.energytribune.com.

ploration and development guided by energy legislation that includes a specific fish and wildlife sustainability title. We believe language must be adopted to insure stronger, more consistent approach in Federal management of energy development and transmission whether it's renewable, non-renewable, onshore or offshore.

We believe this approach must include a new emphasis on pre lease planning that secures the balance multiple use management we've been lacking that sustains fish and wildlife populations throughout development. We believe with a stronger new requirement for the science based out front planning, Federal and State agencies must have the ability to execute monitoring, mitigation, enforcement when leases are sold. This can only occur with adequate funding. Something we have not had to date and that should be adopted, in our opinion, in new legislation.

The TRCP's recommendations to you come from leading hunting and fishing conservation organizations represented in our working groups. Our onshore recommendations are captured in our FACTS principles. Offshore recommendations are captured in CAST principles.

Both have been submitted for the record. When looking at those two sets of principles the common core elements fall into the areas of precaution, planning and investment. I'll just hit on those briefly.

On precaution the idea here is to ensure that all information about potential impacts to fish and wildlife resources are considered prior to developing those resources and if existing information is inadequate. If there are gaps, that to ensure sustainability to fish and wildlife additional research must be done to obtain that data.

We really believe that we must discard the mindset of rushing to develop without adequate precautions. This need not be overly burdensome if up front precautions are followed consistently and adequate resources are made available to gather and synthesize fish and wildlife related data. Leasing and development can proceed in a much more predictable and reliable fashion. Let me just also say on precaution that it is essential in limited cases where certain treasured lands and waters have exceptional habitat and recreational values that these special places be protected.

On planning with adequate and consistent precautions taken before development we believe a conservation strategy for sustaining fish and wildlife should be created for a given area. A well defined plan captured and conservation strategy will specify exactly how to accomplish adaptive management in a given area. Management includes adequate monitoring and mitigation enforcement. Pre-lease planning with conservation strategy that contains specific fish and wildlife population objectives will be critical as we weigh renewables development of new onshore areas and both renewables and non renewable development of sections of the Outer Continental Shelf, such as in the Atlantic where we have significant gaps.

Finally investment, Secretary Prukop hit this effectively I think. Allocations of royalties paid to the Federal Government by industry from offshore energy development should be used to benefit fish and wildlife resources, including expanded marine resources. I'm sorry, research and fisheries management initiatives. In general

much greater investment must be made to enable appropriate Federal and State agencies to have the scientists and qualified fish and wildlife professionals to plan and implement for responsible development.

So I thank you again for the opportunity to testify. I believe we've learned some very important lessons from the surge and development of the Rocky Mountain West in recent years. I believe it's critical we apply those lessons to the major new development the Federal Government is currently contemplating.

[The prepared statement of Mr. Cooper follows:]

PREPARED STATEMENT OF GEORGE COOPER, PRESIDENT AND CEO, THEODORE ROOSEVELT CONSERVATION PARTNERSHIP

Chairman Bingaman, Ranking Member Murkowski, and members of the committee, I am George Cooper, president and CEO of the Theodore Roosevelt Conservation Partnership (TRCP). Thank you for inviting the TRCP to present testimony on how to responsibly develop renewable and nonrenewable energy resources on public lands and the outer Continental Shelf.

Established in 2002, the TRCP is a national coalition of hunting, angling and conservation groups, labor unions and individual grassroots partners working together to guarantee all Americans quality places to hunt and fish. The TRCP and its partners are working together to preserve the traditions of hunting and fishing by (1) promoting proper conservation and enhancement of fish and wildlife habitat through greater use of and adherence to science-based resource management, (2) preserving and expanding access to quality places to hunt and fish, (3) increasing funding for fish and wildlife conservation and (4) speaking with a more unified voice on conservation issues.

Our partner organizations and the sportsmen's community in general are mindful of the conservation legacy and philosophy of TRCP namesake Theodore Roosevelt, who remarked in a speech in 1910, "Conservation means development as much as it does protection. I recognize the right and duty of this generation to develop and use the natural resources of our land; but I do not recognize the right to waste them, or to rob, by wasteful use, the generations that come after us."

American sportsmen-conservationists always have been mindful of the need to extract and harvest resources from our lands and waters. At the same time, however, we demand that these activities be carried out in a manner defined by sound science and that sustains fish and wildlife and ensures outdoor opportunities for generations to come.

The TRCP and our partners recognize the need for both renewable and nonrenewable domestic energy production. Yet we believe strongly that energy development and transmission can and must be conducted responsibly to conserve the nation's fish and wildlife legacy for the benefit of all Americans. To this end, we maintain that energy legislation must include a fish and wildlife sustainability title.

Specific language must be adopted to ensure that a stronger, more consistent approach is taken to federal management of energy development and transmission, whether it is renewable or nonrenewable, offshore or onshore. This approach must be built on upfront planning to ensure balanced, multiple-use management that sustains fish and wildlife populations throughout development. Whether it is wind, oil and gas, geothermal or any other energy-related activity (including transmission across new grids), scientific data regarding fish, wildlife and their habitats must be carefully considered prior to leasing these lands to industry for the purposes of development. Science-driven planning must impel leasing decisions, and, once leases are issued and development begins, it must be followed by active conservation, monitoring, mitigation and enforcement.

The latest energy development boom in the Rocky Mountain West was managed inconsistently by the federal government. Neither current science nor the multiple-use mandate was adhered to uniformly. We must learn from these mistakes and act to avoid repeating them as we proceed with developing our nation's energy resources. A consistent and balanced approach will enable smooth and expeditious development of our valuable domestic energy resources without unnecessary sacrifice of our valuable fish and wildlife resources.

The TRCP has organized our work on energy under two working groups, the Fish, Wildlife and Energy Working Group and the Marine Fisheries Working Group, which are composed of representatives of TRCP partner organizations. The working groups have compiled recommendations concerning federal management of energy

development on public lands and waters known as the FACTS principles and the CAST principles (attached for the record). They may be summarized as three fundamental recommendations for Precaution, Planning and Investment—guiding principles that must be followed whether energy development takes place on public lands or the outer Continental Shelf.

PRECAUTION

Many unknowns exist regarding the far-reaching impacts of energy development on fish and wildlife, particularly in marine environments. For example, many anglers consider the tarpon the ultimate sport fish. Six billion dollars annually are spent from Texas to Virginia in pursuit of tarpon, yet virtually nothing is know about where tarpon spawn. Imagine the impact that an oil rig may have if its location compromises crucial breeding habitat for this magnificent species. Adequate data about tarpon and other marine species must be compiled in advance and coupled with data on other uses of a given area to create a conservation plan (covered further below) that will drive leasing decisions and development activities, including specifying where and how development should occur, seasonal restrictions and mitigation measures to offset habitat loss. Areas whose value to fish and wildlife and user groups precludes development entirely should be detailed therein, as well.

Onshore energy development must be subject to the same approach. Pertinent data regarding the effects of wind turbines must be evaluated in a manner consistent with the effects from drilling. The same approach should be used for locating transmission lines, roads, pipelines and other development-related infrastructure and activity.

State Wildlife Action Plans identify the habitat needed for fish and wildlife species in every state. Produced by state fish and wildlife agencies, this information provides guidance for measures that must be undertaken during development activities to ensure the long-term sustainability of all these important species.

In the face of many unknowns, the scientific method must be employed to facilitate balanced energy development while conserving our fish and wildlife resources. Gaps in data cannot be used to justify poorly planned development; rather, they must highlight areas requiring additional study. Before development commences, managers must have a reliable assessment of its potential impacts and prioritize protection of ecosystems and the species these ecosystems support. Once data are gathered that identify sensitive fish and wildlife areas, management actions—such as seasonal road closures, modifications to construction equipment such as directional drilling, burying of pipelines—can be followed that minimize the impacts of development on these resources.

Careful study may reveal special and unique places for fish, wildlife and recreational use that should be placed either entirely off-limits to development or where development must be extremely limited. The federal government must take an active role in identifying and setting aside these important areas so that their resources can be adequately protected. Current science and data on populations, public recreational use and other factors can be used to pinpoint such areas; places already identified through these means include the Rocky Mountain Front in Montana, the Wyoming Range and New Mexico's Otero Mesa, where valuable fish and wildlife resources and special habitats demand conscientious management.

Willingness by the federal government to consistently engage in upfront planning before allowing energy development on public lands or waters will engender greater confidence by stakeholders, thereby reducing the protests and legal actions to which interested parties now are forced to resort.

PLANNING

A specific plan or "conservation strategy" for each energy field or project on federal lands or waters can address proactively fish and wildlife management and needs—and would require more comprehensive planning than currently being completed. Conservation strategies should be completed before development starts. It must provide specific recommendations and actions to ensure fish and wildlife sustainability and minimize impacts while establishing plans for mitigation, detailed monitoring and evaluation. Federal agencies and Congress must match resources and personnel dedicated to expanding development with resources and personnel dedicated to avoiding, mitigating and monitoring, and managing the effects of such development on fish and wildlife. Project planning must include a science-based adaptive management process that monitors ongoing impacts and incorporates new information into future development decisions. Mitigation plans must employ data from impact monitoring and evaluation to adjust and improve development. On-site and offsite mitigation must be applied appropriately. Conservation strategies should

be followed consistently across all forms of energy development on federal lands and waters, to both renewable and nonrenewable projects.

INVESTMENT

A long-term, dedicated funding solution is needed to provide the Bureau of Land Management, U.S. Forest Service, National Oceanic and Atmospheric Administration, Minerals Management Service, and state fish and wildlife agencies the means to manage habitats and fish and wildlife populations affected by energy development. Increases in funding for expediting energy development have not been matched with commensurate increases in fish and wildlife investments. Long-term funding to inventory, monitor, evaluate and protect fish and wildlife populations influenced by energy development is sorely needed. Funding for fish and wildlife management must be available to manage habitats and populations proactively, not just for processing permits for expanded development. Any annual or short-term increases in federal and state funding for energy development should be matched by investments to address the consequences to fish and wildlife. Allocations of the royalties paid to the federal government by industry for offshore energy development must be used in ways that benefit fish and wildlife resources, including expanded marine research and fisheries management initiatives, via state and federal programs.

A POOR WAY TO DEVELOP ENERGY RESOURCES

The TRCP has been working on energy development issues in the Rocky Mountain West for several years and has documented major problems with the current process for developing oil and gas on BLM lands.

For example, on the Pinedale Anticline, a 200,000-acre project area in Wyoming with valuable wildlife resources, a number of serious problems have been identified by the TRCP due to poorly planned energy development. Thirty percent of the mule deer that existed prior to development has been lost with less than 3-percent disturbance. Adaptive management and mitigation have been loosely instituted and include no systematic approach for addressing impacts; losses from development are neither accounted for nor mitigated. The public has been excluded from most processes and their concerns dismissed; threats to public health and safety (ozone problems, water contamination) have been ignored. The "maximum production" and "fix it later" maxims have become primary premises for management of public lands within the upper Green River watershed. The BLM has been allowed to accelerate development activities without taking responsibility for the first eight years of development. The system has allowed unprecedented industry access to decision-making processes. The work of local land and resource managers has been marginalized in favor of state and national oversight. Industry has "bought" decisions by committing to off-site mitigation while serious on-site habitat loss occurs.

These effects of energy development on public lands are not acceptable to sportsmen-conservationists.

A BETTER WAY TO DEVELOP ENERGY RESOURCES

Unfortunately, few examples exist where recent public-lands energy resource development is balanced with fish and wildlife resource conservation. One example is the Lacassine National Wildlife Refuge, a nearly 35,000-acre area in southwest Louisiana. The U.S. Fish and Wildlife Service holds the surface rights on Lacassine, but it does not own the rights to sub-surface minerals. Oil and gas exploration has existed on the refuge since its inception in 1937. Eighty-two wells have been drilled and 15 oil and gas transmission pipelines traverse the refuge, the result of right-of-way agreements between the Service and oil and gas companies. Energy exploration, production and transmission are not allowed to interfere with the purpose of the refuge, but neither can the refuge deny the sub-surface owner the right to access and produce minerals. Jointly agreed-upon special-use permits are issued to oil and gas production operations to communicate Service expectations and environmental concerns. The Service manages oil and gas operations under the guidelines of its Oil and Gas Plan, which facilitates the coexistence of a variety of fish and wildlife populations along with hydrocarbon operations.

Lacassine is an important waterfowl area, and historic wintering populations are among the largest in the National Wildlife Refuge System. Lacassine Pool is one of the most critical wintering areas on the continent for northern pintails. This sanctuary has a wintering population of almost 400,000—between 50 percent and 80 percent of the entire southwest Louisiana midwinter waterfowl survey—and is crucial to the long-term viability of Continental pintail populations. Lacassine also sup-

ports bald eagles, peregrine falcons and Louisiana black bears. Furthermore, the refuge is enjoyed by hunters and anglers.

CONCLUSION

In conclusion, I wish to re-emphasize the importance of Precaution, Planning and Investment for responsible energy development on the nation's public lands and outer Continental Shelf—values that should be incorporated into a fish and wildlife sustainability title:

Precaution: Consider all available information about potential impacts to fish and wildlife resources prior to developing energy resources. When existing information is inadequate to ensure the conservation of fish and wildlife resources, additional research must be done to obtain the data necessary to properly conserve these resources as energy development proceeds. In cases where certain lands and waters have habitat and recreational values that are too sensitive to develop sustainably, protect them.

Planning: A conservation strategy should be employed to take a holistic approach to addressing fish and wildlife concerns at the landscape or ecosystem level before development occurs. Where energy development must occur, use the best available science to develop cautiously using an adaptive approach—inventory, monitor, evaluate and incorporate new knowledge to modify future projects to sustain natural resources.

Investment: Allocations of royalties paid to the federal government by industry from offshore energy development must be used to benefit fish and wildlife resources, including expanded marine research and fisheries management initiatives, via state and federal programs.

Thank you for your attention to the concerns of sportsmen and for your commitment to balancing energy development with other public land and water uses.

[Supplemental materials retained in committee files.]

The CHAIRMAN. Thank you very much.
Mr. Kopf.

STATEMENT OF STEVEN R. KOPF, PARTNER, PACIFIC ENERGY VENTURES, LLC, PORTLAND, OR

Mr. KOPF. Mr. Chairman and members of the committee, thank you for your interest in ocean energy on the Outer Continental Shelf. My name is Steve Kopf. I'm a partner in Pacific Energy Ventures and have spent the majority of my career fostering new technologies and business ideas as they move from R and D toward commercialization.

Our firm is focused on sustainable resource development and has been engaged in the ocean energy industry since 2004. I'm also a board member at the Oregon Wave Energy Trust which is funded by the State to promote the responsible development of ocean energy with a goal of producing 3 to 5 percent of Oregon's energy needs by 2025.

Beginning in 2006 I organized and led Ocean Power Technology's efforts to develop a commercial wave energy project in Reedsport, Oregon. The project is a great example of how FERC is helping this nascent industry navigate a complex regulatory process. Through collaboration and outreach the needs and concerns of all stakeholders were identified.

Based on this input a multi-party settlement agreement was developed which addresses how the project can be monitored and how it will be adaptively managed. Our settlement team includes State and Federal resource agencies, existing users and environmental groups.

The investment and collaboration is already paying dividends. We're building trust with the environmental and fishing commu-

nities. We're resolving how resource agencies manage early stage projects. We're getting a real project in the water. OPG project will likely be the first commercial scale wave energy project in North America.

Over the past year I've had the opportunity to participate in diverse stakeholder coalition led by the Environmental Defense Fund. The coalition consists of 34 organizations including private sector developers, utilities, local governments, universities and six environmental organizations including hydropower reform Coalition, Natural Heritage Institute, Natural Resources Defense Council, Ocean Champions and the Surf Rider Foundation. This group worked together and drafted a set of principles that were presented in December to the President Obama's transition team.

These principles include.

One, commit resources to support a robust evaluation of ocean energy and its potential environmental effects.

Two, support demonstration projects to rapidly accelerate the deployment under permitting conditions that protect ocean resources.

Three, fund an environmental data base to assist developers and regulators in potential environmental effects.

I'm going to skip the next one because it got resolved today. That's resolve the FERC/MMS jurisdiction dispute.

Five, enable cooperation between agencies to simplify, expedite and economize the regulatory process.

Six, initiate ocean planning to balance short term need for demonstration projects with a longer term need for multiple uses.

Finally, continue to encourage stakeholder participation in a way that values the public input, balanced with an imperative to move forward.

These principles clearly demonstrate a consensus to develop ocean energy. But in a way that respects the environment and proactively plans for the growth of the industry. The power of this coalition is that it unites a diverse group of stakeholders into a common vision of how we can do this right. Leveraging this position can only increase the probability of mutual success. I strongly encourage the committee to adopt these principles as the framework for whatever action it takes.

I would like to thank Secretary Salazar, Acting Chairman Wellinghoff and Commissioner Moeller for their leadership in resolving the jurisdictional dispute this morning and paving the way for ocean energy projects to move forward. The three nautical mile line is indiscriminate. Waves roll right over it. Fish swim right under it. So thank you for deciding to develop a unified approach which continues FERC's leadership in the area of wave, tidal and current energy.

The joint FERC/MMS announcement this morning preempted much of what I was going to say. But now that we've got clarity on the issue I would like to stress to the committee as well as to FERC and MMS the importance of a complete solution. Resolving the jurisdictional dispute is a great start. But there is clearly more to do.

Before MMS issues the final rule for renewables on the OCS, please consider the differences in scale. Make sure that the procedures and fees for ocean energy reflect the early stage of the indus-

try. Over burdening developers with multiple NEPA reviews and disproportionate front loaded license fees will limit near term development.

Section 8 of the Outer Continental Shelf Lands Act gives Secretary Salazar broad discretion in collecting rents and royalties. Recognize that unlike oil and gas, ocean energy is not depleting a natural resource. Payments to the Federal Government must reflect the sustainable public benefit and a long term nature of capital cost recovery of renewable energy projects.

Finally again, stress the importance of the planning. Respect the State's coastal zone management authority. Respect environmental and existing users and leverage NOAA's science and ocean planning experience.

Let's think holistically. Get it right. We will enable this industry to rapidly demonstrate that ocean energy can and will be an important component of this Nation's energy independence. Thank you very much.

[The prepared statement of Mr. Kopf follows:]

PREPARED STATEMENT OF STEVEN R. KOPF, PARTNER, PACIFIC ENERGY VENTURES, LLC, PORTLAND, OR

1Mr. Chairman and members of the Committee, thank you for this opportunity to discuss the issue of ocean renewable energy on the Outer Continental Shelf (OCS). My name is Steven Kopf and I am a partner in Pacific Energy Ventures. I have spent the majority of my career fostering new technologies and business ideas as they move from R&D towards commercialization.

Our firm is focused on renewable energy development and has been engaged in the ocean energy industry since 2004. I am also a board-member of the Oregon Wave Energy Trust, which is funded by the State of Oregon to promote the responsible development of ocean energy with a goal of producing 3 to 5% of the Oregon's energy needs by 2025.

COLLABORATION DRIVES SUCCESS

Beginning in 2006, I organized and led the team and process for Ocean Power Technology's project in Reedsport, Oregon. The Reedsport project is a great example of how FERC is helping early stage projects effectively navigate the regulatory process. The project utilized a collaborative process to identify the issues and concerns of all project stakeholders. The result of this collaboration is a settlement agreement that addresses how the project will be monitored following construction and how it will adaptively manage any unexpected environmental effects. Our 'Settlement Team' includes State and Federal resource agencies, existing users, and environmental groups. The settlement process provides FERC with the basis to conduct its NEPA analysis with the confidence that all major issues have been adequately addressed by the stakeholders before the license application is submitted.

The investment in collaboration is already paying dividends. We are building trust with the environmental and fishing communities. We are resolving how resource agencies can manage early stage projects. These efforts are paving the way to make Reedsport the first commercial scale wave energy project in North America.

I am proud of the Settlement Team's accomplishments and have two other observations based on my experience that I would like to share:

1. Need for Planning—When we started the Reedsport project the Oregon's Territorial Sea plan did not include ocean energy, resulting in uncertainty in project siting. Oregon is now in the process of amending its Territorial Sea Plan and is explicitly addressing ocean energy. I commend the Governor for his leadership on this issue and feel that changes in ocean governance and planning are critical to the responsible development of this industry. Planning of the OCS must balance both existing and future uses of the ocean.

2. Unified Siting and License Process—Early stage companies rely on significant amounts of private investment and investors are wary of complex regulatory environments. There has been a great deal of confusion of which agency has which authority, with many overlaps in review and analysis. In Oregon we focused on how best to integrate the State and Federal review of environmental

documents and developed a relatively streamlined parallel review process. Oregon and FERC have developed a Memorandum of Understanding (MOU) that clarifies roles and responsibilities. As we move forward on the OCS, I believe that it is imperative to focus on a unified regulatory process that could work within the Territorial Sea as well. A unified process will reduce cost, expedite review, eliminate redundancies and allow early stage companies to continue to attract much need investment and move forward regardless of project location.

OCEAN ENERGY CAN MAKE SIGNIFICANT CONTRIBUTION TO THE NATION'S ENERGY MIX

There are several attributes of ocean renewable energy that I would like to highlight:

- Large Resource Potential—EPRI estimates that as much as 10% of the US energy demand could be produced by ocean energy (wave, tidal and current).
- Proximity of Supply and Demand—More than 50% of the US population lives within 50 miles of the coast, reducing the need for costly transmission infrastructure.
- Predictability—Based on NOAA research, accurate wave energy forecasts can be made days in advance, enabling energy planners to better integrate ocean energy into their resource portfolios.
- Base Load—The Gulfstream is an endless current that flows northward just 5 miles from downtown Miami and can provide a consistent supply of energy.
- Energy Resource Firming—Solar radiation creates wind and the wind creates waves. Waves continue to propagate for several days after a storm, offering utilities the potential to blend with intermittent resources such as wind power.

And while these attributes provide the vision for innovation and private sector investment, there is a unique challenge. Unlike solar and wind, there is no way to experiment and test these technologies without some use of public trust resources. Inherently, all ocean energy development will occur in public common areas. As a result, the pioneers in this industry such as Ocean Power Technologies, Verdant, Pacific Gas and Electric, and Snohomish Public Utility District are expending large amounts of capital to deal with the complexities of public land law in order to demonstrate and validate their chosen technologies.

THE CRITICAL ENERGY ZONE STRADDLES THE BOUNDARY BETWEEN THE TERRITORIAL SEA & THE OCS

The early demonstration of ocean renewable energy has focused on the use of the Territorial Sea (within 3 nautical miles), based on proximity to transmission, water depth and regulatory certainty. However, the Outer Continental Shelf (3 to 12 nautical miles) will play a critical role as the technology begins to mature.

Proposed projects, such as PG&E's WaveConnect site near Eureka, California, may actually straddle the boundary between the Territorial Sea and OCS. The WaveConnect project aims to test a wide variety of wave energy systems. Currently the project is confined to the Territorial Sea. However, shallow water depths in the Territorial Sea may limit the types of technologies than can be tested. Expanding this project to include an area on the OCS may be desirable, but split jurisdictions would greatly complicate the project.

We have also learned in Oregon that Dungeness crabs love the Territorial Sea. Generally, crabs are harvested in water depths of less than 40 to 50 fathoms, the majority of which is inside the 3 nautical mile Territorial Sea boundary. Siting projects farther offshore could help minimize spatial conflicts with this important fishery.

Clearly the OCS is critical to the commercialization of this industry and I thank you for recognizing this need and holding this hearing to address the need for regulatory clarity on the OCS.

GUIDING PRINCIPLES

Over the past year I have had the opportunity to participate in a diverse stakeholder coalition led by the Environmental Defense Fund (EDF). The coalition consists of 34 organizations including private sector developers, utilities, local governments, universities, and six environmental organizations, including: EDF, Hydropower Reform Coalition, Natural Heritage Institute, Natural Resources Defense Council, Ocean Champions, and Surfrider Foundation. This group worked together and drafted a set of principles that were presented in December to President Obama's Transition Team. The principles that were agreed to by this diverse group include:

1. Commit Resources—to support a robust evaluation of ocean renewable energy and its potential environmental impacts.
2. Support Demonstration Projects—to rapidly accelerate the deployment of this promising technology under permitting conditions that protect ocean resources.
3. Fund Environmental Database—to assist developers and regulators in assessing and studying potential environmental effects.
4. Resolve the FERC/MMS Jurisdictional Dispute—to allow this nascent industry to move forward under a clear, consistent regulatory environment.
5. Enable Cooperation Between Federal and State Agencies—to simplify, expedite, and economize the regulatory process. A process which uses a single NEPA document is desirable.
6. Provide a Mechanism for Ocean Planning—in a way that leverages respective agency strengths, respects the State's CZMA authorities, and balances the short-term need for demonstration projects with the longer term need for balanced ocean use.
7. Encourage and Facilitate Stakeholder Participation—in a way that balances the need for public input on decisions affecting public lands with the imperative to move the industry forward.

These principles clearly demonstrate a consensus to develop ocean renewable energy, but in a way that respects the environment and proactively plans for the growth of the industry. The power of the coalition is that it unites a diverse group of stakeholders into a common vision of how we can do this right. Leveraging this position can only increase the probability of mutual success, and I strongly encourage the committee to adopt these principles as the framework for whatever action it takes.

RECOMMENDATIONS

I recognize that there is no easy solution on how best to plan, lease, and license the OCS for an emerging industry, but I ask the Committee to consider these additional recommendations as you move forward with new energy legislation:

1. Build on Momentum and Familiarity—Consider that the industry has already invested in learning how to do a project in the Territorial Sea that includes FERC as the lead agency. And FERC has invested in this nascent industry by recognizing our unique needs and adapting their regulations accordingly.
2. Leverage the Unique Skills of Agencies—Consider how to take advantage of the unique skills of different agencies. MMS clearly has experience in leasing of the OCS. FERC has demonstrated how to engage stakeholders and to develop collaborative solutions in the form of settlement agreements with adaptive management plans. And NOAA has much to offer in the area of environmental baseline research and ocean planning.
3. Oil & Gas and Renewable Energy Are Different—Recognize the differences between oil/gas, wind, and ocean energy. A consistent message in comments that were made to MMS on its proposed rule is that it did not adequately accommodate these differences. The rules should consider the differences in scale and make sure that the procedures and fees for ocean energy reflect the early stage development of the industry. Overburdening the developers with multiple NEPA reviews and disproportionate, front-loaded license fees will likely limit near term development of the OCS. Section 8 of the Outer Continental Shelf Lands Act (OCSLA) provides the Secretary with broad discretion on collecting rents and royalties. Recognize that unlike oil and gas on the OCS, renewable energy is not depleting a natural resource, and that payments to the Federal Government must reflect the sustainable public benefit and the long term nature of capital cost recovery, particularly in emerging renewable energy technologies.

Over the past week since I was called to testify, I solicited the opinions of a wide range of parties interested in this topic. This included trade groups such as the Ocean Renewable Energy Coalition and the National Hydro Association, members of the EDF coalition, attorneys, lobbyists, and consultants. As you might expect, there are a wide range of opinions. Some are pro-FERC. Others are pro-MMS. However, we are all united on the need to resolve this quickly and completely. Resolving the jurisdictional dispute is critical, but is just one component of the comprehensive legislative and appropriations solution we need to allow this industry to rapidly demonstrate that ocean renewable energy can be an important component of our Nation's energy independence.

Thank you and I look forward to your questions.

The CHAIRMAN. Thank you very much. Thank you all for your testimony. Let me ask a few questions. Then I'm sure the others, Senator Murkowski and the other Senators will have some questions.

Commissioner Moeller, let me just state that I welcome the news that this issue of jurisdiction offshore has been resolved between MMS and FERC. But I'm a bit skeptical. I mean it's easy to announce that there's going to be a resolution.

But from the point of view of a potential developer you say in your testimony that the Commission jurisdiction over hydrokinetic projects on the OCS would not hinder in any way the timely development of associated wind facilities subject to MMS regulation on the OCS. This release that was put out says the Department of Interior has permitting and development authority over wind power projects that use offshore resources. FERC will have the primary responsibility to manage and license such projects in offshore waters.

I'm just not exactly sure that this is going to be that streamlined a process for a developer who wants to put in one of these projects. Can you speak to that a little more definitively?

Mr. MOELLER. Yes, thank you, Chairman Bingaman. I think the first thing is that we don't have any interest in the wind. That's all in the realm of MMS.

Our interest is in the hydrokinetic side of things. So I think that's been something where we've probably needed to educate people a little bit better. But this is part of that process.

From our perspective——

The CHAIRMAN. So as to wind projects offshore, you're happy to have MMS license those, cite those, do whatever.

Mr. MOELLER. Yes, we don't have jurisdiction on that. I mean there could be cases where there's a shared facility. Say a wave technology platform is used for a wind turbine.

But in that case I think that's the promise of the MOU which again hasn't been finalized. But there's a lot of progress being made on it and that is that we can work out, by good communication between the agencies, how we can develop those resources or how the developer can develop them simultaneously.

You know we have many examples where we have to deal with other Federal agencies on Federal lands. We have decades of experience doing it. So and with the right attitude this is not an insurmountable issue.

The CHAIRMAN. I appreciate that. I don't question anyone's attitude. But I do think if you could perhaps get us whatever detail you can about how these issues are going to be resolved so that we're going to have to decide if we mark up an energy bill whether to legislate some resolution of some of this.

We thought we had done that before. It turned out that we didn't. So the question is do we go back in and specify who has authority for what or is the problem solved? So if you could get us more information that would be helpful.

Mr. MOELLER. Absolutely. I'm confident we can solve it.

The CHAIRMAN. Ok. Secretary Prukop, let me ask you in our State, in New Mexico I'm interested in this effort that we made there. As I understand it we have a system in place for the leasing

of State trust lands for wind and solar development. At the Federal level we don't do it that way at the current time.

We just essentially grant rights of way, permits to put in a solar plant. Should the Federal Government look at following the lead of New Mexico and set up a leasing system for wind and solar project development?

Ms. PRUKOP. Yes, in New Mexico—well first the Federal Government should do this, yes. Because I think we need the funding to help support the work that needs to be done to develop resources on public lands for energy production. In New Mexico under the State Land Office Commercial Leasing Process, wind turbines or solar facilities are going in with something I would call, using the term loosely, a royalty.

A few years ago when the State Land Office permitted a wind facility on State trust land they would charge by the annual lease fee based on the number of turbines of that property. Land owners in our area do the very same thing where they get from $3 thousand to $5 thousand per turbine, per year. More recently, especially with the major wind companies like Shell Wind and Edison Mission, they're moving toward a percentage of the generation.

On State trust land that starts out at about 3.5 percent. Then over a 5-year period it is intended to grow to about 8 percent of the total wind, in the case of a wind farm, wind energy production off of that property. So you can, using again, the term loosely, you can think of it as a royalty. That gives of an ongoing funding stream for, in our case, public schools.

The CHAIRMAN. Thank you very much.

Senator Murkowski.

Senator MURKOWSKI. Thank you, Mr. Chairman. I want to just follow on Chairman Bingaman's comments about this memorandum of understanding out there. I appreciate that it's not fully flushed out, if you will.

But Mr. Kopf, you spoke to finding a complete solution and that we may have in place this agreement that says jurisdiction is this way. The question that I would have, Commissioner Moeller and to you, Mr. Kopf is whether or not there is a legislative fix, legislative language that you feel we will have to advance. I think the Chairman's question is spot on.

You've indicated Commissioner, that you're confident that I think you said you're confident that we can solve it. But does that solving it include a legislative fix as well? Where are we in this?

Mr. MOELLER. Thank you, Senator Murkowski. I don't think we need a legislative fix. I think we can handle it with a memorandum of understanding.

It's pretty clear, at least I haven't heard anyone suggesting that we're not the primary jurisdictional entity for the first three miles. The question is what roles do we have after the first three miles. I think when you look at it from afar FERC is essentially has a role as a citing agency and that's its strength.

The strengths of MMS are that it is essentially a leasing agency. That's where I think we can work together in a situation where there is a proposed development on the OCS. We can define our roles where essentially they would have lead over the leasing as-

pect of it we would have the lead on the licensing aspect of it. But that we would work very closely together.

Senator MURKOWSKI. Let me ask you, Mr. Kopf. As a stakeholder, somebody that is part of the process trying to make good things happen out in Oregon, what do you view as this complete solution then?

Mr. KOPF. Thank you, Senator. Again I think it comes back to Senator Bingaman's concern is what is the MOU really going to say. Clearly if it's split as the Chairman just described then I think it is a workable solution.

Already when you're doing a project in the territorial sea the State is the leaser and FERC is the licensor. So we're already working with two agencies. As proposed this morning I could see how that could work.

But again I think the concern is the way the MMS rule is currently drafted. There were multiple NEPA reviews, burdensome fees and that would really need to be worked on to make the leaser, the citing part of this really work for the industry.

Senator MURKOWSKI. Let me ask you, Mr. Cooper. In your testimony you referenced that there are good ways, good examples and bad examples as to how we can develop our resources, our oil and gas resources on public lands. You cite the Lacassine Wildlife Refuge in Louisiana as an example of a good practice.

Apparently you've got bears and eagles. In the midst of it all you have 82 oil wells, 15 pipelines. If this surface activity can co-exist with fish and wildlife what would your group's opinion be of drilling for oil directionally from outside of that wildlife refuge?

I think you can guess where I'm hinting to, but if we can be sensitive to the environmental considerations on the land. Is this not something we would want to encourage?

Mr. COOPER. We've seen the benefits of directional drilling particularly in well, in New Mexico, Utah, Wyoming. When we look at up front planning that takes into account impacts on fish and wildlife. Best management practices including things like directional drilling become a crucial part of the answer.

I think to answer your question. We have seen tremendous strides in terms of technology and the ability to extract these resources also in conveying them with burying pipelines etcetera that we think can drive different decisions on leasing.

I think there's been a disconnect though, between first doing that assessment that determines potential impacts. Matching it up against industry knows it can do whether it's directional drilling or other methods. Then coming up with a plan up front and then once the plan is established with these factors in mind, giving the appropriate agencies both State and Federal, the ability to monitor.

So if that directional drilling is not doing what it needs to do that the steps are taken to carry out adaptive management.

Senator MURKOWSKI. Let me ask one final question directed to you, Mr. Bryce. You've mentioned that renewables as a very valuable and important part of our energy policy. We need to do more. We need to be aggressive with it.

What if anything would a massive effort increase in wind and solar energy? Let's just say a tenfold increase. What do you think that that does to reduce our foreign oil imports?

I mean this is where we want to go when we're talking about energy independence. Is a tenfold increase in wind and in solar get us there?

Mr. BRYCE. No, ma'am. I mean, as I say, I'm fully in favor or renewables. But I mean the clear issue here is electricity storage or energy storage.

Compressed air energy storage for wind and solar are—there is one active plant in the United States. But as far as displacing oil, right now the solar and wind are providing electricity with no virtually no electricity transportation in the United States. We have Amtrak is some.

But in terms of personal vehicles and heavy vehicles there is essentially none. Hybrid vehicles accepted. But that again is a hybrid.

I mean the short answer to your question is it really, the key issue now is energy storage. That is where this defeated Thomas Edison. He spent $30 million of his own money in current dollars trying to get high capacity batteries. He failed and the market yielded to gasoline and hydrocarbons in the automotive market.

So the key for the future of renewables, I think, particularly for solar and wind is some large scale energy storage and small scale so that it can be used in the transportation fleet.

Senator MURKOWSKI. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Dorgan.

Senator DORGAN. Mr. Chairman with respect to the last answer by Mr. Bryce, you know nearly 70 percent of the oil that we bring into this country is used in the field of transportation. If you project forward what we've done in the past. I agree with you that what we do with respect to renewables has little impact, not very much impact on reducing our need for foreign oil.

But if you believe as I do that we're headed toward an electric drive vehicle future. We just put $2 billion in grants for batteries in the stimulus and so on. If you believe as I do that the future is going to be different. Then I think renewable is going to have a significant impact.

With respect to the Senator from Alaska, you know a tenfold increase in wind energy. The fact is if we see the potential to exploit wind energy that I think really exists tenfold on the current base will not be as much as we can do. I mean we can do much more.

I want to ask Dr. Arvizu. You know we're doing now one megawatt and up to three megawatt towers and turbines. Some are talking about ten megawatts. How much additional research is necessary for us to accomplish ten megawatt wind turbines?

Mr. ARVIZU. Thank you, Senator Dorgan for your question. I've been biting my lip here trying to figure out how I'm going to get into this conversation. I think it's, first of all short sighted to suggest that we need a lot more innovation before we can deploy renewable energy today.

I think there's a first generation technology that we've been working on, literally, for 30 years. I think we can deploy that immediately. Get a start in an industry that I think will ultimately bear great benefits. Like you I think we need to invent the future that we're really after.

If we don't care about the urgency then really there probably isn't any need for government intervention. I think if we do have a sense of urgency, as I do, regarding things, to carbon emissions, in regarding the volatility of price, regarding all the things that relate to the displacement of oil and transportation fuels. Then I think we need to move most aggressively in fashioning a set of market conditions that allow these industries to flourish.

The ten megawatt turbine is a concept at this point. You know, I started 30 plus years ago looking at wind turbines that literally were a meter and a half across.

Senator DORGAN. Right.

Mr. ARVIZU. Now they're 107, 120 meters across. There is a lot of evolution in that innovation pathway. Over time I think we'll get to ten megawatts for offshore type of applications because they can be put many miles away from the horizon of the shoreline and essentially will have little impact on anything except our generation capacity.

So we're within probably, another 5 to 10 years of having those kinds of technologies in the marketplace. But we have 1.5 megawatts that are kind of the generic staple of the industry today that we can put thousands of megawatts online really with very little impact in terms of generation reliability concerns.

Senator DORGAN. I don't think this should be an either/or or that wind and solar should compete with oil. As you heard at the start of this hearing I believe we ought to be drilling most of the Gulf of Mexico. I mean, I'm for drilling.

But by the same token I think as a country we should try to maximize the potential of renewable energy. I understand the issue of storage. But I also would point out that there are ways to make intermittent power, to firm up intermittent power combining it with hydro and a range of interesting approaches to firm up intermittent power.

So my hope is that we will move very aggressively to maximize our potential for renewable energy. Because I think it will, if we move toward an electric drive vehicle future it will be helpful in reducing our dependence on foreign oil. I must also say that we're producing in a pilot project in North Dakota. We're producing hydrogen from wind energy and taking the energy from wind through electrolysis separating hydrogen from water and storing hydrogen for vehicle fuel. So a lot of different approaches here that are useful.

I want to just mention with respect to Mr. Cooper's answer on horizontal drilling. We are doing the most unbelievable things with respect to drilling technology. In our region of the country the Bakken shale, which is the largest assessed recoverable oil pool ever found in the lower 48, just announced by USGS recently, about a year ago.

They predicted up to 4.3 billion barrels recoverable using today's technology. That was not capable. We weren't capable of getting that 7 years ago, 10 years ago.

Now they go down two miles, 10,000 feet. Make a big curve and go out 10,000 feet. They're searching for the Bakken shale seam which is 100 foot thick.

They've divided it into top third, middle third, bottom third. They're searching 10,000 feet down for the middle 30 feet of the Bakken seam. Then they go out two miles in that seam. They're getting unbelievable wells.

The point is that sophistication of drilling has not been available until recently. All of a sudden we're accessing the largest assessed reserve of recoverable oil that we've ever had in the lower 48 because of technology. That's why I think Dr. Arvizu said it well when he said inventing the future.

The previous President kept zeroing out the $75 million for drilling research, oil and gas research. As chairman of the committee, I kept putting it in. This new President is also going to zero it out. I'm going to put it in again because we lead the world in unconventional drilling and deep well drilling.

Most of that is done by independents. We ought to continue to lead the world and make those investments in the future to invent our future.

Senator BENNETT. Will that be an earmark?

[Laughter.]

Senator BENNETT. I'll be happy to co-sponsor it, if it will.

Senator DORGAN. Listen, somebody is going to earmark all of these dollars. The question is it downtown or in the State governments. With the stimulus somebody is earmarking these things.

But I wanted to make one final comment. I regret that I wasn't able to get back. But this is a really terrific panel. I've had a chance to review much of the testimony.

I know Secretary Salazar is important. I'm really pleased that he was here. I'm pleased you had him.

But this is a terrific panel. I think what you have put together in prepared testimony is going to be very valuable to our committee. So I thank you very much for being here.

The CHAIRMAN. Senator Bennett.

Senator BENNETT. Thank you very much, Mr. Chairman. I agree with Senator Dorgan about the quality of the panel. What I'm looking for and anyone can volunteer an answer to this is the point at which we cross the line.

Let's talk primarily about wind and solar. I happen to think the greatest source of renewable energy is going to come from tidal energy, not wave but tidal barrages, similar to the ones that the French built in Laurence, which I have visited and referenced in my previous comment and nuclear. I think those are the places where you get the scale.

I think Mr. Bryce you've given us a valuable point in saying that it's nice to talk about all of these things in stovepipes and compare this amount of progress to previous progress. But to the Nation as a whole we're going to need an enormous amount of energy in the future. We've got to look at those that will give us scale.

I agree that the Promised Land is probably about 30 years away and the bridge to the promised land of renewables is built out of fossil fuels. We need to recognize that reality and respond to it.

But let's talk about wind and solar for just a moment. Both of which are intermittent and are not intermittent on a predictable fashion. Unlike tidal the wind can suddenly stop blowing and the sun can suddenly stop shining even though we think we've got

enough warning as to when that will happen, there are still times when it happens without warning. If you're on the grid you've got a problem with that.

At what point do we cross the line where we have solved enough of the problems of scale and intermittence that we can stop subsidizing it. It becomes an industry that stands on its own bottom financially earning enough money, Ms. Prukop, to pay royalties. I find it kind of ironic that the Federal Government is subsidizing so that these industries can pay the State of New Mexico royalties.

Because obviously the industry can't stand alone and pay royalties, but somehow the way it's structured. That's a very interesting kind of way of transferring Federal dollars to the State of New Mexico. We have trust lands in Utah.

We'd like to do the same thing. Because, you know, we need all the money for our schools we can get and like trust lands in New Mexico ours are all dedicated to education.

But anyone, what do you see as the time when you say, ok, the Federal subsidies for research or for demonstration projects or whatever else it is for wind and solar can go away. It's reached a critical mass where it can make money on its own. At that point obviously you will be in an area where the scale is sufficient to make a big contribution because right now it's not making, as Mr. Bryce pointed out, it's not making any significant contribution.

It's not making any money. We all believe at some point it will make a contribution. It will make some money. Where is that point?

It can either be a guess as to time or a statement of the conditions that have to be in place before we reach that time. But just help me see when this future finally ceases to be something worth looking forward to and starts to contribute to the overall scale that our country needs. Alright?

Ms. PRUKOP. Am I on?

Senator BENNETT. Yes, you're on.

Ms. PRUKOP. I can give you several answers to what is a pretty complex question.

One is you know, we can move toward a national renewable portfolio standard, RPS, that requires something like 25 percent renewable energy.

Senator BENNETT. I don't want a government or an imposed requirement. I want an industry that stands on its own bottom and therefore survives in the marketplace.

Ms. PRUKOP. Then let me tell you about one transmission planning concept in the Western States. It's known as High Plains Express and right now involves Wyoming, Colorado and New Mexico to deliver power in Arizona.

One thing that's being designed into that project is farming wind with wind. Balancing geographic distribution of our wind resources, especially because we have high quality ones on the Eastern Plains of Wyoming, Colorado and New Mexico. So you deal with that intermittency question to some degree. You still will need a firming power of some sort, natural gas or conventional existing coal.

One of the things about wind power is wind power is very competitive right now, especially depending on the volatility of the price of natural gas. Because we have a State production tax credit

in New Mexico as well. It couples with the Federal PTC. We have wind power being generated right now in New Mexico that's five cents a kilowatt hour which is very cheap power.

Senator BENNETT. Yes, but that's subsidized. My question is——

Ms. PRUKOP. No, that is correct. But what I'm getting to sir is we think that right now wind no longer needs to be subsidized. It is somehow linked to the price of natural gas though. So when natural gas prices are $6 in mcf or greater, wind is very competitive and probably doesn't need any more subsidization.

Concentrating solar power however is still not under 15 cents a kilowatt hour for whatever technology you want to talk about. Although thin film, PV is supposedly going to be under 15 cents, still needs the Federal subsidy. So as soon as we can get more of that deployed which a Federal RPS would help with, then you'll drive those prices down.

You'll become more competitive. So we probably could have wind and commercial scale solar cost competitive without Federal subsidies if we had a Federal RPS that drove that. You could probably do that in about 20 to 25 years.

Senator BENNETT. Ok.

Mr. ARVIZU. Let me offer a little bit different perspective. I think one of the things that we're struggling with here is what is the value of the energy? Essentially what do we want the market to do?

I agree with you that the only competitive alternative energy form is one that can compete without government subsidies. I think ultimately we need to get it there. The price of energy, however, fluctuates wildly.

It will continue to fluctuate wildly. So it's kind of a moving target. So where as much as I want to champion innovation because I believe innovation will ultimately get us there. We've got to get to it.

My friend Vinnie Costa calls the Chinindia price. The price that's competitive in the China and India marketplace. Because without that I don't think it matters what we do in this country.

But that said, technology will get us a certain part of the way there. But if the value is what you're after then you need to actually have a market set of conditions that allow that value to be priced appropriately in the marketplace. By that I mean there needs to be time of day pricing so when you're generating solar energy in the middle of the day when everybody in the Southwest has their air conditioners on and the value of that energy is over a dollar a kilowatt hour that you are matching that load with a resource that's clean, environmentally less impactful than other options that you have.

What you need in order to do that is a smart grid. You need a grid that will allow you to vary your load as well as vary your supply for the conditions that you mentioned that are sometimes less than predictable. So we have a long way to go before we have the market conditions that allow these technologies to flourish in the marketplace.

Now that said, if we don't do something now with government intervention of some sort, we will essentially continue on the path we've been on for the last 30 years which is really a minute

amount of renewable energy on the grid. So where there is a philosophical argument that says you need to get to that end point. I think as a matter of trying to overcome structural barriers there needs to be some intervention. It needs to be smart intervention, I will add, because there's a lot of ways to do this wrong.

But unless we do that we will never get to the outcome that we're after.

Senator BENNETT. Mr. Bryce.

Mr. BRYCE. If I could just add a couple of quick comments. The short answer is I don't know when we stop subsidizing. I don't think anyone here knows.

Senator BENNETT. We have 20 years do you think that's optimistic or too long?

Mr. ARVIZU. I think with the national effort I think certainly two decades is not unrealistic to expect that we can get there.

Senator BENNETT. Ok.

Mr. BRYCE. I see a lot of tremendous progress in the solar field. If you notice First Solar. They just announced they have the price of their new solar panels at under a dollar a watt which has been the aim of the industry for a long time.

So if the industry continues to innovate I think they could cut that price in half again. Then perhaps in half again and then solar really does become viable. But that's going to take a while.

You mention nuclear. If I could just, this is not germane necessarily directly to your point. One of the most promising, in addition to the boom in natural gas, domestic natural gas completion techniques.

One of the most promising techniques I see in the whole energy field is modular nuclear reactors. There are three American companies. Galvin Energy, New Scale Energy, I don't know where Galvin. I think Galvin is based in Arizona. New Scale Energy based in Corvallis, Oregon. Hyperion Power Generation based out of Santa Fe.

All are looking at producing modular nuclear reactors without electric output of less than 100 megawatts. Hyperion and New Scale have said they will go to the NRC this year for licensing requests for manufacture so that they would have a centralized manufacturing location where it's not stamping. It's a very complex process.

Senator BENNETT. Right.

Mr. BRYCE. But create the reactors that could be shipped then on a rail bed or on rail or by truck to the final destination. This could provide a scalable modular solution where they could gang individual reactors and have those large set of generation as it is needed. But the one stumbling block I hear and I heard this from Peter Lyons at the NRC himself, at the NRC is manpower.

They don't, the modular reactor is a whole different breed of cat from the thousand megawatt plus reactors that they have been dealing with for the last few decades. They have to create a whole new separate licensing system, a whole new application fee process. From everything I've heard the NRC simply does not have the manpower. So I think if the Senate is really serious about base load power, low carbon, no carbon electricity, you have to give the NRC the resources that it needs.

Senator BENNETT. Yes.

Mr. KOPF. Could I comment on behalf of the ocean energy industry?

The CHAIRMAN. Why don't you do that reasonably quickly. Then we will conclude the hearing.

Mr. KOPF. Yes, sir.

Senator BENNETT. I didn't realize I was going to set off this kind of a discussion.

The CHAIRMAN. Yes, yes. That's fine.

Mr. KOPF. Just five quick points.

The CHAIRMAN. Interesting information. Go ahead.

Mr. KOPF. Senator, I agree with your comments on tidal. I visited that same site in France. Alaska, Washington State and Maine have great tidal resources that under FERC's leadership are already being explored.

With respect to wave energy just a couple of quick comments. Electric Power Research Institute has shown that there's as much extractable energy possible as currently we have in conventional hydro. One thing to keep in mind is that that resource is very close to our population centers. Fifty percent of the population lives within 50 miles of the coast. So again really helps avoid the transmission issue.

Third in predictability, NOAA can predict wave energy densities out 120 hours which really gives energy planners and schedulers a great opportunity to integrate wave energy resource.

Fourth aspect, don't forget about the Gulfstream. That's the powerful current that flows really on both sides of Florida, but mainly up the East Coast. That's base load power.

If you can figure out how to tap that with a tidal like turbine, you've got base load power for Miami, really important and something that's being looked at.

Fifth, firming. There's a recent study out of Stanford that's showing that wave and wind are kind of out of phase. You got to remember solar radiation creates wind. Wind creates wave. Waves become a storage device for effectively solar and wind.

You know waves last for many days after a storm. Effectively, wave energy becomes a natural storage device for solar and wind. So, thank you. Appreciate it.

Senator BENNETT. Thank you very much.

The CHAIRMAN. Thank you all. This is very useful testimony. We appreciate you waiting and talking with us. So that will conclude our hearing.

[Whereupon, at 12:50 p.m. the hearing was adjourned.]

APPENDIXES

APPENDIX I

Responses to Additional Questions

RESPONSE OF ROBERT BRYCE TO QUESTION FROM SENATOR MURKOWSKI

Question 1. You have stated that currently, wind and solar make up about two-tenths of one percent of America's total energy consumption. Am I correct in reading that in order to meet our still growing energy needs, Congress and the Interior Department should therefore be pursuing oil, gas, and coal development with at least as much enthusiasm as we seem to be pursuing renewables?

Answer. The short answer: yes.

No matter how avidly the U.S. pursues renewable energy, the hard truth is that energy transitions are protracted affairs—and Congress and the Interior Department must recognize that reality. It has taken the U.S. more than a century to build a $14 trillion-per-year economy that's largely based on hydrocarbons—oil, natural gas, and coal.[1] Transitioning the world's largest economy away from those hydrocarbons will take decades and require trillions of dollars in new investment.

"There is one thing all energy transitions have in common: they are prolonged affairs that take decades to accomplish," wrote Vaclav Smil in November 2008. "And the greater the scale of prevailing uses and conversions the longer the substitutions will take."[2] Smil, the polymath, prolific author on energy issues, and distinguished professor of geography at the University of Manitoba, wrote that while a "world without fossil fuel combustion is highly desirable getting there will demand not only high cost but also considerable patience: coming energy transitions will unfold across decades, not years."[3]

I am in favor of renewable energy. I have 3,200 watts of solar panels on the roof of my house. But the key issue to keep in mind is that sources like solar and wind will not do anything to reduce America's use of oil. And that's where the American economy is most vulnerable. The U.S. gets nearly 40 percent of its primary energy from oil. The U.S. transportation system is almost wholly dependent on oil, therefore any supply disruption or price spike will a significant effect on the U.S. economy. Solar and wind provide electricity, not oil. Unless or until there is a major breakthrough in automotive batteries—accompanied by a major adoption of electric cars by U.S. consumers—electricity will not make a major dent in our oil needs. Therefore, Congress must recognize—and encourage—the development of oil resources on federal lands and on private lands. In particular, Congress should be pushing for increased exploration and production in offshore areas like the eastern Gulf of Mexico and the Outer Continental Shelf. Moreover, it should be pushing enhanced oil recovery projects, particularly those that use carbon dioxide flooding, to increase oil recovery from existing fields.

At the same time, Congress and the Interior Department should be encouraging the use of natural gas. The U.S. has abundant natural gas resources—much of which is on private land. During combustion, natural gas emits about half as much carbon dioxide as coal and virtually no air pollutants. Therefore, increased use of natural gas, both for power generation and transportation, should be encouraged.

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[1] CIA World Factbook. Available: https://www.cia.gov/library/publications/the-world-factbook/geos/us.html#Econ

[2] Vaclav Smil, "Moore's Curse and the Great Energy Delusion," The American, November 19, 2008. Available: http://www.american.com/archive/2008/november-december-magazine/moore2019s-curse-and-the-great-energy-delusion

[3] Ibid.

Although nuclear power is not mentioned in your question, let me be clear: If Congress is serious about reducing America's carbon dioxide emissions, then it must move decisively to encourage the expansion of the U.S. nuclear power business. As I said during the Q&A portion of the hearing on March 17, one of the most exciting developments in the U.S. energy sector is the potential for modular nuclear reactors. But from what I've been told, the Nuclear Regulatory Commission does not have the manpower and funding it needs to deal with this new class of reactors.

Ethanol is not mentioned in your question either, but I am compelled to make the same point I've made repeatedly over the past few years: the corn ethanol scam is one of the longest-running robberies of American taxpayers in this country's history. The corn ethanol scam is an obscene, immoral boondoggle that does nothing to reduce our nation's oil needs. The corn ethanol scam is not an energy program it is a farm subsidy program masquerading as an energy program. And the costs it is imposing are outrageous. I will offer just one example: The January announcement by Lexus that it is recalling 214,570 vehicles because "ethanol fuels with a low moisture content will corrode the internal surface of the fuel rails."[4] Despite this recall, despite the evidence that ethanol worsens air quality, despite the evidence that the it is raising food prices, despite the evidence that it does nothing to reduce our energy use, Congress is expanding the corn ethanol scam. If Congress is truly serious about energy policy, it will kill this special-interest boondoggle immediately and apologize to the American people for the harm it has caused.

I am attaching below two of my recent articles that spell out some of my positions on these matters.* The first is from the March 4, 2009 issue of the Wall Street Journal. The second is from the November 12, 2008 issue of Slate.

Thank you for giving me the opportunity to speak to the Senate Energy Committee and to address your question.

RESPONSES OF JOANNA PRUKOP TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. Please describe the system in place in New Mexico for the leasing of state trust lands for wind and solar development.

Answer. Trust lands in New Mexico are leased by the State Land Commissioner. The practice used with proposed developers is to allow them a two-year lease that gives them access to the land to conduct studies such as those for wind speed at various locations. It also allows time for negotiations with existing holders of grazing leases that may exist in the same area. After that, if the developer wants to go forward with the project the lands involved are put up for bid. Bids are based on a percentage of electricity generating capacity rather than on acres used. The percentage rates are set in a manner that allows them to increase over the life of the lease. For example, over the 35 year term of the lease the rate may start at three percent and increase to eight percent as the developer recoups the project's initial construction costs.

Question 2. Your statement references the Westwide Energy Corridors designated by the Department of Energy. It sounds like you have concerns that these corridors do not adequately take into account renewable energy sources. Can you please elaborate?

Answer. In our comments to the draft Environmental Impact Statement for the Westwide Energy Corridors we identified a need for additional corridors to support development of renewable energy in New Mexico and proposed specific additions to the proposed corridors to meet these goals. The final report acknowledges that the federal agencies were asked to evaluate alternatives that would support renewable energy development but decided not to evaluate them. (Final Programmatic Environmental Impact Statement, Volume 4, p. 2.) As a result the final version does not respond to New Mexico's specific request for corridor designations and did not designate any new corridors to support renewable energy development in areas identified by the State.

New Mexico is also actively involved in the Western Governors Association's Western Renewable Energy Zones (WREZ) initiative. The WREZ process is identifying key renewable energy areas throughout the West. By not building the energy corridor designation process on this valuable information the drafters diminished the likelihood that the corridors will significantly assist the development of renewable energy. Additionally, it is disappointing to see federal funds used for developing the

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[4] National Highway Traffic Safety Administration data, January 2009. Available: http://nhthqnwws111.odi.nhtsa.dot.gov/acms/docservlet/Artemis/Public/Recalls/2009/RCLMTY-012009-1234.pdf

* Articles have been retained in committee files.

WREZ information not being used to refine the corridor project. The lack of coordination is wasteful.

Department of Interior Secretary Ken Salazar announced on March 11, 2009, the creation of a new task force to identify specific zones on public lands to spur the large scale production of renewable resources. Assuming that group will build on the work done on the WREZ initiative it will dictate where transmission corridors are needed in order to encourage renewable resources. These should be much more helpful than many of the routes designated as part of the Westwide Energy Corridor effort.

Question 3a. I am interested in your suggestion that the permit processing pilot offices be expanded to include additional state personnel. How much additional funded would be necessary to do this?

Answer. In New Mexico I think adding two state employees to the pilot program effort would be extremely helpful in allowing the state environmental and wildlife policy issues to be considered as part of the evaluation of management plans, leasing decisions, leasing stipulations and other environmental work. Two experienced employees could be hired and outfitted with supplies and computers and funded for a reasonable amount of travel within the state for $225,000 per year. Assuming the cost and needs would be similar in all five of the states with the pilot program then the cost would be $1 to 1.25 million each year.

Question 3b. Should this expansion also include additional resources for the inspection and enforcement program?

Answer. In New Mexico the only state personnel working in the pilot program are employees of the Oil Conservation Division. For the most part they worked on inspection and enforcement issues. This may have been the case in other states because the national BLM website reports a significant increase in inspections by the pilot offices already in place. Total inspections reported in FY 07 were 10,982 compared with 8,800 in FY 06. The number of environmental inspections increased 78 percent, from 3,365 to 5,976 from FY 06 to FY 07. The BLM completed 100 percent of the planned inspections in FY 07. It appears this portion of the program is already a success and should move from "pilot" status to a more permanent footing. Unfortunately, in New Mexico the three-year pilot program is ending and it is not clear, yet, whether the arrangement will continue. Finally, it would be helpful to add one more component to the pilot or collaborative program and that would relate to data base creation. If both the BLM and state offices could share electronic data more easily it would help in all levels of collaboration. If the cost of developing and maintaining a data base was shared it would cost both BLM and the state agency less and both would have a better product.

Question 4. Do you think it would be helpful to find a dedicated source of funding for the Land and Water Conservation Fund?

Answer. A. Presently there are several sources of funding designated to support the Land and Water Conservation Fund (LWCF), but they are not truly dedicated to the program. Revenues from Outer Continental Shelf leasing, proceeds from the sale of surplus real property, motorboat fuel taxes and fees from recreation uses of Federal Lands are set aside, but may not reach LWCF. The funding for LWCF must be appropriated every year and can be appropriated to other programs. The National Park Service reports, "The funding of high priority Interior programs from the LWCF through the appropriations process has resulted in a decrease in funding grants for recreation grants in recent years." There were zero dollars for grants to states under LWCF in 1996 through 1999. The best option for funding would be to make the current revenue sources true set-asides for LWCF, or at least a portion of them, so they are not competing against other Department of Interior projects.

B. Another source for recurring funding could come from a small percentage of all federal energy-related leases. The leasing process could be changed for sites leased for renewable energy to be based on a percentage of production each year. New transmission lines could be charged based on their carrying capacity. And new agreements could be executed as current contracts expire from pipelines and existing transmission lines.

C. Finally, fees could be charged for all permitted activities on federal land. Currently only proceeds from fees for recreation uses go to the LWCF. By requiring this of other activities you make those using federal lands pay for more protections of federal and state land under LWCF. Those using federal lands have a direct impact on the condition, conservation needs and recreational potential of the public lands. Spreading costs to all users is equitable and helps to assure that there will always be places set aside for recreation.

RESPONSES OF JOANNA PRUKOP TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. You have stated that the 14 currently pending solar energy applications in New Mexico would represent solar energy development on as much as 55,000 acres of land. I understand that solar panels require as much as a thousand gallons of water per megawatt hour. Are you concerned about the water requirement for this development?

Answer. Currently all forms of power generation require significant amounts of water for cooling. Living in arid New Mexico I am, of course, concerned about water at all times. Fortunately there is technology for solar energy that is water efficient: 1) utility-scale photovoltaic projects use only a minimal amount of water (for cleaning the panels). 2) Solar thermal projects (both 'trough" and "tower") can be dry-cooled. If solar thermal plants are wet-cooled they will use an amount of water greater than conventionally fueled (coal) wet-cooled thermal power plants—on the order of 900 gallons/mwh versus 500 gallons/mwh. But if a solar thermal plant is dry-cooled, it uses less than 10% of the amount of water a wet-cooled plant uses. Granted, dry-cooled plants operate less efficiently and, therefore, can run 3-8% higher costs (~1cent/kwh more).

Question 2. Do you believe that there should be federal lands zoned exclusively for renewable energy, or does there need to be access to other sources like natural gas and other baseload energy nearby?

Answer. At this time we need to develop multiple sources of energy as we move from a fossil fuel dominated economy to one based on more renewable resources. Federal lands will play a significant role in all these resources and land managers need to consider what the best mix of resource development is. Clearly, certain uses such as solar are likely to prohibit other surface uses. But they may be located in area with subsurface development of geothermal or oil and gas resources. By first identifying the best areas for each resource type it will be easier to make planning decisions to facilitate the co-location of certain uses.

Additionally, in certain situations it could be advantageous for a renewable energy facility to locate near a natural gas pipeline or a traditional power plant. Sometimes non-renewable energy sources are needed for firming power delivery obligations. With such firming, power commitments may be met even on a cloudy or non-windy day.

RESPONSES OF STEVEN R. KOPF TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. As a developer of ocean energy projects, you've stated that resolving the jurisdictional dispute is critical to the industry. What are your thoughts on today's announcement under which MMS and FERC would share the responsibility for these projects out on the OCS? Will this give industry the certainty it needs?

Answer. I am optimistic that FERC and MMS can develop an MOU that clarifies and simplifies the leasing and licensing process for the Outer Continental Shelf. FERC has proven that it understands the needs of a nascent industry and is fostering a license process that is based on broad stakeholder participation and collaborative solutions. MMS has a clear role in leasing Federal lands for energy production. Currently, a developer working in the Territorial Sea (within 3 nautical miles) must work with both FERC for a license and the State for a land lease and in some cases a State hydroelectric license. In many cases the State license process parallels the FERC process and creates little additional work for the developer. The industry is hopeful that FERC and MMS will develop a leasing/licensing process that is consistent with how projects are licensed in the Territorial Sea.

Furthermore, we expect that MMS will revisit the approach to leasing the OCS. As proposed in 2008, the draft rules seemed to ignore the reality of early stage technology development. The leasing fees and bid procedures were overly burdensome. Revisions must be made to the rules to recognize that ocean energy is not depleting a public resource. As currently structured the rules will stymie development. Section 8 of the Outer Continental Shelf Lands Act provides the Secretary with broad discretion on collecting rents and royalties. Recognize that unlike oil and gas, ocean energy is not depleting a natural resource. Payments made to the Federal Government must reflect the sustainable public benefit and the long term nature of capital cost recovery.

In addition to the FERC/MMS MOU and the need for reform of the proposed MMS leasing rules, there is also a need for comprehensive marine spatial planning. Planning needs to be done in a way that:

1. Respects the State's Coastal Zone Management Authority.
2. Respects the environment and existing users, and

3. Leverages NOAAs science and ocean planning experience.

Resolving the jurisdictional dispute, developing reasonable lease rates/terms and initiating ocean planning are key elements to allowing the wave, current, and tidal energy industry to move forward. We appreciate your leadership in this area and look forward to a comprehensive solution.

Question 2. You highlight EPRI's estimate that as much as 10% of U.S. energy demand could be produced by wave, tidal, and current energy. What kind of timeline are we looking at for that estimation to become a reality?

Answer. EPRI has estimated that the wave energy and tidal resource potential that could be credibly harnessed is about 400 TWh/year, or about 10% of the 2004 US energy demand. Based on typical capacity factors, this is approximately 140,000 MW of installed capacity. In a June 2007 report, EPRI estimated that 10,000 MW of new hydrokinetic technologies could be installed by 2025, which would be equivalent to approximately 0.7% of US Energy demand. EPRI has made no estimated of the time it would take to build-out all 140,000 MW.

Since 1999, the wind power industry has experienced explosive growth, adding almost 25,000 MW of new generating capacity. Using similar growth rates, it is likely that the ocean and tidal energy could contribute 10% of the US energy demand by 2040 to 2050. However, to achieve this growth rate, it is imperative for this industry to receive the same level of Federal support that the wind and solar industries have received.

RESPONSES OF GEORGE COOPER TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. Your testimony encourages us to include in any energy legislation a title that provides a fish and wildlife sustainability title.

Do you think it would be helpful to find a dedicated source of funding for the Land and Water Conservation Fund?

Answer. Mr. Chairman, The Theodore Roosevelt Conservation Partnership (TRCP) supports funding dedicated to fish and wildlife sustainability, outdoor recreation, and conservation education in every state. The TRCP worked for passage of the Wildlife Conservation and Restoration Program (WCRP), created by Congress in 2000, which authorizes federal funding to state fish and wildlife agencies for wildlife conservation and related recreation and education. While the program is on the books, its funding relies on annual appropriations that have not lived up to the expectations envisioned when it was created. Thus, state fish and wildlife agencies struggle to take the necessary planning and management actions necessary to sustain fish and wildlife species that are under their authority.

The Land and Water Conservation Fund (LWCF) has a long-standing record of creating parks and open spaces, protecting wilderness, wetlands, and refuges, and enhancing recreation areas across the country. It's one of the most important and successful conservation tools ever designed.

If the Committee is contemplating a dedicated funding source for natural resource conservation—including LWCF—the TRCP urges the inclusion of a fish and wildlife sustainability provision that maintains diverse and abundant fish and wildlife and prevents additional species from becoming endangered. A good template for such a title is offered by the Teaming with Wildlife Act of 2009, recently introduced by Sens. Tim Johnson (D-SD) and Debbie Stabenow (D-MI). That bill would provide a dedicated funding source for the Wildlife Conservation and Restoration Program through allocation of monies received from energy development onshore and offshore on federally managed land and water. The funding would allow states to fully implement their comprehensive wildlife strategies that provide action plans for conserving the full array of wildlife and their habitats. The TRCP believes that increased renewable and non-renewable energy development on America's public lands and waters necessitates the inclusion of such a fish and wildlife sustainability title in energy legislation emerging from this Committee.

Question 2. With respect to offshore energy development, you advocate a network of conservation areas. Would these areas be in addition to existing marine sanctuaries? How would they be designated?

Answer. Mr. Chairman, There is quite a bit of controversy in the conservation community about marine sanctuaries or Marine Protected Areas that are off-limits to both recreational and commercial fishing. TRCP wishes to focus on the principle that there are certain areas that are so special or unique that, if impacted by energy development, cannot be mitigated or replaced. These areas have such importance for marine life that any impact would cause significant and exponential impacts to the current and future populations of fish, mammals, and other sea animals. Impacts to these areas would also create a significant impact on the sustainability of com-

mercial and recreational use of fisheries. These areas are of vital importance for reproduction, migration, brood-rearing, or other survival and propagation such that the risk from development would hinder species fitness or abundance. Many of these areas are unknown, but with adequate inventory and research, we can devise a process for identifying them and subsequently managing them as offshore energy development proceeds.

The approach is much like the process we propose for onshore development and would include a thorough examination of the known information of marine life for the given area, an understanding of the needed and vital habitats or migration routes for species of concern, an understanding of the potential impacts from development, coordination with NOAA Fisheries, MMS, the states, research groups, industry, and other stakeholders. After the data and information are compiled and examined, maps could be developed that would identify areas that need various levels of protection to sustain marine life as energy development proceeds. This mapping would create a matrix of areas which then could be overlaid with proposed lease maps and energy potential. This matrix approach would allow for the identification of certain areas that should be off-limits, areas with restricted development, and areas with development as proposed.

Once the mapping is complete, a "sustainable wildlife (and fish) plan" can be developed as plans are prepared to lease and develop energy resources. The designation, regulation and management requirements will only be as effective as how the authorized agencies implement the plans as they attempt to extract energy and sustain fish and wildlife. Formal designation of areas off-limits to development would be necessary if the problems with sustaining marine life could not be achieved through informal designation or management. Because of the dynamic nature of managing marine life and innovations in technology, these areas should be reviewed periodically and changed if the goals and objectives for sustaining marine life are achieved through better sustainable development methods.

TRCP through its Marine Working Group has proposed the CAST (Conservation, Allocation, Science, and Transparency) principles as recommendations to assist in balancing responsible offshore energy development while sustaining marine life.

RESPONSE OF GEORGE COOPER TO QUESTION FROM SENATOR MURKOWSKI

Question 1. Mr. Cooper, in considering ways for the states and particularly coastal communities near offshore energy development to adjust for the risk and impacts to fish and wildlife, do you think that states should share in part of the revenues associated with energy production from the OCS?

Answer. Senator Murkowski, The Theodore Roosevelt Conservation Partnership (TRCP) supports all state fish and wildlife agencies sharing in part of the revenues derived from energy production in the Outer Continental Shelf. Funding for fish and wildlife sustainability must be a key element of any energy legislation that would increase renewable and non-renewable energy development on America's public lands and waters. Allocations of royalties paid to the federal government by industry from offshore energy development must be used to benefit fish and wildlife resources, including expanded marine research and fisheries management initiatives, via state and federal programs. A good template for such a title is offered by the Teaming with Wildlife Act of 2009, recently introduced by Sens. Tim Johnson (D-SD) and Debbie Stabenow (D-MI). That bill would provide a dedicated funding source for the Wildlife Conservation and Restoration Program through allocation of monies received from energy development onshore and offshore on federally managed land and water. The funding would allow states to fully implement existing comprehensive wildlife strategies that provide action plans for conserving the full array of wildlife and their habitats.

RESPONSES OF PHILIP D. MOELLER TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. Section 388 of EPAct 2005 was based on legislation transmitted by the Bush Administration that provided that MMS was to be the agency to authorize alternative energy projects on the OCS through the issuance of leases, permits, or rights-of-way. Was FERC part of the interagency process that led to this Bush Administration legislative initiative?

Answer. While the legislative efforts in developing the Energy Policy Act of 2005 pre-dated my tenure at the Commission, I understand that Commission staff attended an interagency meeting on the administration's proposal to discuss the proposed legislation as it related to liquefied natural gas facilities. Commission staff was not a party to any discussions that led to Section 388, nor was it asked about the Commission's jurisdiction on the OCS.

Question 2. Your statement observes on page 2 that, "a single federal agency having the responsibility and authority to make siting decisions with regard to projects that affect the national interest is clearly the most efficient way to site major energy projects." Is it a problem in your view that two agencies, FERC and MMS, will be involved in siting these projects under the newly-announced MOU?

What role do you see for each agency in the siting and approval of ocean energy projects on the OCS?

Answer. We do not foresee problems with this approach. The Commission carries out its authorities under the Federal Power Act (FPA) while taking into full account the current reality of "shared decision making" among federal and state agencies.

The Commission has worked closely with these agencies for almost a century to promote the comprehensive development of the nation's hydropower resources, and has developed processes that provide for public notice and extensive public participation, including participation by affected federal agencies, Indian tribes, and states. These processes ensure the early identification of issues and any study needs, development of a thorough environmental analysis, and decisions based on a complete record and consideration of the public interest. The Commission's close working relationship with these entities is reflected not only in the Commission's licensing regulations, but also memoranda of understanding with those agencies and hundreds of licensing decisions.

On March 17, 2009, the Secretary of the Interior and the Commission's Chairman issued a Joint Statement on the Development of Renewable Energy Resources on the OCS. As explained in the Joint Statement, the Commission will have the primary responsibility to manage the licensing of hydrokinetic projects in offshore waters pursuant to the Federal Power Act, with the active involvement of relevant federal and land resource agencies, including the Department of the Interior. Interior and Commission staffs are working together to prepare an MOU that describes the process by which MMS leases, easements, rights-of-way, and Commission licenses for hydrokinetic projects in offshore waters will be developed. The MOU will clarify jurisdictional understandings of the two agencies regarding renewable energy projects in the OCS and develop a cohesive, streamlined process that will help accelerate the development of wind, solar, and hydrokinetic energy projects. The MOU is nearing completion and I expect that it will be signed in the near future.

Question 3. Concerns have been raised in the past regarding the imposition of so-called 4(e) conditions proposed by resource agencies at the Departments of the Interior and Commerce and the Forest Service. Issues have been raised regarding whether our natural resources are being adequately protected and the complexity of the process. I recently asked GAO to review how this process is working.

Do you expect that resource agencies will impose 4(e) conditions on FERC licenses granted on the OCS? How can we be assured that using this process on the OCS will adequately protect the natural resources of the OCS?

Answer. Whether or not resource agencies impose 4(e) conditions on FERC licenses, the Commission is well-versed in reviewing and authorizing critical energy infrastructure projects, and in establishing a regulatory regime that encourages the development of appropriate energy projects, while at the same time protecting the interests of consumers and safeguarding the environment. Commission staff is committed to working cooperatively with the MMS and other resource agencies to ensure that their planning responsibilities and concerns regarding protection of OCS resources will be fully considered in the licensing process, and to avoid unnecessary regulatory duplication for the offshore energy hydropower industry. The MMS has a critical role to play in all hydrokinetic developments proposed on the OCS.

The Commission's existing licensing processes provide many opportunities for land management agencies to be involved. These time-tested and comprehensive processes provide for the seamless integration of valuable input and coordination from the MMS and other resource agencies with regard to managing the OCS. The Commission's regulations detailing the licensing processes allow for pre-application consultation with MMS and other parties to facilitate early identification and resolution of potential issues or concerns, provide several commenting periods for the MMS to give input at every stage of the decision making process, specify that the MMS can participate in study plan development with the Commission and other parties, detail specific procedures for resolution of study request disputes, and describe how the MMS can be involved with the environmental review process.

Question 4. What role do you think the Interior Department should play in the siting of transmission facilities across lands administered by that Department?

Answer. Similar to the siting of interstate natural gas facilities across such lands, it is expected that the Interior Department would continue to oversee and execute its statutory obligations in the siting of electric transmission facilities across Interior-administered lands. As you know, several bills now before the Senate Energy

and Natural Resources Committee would assign new authority to the Commission with regard to siting of electric transmission facilities that meet specified criteria. If Congress decides to take that step, then it will likely be most efficient for the Commission to act as the "lead agency" for purposes of coordinating all applicable federal authorizations and complying with National Environmental Policy Act of 1969. Drawing on decades of natural gas and hydropower proceedings, the Commission has extensive experience in that role, which includes establishing schedules for all federal authorizations and maintaining a consolidated record of all such decisions made or actions taken. Importantly, such lead agency authority does not usurp or replace other agencies' authorities or abilities to oversee their statutory responsibilities, but adds discipline by means of a schedule and expedites the siting of needed energy infrastructure.

RESPONSES OF PHILIP D. MOELLER TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. I'm very pleased that FERC and MMS were able to come together on a solution to give certainty to this nascent industry rather than asking Congress to intervene legislatively. Under this new agreement, how do you see FERC and MMS working together to move this industry forward and realize the potential of hydrokinetic energy?

Answer. On March 17, 2009, the Secretary of the Interior and the Commission's Chairman issued a Joint Statement on the Development of Renewable Energy Resources on the OCS. As explained in the Joint Statement, the Commission will have the primary responsibility to manage the licensing of hydrokinetic projects in offshore waters pursuant to the Federal Power Act, with the active involvement of relevant federal and land resource agencies, including the Department of the Interior. Interior and Commission staffs are working together to prepare an MOU that describes the process by which MMS leases, easements, rights-of-way, and Commission licenses for hydrokinetic projects in offshore waters will be developed. The MOU will clarify jurisdictional understandings of the two agencies regarding renewable energy projects in the OCS and develop a cohesive, streamlined process that will help accelerate the development of wind, solar, and hydrokinetic energy projects. The MOU is nearing completion and I expect that it will be signed in the near future.

The Commission staff is committed to working cooperatively with the MMS as well as other resource agencies to ensure that its planning responsibilities and concerns regarding protection of OCS resources will be fully considered in the licensing or exemption process, and to avoid unnecessary regulatory duplication for the offshore energy hydropower industry. As the agency with specific authority to issue leases, easements, and rights-of-way for energy projects on the OCS, the MMS has a critical role to play in all developments proposed on the OCS. The role of the MMS in the licensing process would be similar to that of the U.S. Forest Service for national forests and the Bureau of Land Management for federal lands it administers, and of the U.S. Bureau of Reclamation and the U.S. Corps of Engineers for waterpower projects at their federal facilities.

The Commission and its predecessors have worked closely with these agencies for almost a century to promote the comprehensive development of the nation's hydropower resources, and the close working relationship is reflected not only in the Commission's licensing regulations, but also memoranda of understanding with those agencies and hundreds of licensing decisions.

Question 2. Can you comment on Secretary Salazar's recent "Secretarial Order" calling for DOI to not only establish renewable energy zones on public lands, but also to handle the permitting and environmental review? Should FERC be given the coordinator role instead? Should we expedite environmental or judicial reviews?

Answer. Secretary Salazar's Order establishes as a priority "the permitting and appropriate environmental review of transmission rights-of-way applications" necessary to deliver renewable energy generation to consumers. I believe that taking full advantage of our capacity to develop clean, renewable power is essential to meeting our nation's energy goals, and I applaud Secretary Salazar's work on this important issue.

At present, the Commission's authority with regard to siting of electric transmission facilities is limited to National Interest Electric Transmission Corridors (NIETC) designated by the Department of Energy. In addition to responsibilities that Congress assigned directly to the Commission in Section 1221 of the Energy Policy Act of 2005, the Secretary of Energy has delegated to the Commission authority to serve as lead agency to coordinate all applicable federal authorizations and related environmental reviews associated with NIETC siting applications, and to prepare a single environmental review document.

As you know, several bills now before the Senate Energy and Natural Resources Committee would assign new authority to the Commission with regard to siting of electric transmission facilities that meet specified criteria. If Congress decides to take that step, then it will likely be most efficient for the Commission to act as the "lead agency" for purposes of coordinating all applicable federal authorizations and related environmental reviews. Drawing on decades of natural gas and hydropower proceedings, the Commission has extensive experience in that role, which includes establishing schedules for all federal authorizations and maintaining a consolidated record of all such decisions made or actions taken. Importantly, such lead agency authority does not usurp or replace other agencies' authorities or abilities to oversee their statutory responsibilities, but adds discipline by means of a schedule and expedites the siting of needed energy infrastructure.

You also raise the important issue of judicial review. Judicial review can be expedited by providing for all actions to be subject to review in a single United States court of appeals (either in the circuit where the proposed facility is to be sited or in the District of Columbia Circuit). The review would be based on the single record developed by all affected agencies and administered by the lead agency.

Question 3. FERC has moved forward with hydrokinetic projects in state waters and currently has permits pending before it that represent about 10,000 megawatts of energy. Now that you've reached agreement with MMS on how to proceed on the Outer Continental Shelf, do you expect to see more activity out in the OCS or will the action still be in state waters in the near term?

Answer. The recent Joint Statement on the Development of Renewable Energy Resources on the OCS is an important step toward providing needed certainty for prospective developers of OCS hydrokinetic resources. However, other considerations—including further analysis by prospective developers of costs associated with transmitting power from more remote sites on the OCS—will also affect the extent to which hydrokinetic development increases on the OCS. We expect to see continued interest in hydrokinetic projects to be located in state waters, due in part to the abundance of potential sites and the generally shorter transmission lines needed to bring this power to market, as compared to more remote sites on the OCS.

RESPONSES OF DAN ARVIZU TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. You noted in your testimony that the process must minimize any opportunity for administrative delay; have workable timelines for project approval in place; and safeguard against misuse of the leasing system. Please tell us more about the problems you've identified.

Answer. There is a concern that reported problems with federal oil and gas leasing could be replicated in leases for wind, solar, geothermal, and other types of renewable energy development. For example, if a lease holder never moved forward with the project after being awarded a lease, the program's objectives cannot be fulfilled. This not only runs contrary to the government's intent to promote renewable energy on federal land, but it also prevents others from stepping in to do the job.

In addition, if early auctions avoid tracts with known environmental sensitivities, withholding leases obtained in these auctions could create more pressure to lease and develop areas that are more environmentally sensitive.

Equally crucial, agency rules should be issued in a timely manner, and inter-agency conflicts should be resolved in ways that prevent new delays caused by jurisdiction uncertainty or dispute.

Question 2. You noted in your testimony that a significant challenge for the federal agencies, as well as for renewable energy developers, is the time and cost of compliance with the National Environmental Policy Act. An EIS can cost more than $1 million and take 18 months to complete—if everything goes according to schedule. How can we address the problems with NEPA compliance? Should Congress legislate an expedited environmental review and/or a consolidated judicial review process?

Answer. One response would be to address ways to reduce time and cost of compliance within existing law. An approach taken by the Western Governors Association—in its work to anticipate renewable energy development within participating states—is to identify environmentally sensitive areas in advance, so that development can focus on areas less likely to pose concern. The NEPA process remains the same, but has a higher probability of going smoothly. The Bureau of Land Management's programmatic EIS model has a similar goal. This does not involve changing NEPA, but it does require input from agencies such as the U.S. Fish and Wildlife Service that have requisite expertise. The aim is to improve information, reduce risk, and preserve due process within existing law.

Question 3. You testified that any process for permitting renewable energy development and transmission projects should have the twin goals of finding sites where the most economical renewable resources can be developed, with the least harm to the environment. In your opinion, which agency should be the lead for such an effort? Should we task DOI or FERC with coordinating environmental reviews and overseeing the permitting process? How is transmission development best addressed at the federal level?

Answer. Regardless of who leads transmission siting and permitting efforts, the entire process will be smoother, quicker, and better-informed if the Department of Interior takes the lead in mapping those locations that are too environmentally sensitive for development, and, alternatively, areas where development would pose the least risk. Companies developing large-scale wind, solar and geothermal plants would prefer not to go into an environmentally sensitive area with a prospective project. The problem often has been that they don't know the potential problems with a site until they're too financially invested in the project to turn back. DOI leadership on that piece of the puzzle would result in better coordination between FERC, DOE and other federal agencies, as well as between the federal government and state or regional transmission planning authorities.

Question 4a. Dr. Arvizu, you point to a potential contribution of approximately 640 gigawatts from America's renewable resources. You correctly remind us to keep in mind is that wind and solar are intermittent, and thus produce less energy over time than this 640 gigawatt figure would suggest.

Do you have an estimate about how much less than the 640 gigawatts America's renewable sources might produce, in a best case scenario?

Answer. If wind power were located at sites with the best wind regimes, the average capacity factor would be around 45 percent. In other words, actual production from available sources over the course of a year would equal 45 percent of what would be produced if the equipment ran at full capacity, 24 hours a day, 7 days a week, 52 weeks a year. To put this in perspective, the overall capacity factor for all coal plants in the US last year was 72 percent and 25 percent for units using natural gas. Nuclear plants had an average capacity factor of 92 percent.

If we take the Energy Information Agency's U.S. generation data for all of 2008 as a benchmark, total electricity production in all 50 states plus the District of Columbia was 4,115 terawatt-hours. Of the 640 GW mentioned in my testimony, we estimated wind to contribute 80 GW. On moderately good sites, that 80 GW of equipment would have a capacity factor of about 35 percent, and, therefore, would produce about 6 percent of the electricity generated in all of 2008. On the best sites, the capacity factor would go up to 45 percent, or higher, and would be equivalent to 8 percent of U.S. production in 2008.

Concentrating solar power currently has a capacity factor of around 30 percent at a moderately good site, and above 40 percent in areas with the most annual sunshine. Current technologies can store thermal energy for about six hours after the sun goes down, so there is necessarily some drop off in production at night. With these capacity factors, the 400 GW of concentrating solar power in our estimate could equal between 26 percent and 34 percent of overall generation capacity for last year.

Photovoltaic technologies generally have a lower capacity factor: 22 percent to 25 percent for moderately good to high-quality locations. At that range, the 140 GW of photovoltaics we estimated would amount to 7 percent of what the U.S. generated in 2008.

We also included 20 GW of geothermal potential in our estimate. That technology functions very well for baseload power, as it has a very high capacity factor. At a 90 percent capacity factor, that much geothermal would contribute the equivalent of 4 percent of 2008 total production.

In the best scenario, with renewable technologies located in areas that could achieve the highest respective capacity factors, the 640 GW included in my estimate could theoretically have provided more than half of the electricity produced nationwide in 2008.

Question 4b. In a situation where something less than 640 gigawatts total came from renewable sources in America, would it be fair to say that about half of America's electricity demand will still come from traditional sources?

Answer. A large portion would come from traditional sources, but we may see these resources managed in non-traditional ways. We've only begun to think about how smart grid technologies will change the way traditional and non-traditional generation resources are managed, and once entrepreneurial innovations take hold, there's no telling what advances may be beyond the horizon. We may also see conventional natural gas resources co-scheduled and co-managed with renewables as wind and solar forecasting techniques improve, thereby reducing the need to rely

on coal as a baseload resource. So, even though by our estimates, 640 GW would equate to about half of the electricity produced in 2008, it's far from certain that the remaining half would remain in a "business as usual" mode.

Question 4c. Do you consider natural gas to be the correct baseload power generation as a complement to wind and solar power?

Answer. With increasing variable (intermittent) generation such as wind and solar, the need increases for flexibility in the other parts of the power generation system to handle the variability and uncertainty. Combustion turbine and combined cycle units that burn natural gas and liquid fuels can provide a substantial part of this needed flexibility. Hydropower plants, internal combustion plants, and certain other technologies can also provide this flexibility. In this role, the plants providing this flexibility are not operating in a baseload function (baseload resources typically run at the same output level day and night for extended periods of time).

Our ability to operate wind and natural gas units conjunctively on the grid is improving every day. The key factors are day-ahead and hour-ahead wind forecasting—two areas where NREL is leading significant research. Greater day-ahead accuracy ensures that the correct and most efficient units are committed for the next day's operation, while greater hour-ahead accuracy allows grid operators to effectively reserve sufficient quick-responding units, so the net output of the dispatched and the variable resources matches the load. With accurate forecasting, conjunctive operation of wind and natural gas units can reduce the need for baseload coal generation

Today's solar power technologies, on the other hand, are not baseload resources but are typically identified as intermediate resources—beginning operation in the morning as demand rises, and decrease in the evening as demand drops off. As such, utility-scale concentrating solar power tends to replace the conventional intermediate resources, which are typically natural gas or small coal units.

Geothermal and biomass technologies are likely to provide an increased share of baseload power, as both of these technologies can run at a constant level, 24 hours a day. In addition, large-scale energy storage could provide options for managing variable renewable resources with reduced reliance on natural gas. Sophisticated application of smart-grid technologies could also enable customers to provide equivalent demand response capability in exchange for lower rates or other incentives.

RESPONSES OF HON. KEN SALAZAR TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. I understand that the oil and gas permit processing pilot offices have been successful in improving coordination among federal agencies and states for permitting. Do you believe that the mandatory funding for these offices should be extended?

Answer. We believe the oil and gas permit processing pilot offices have been successful in bringing together the right staff from multiple agencies to ensure that permits undergo proper reviews and are processed in a more timely manner. The additional program funding provided in recent years has made implementation of these process changes possible.

The President's Budget proposes to terminate (beginning in 2011) the mandatory funding set aside for these pilot offices in the 2005 Energy Policy Act (EPAct) and we do not support the extension of this funding. In transitioning away from this mandatory funding, the Budget proposes a commensurate increase in the regular BLM oil and gas appropriation, so that the program is held harmless during the changeover. The pilot offices would continue to operate as intended under EPAct. The BLM appropriation would be offset by cost recovery fees, which unlike rental receipts, are directly tied to the costs BLM incurs in processing industry permits.

Question 2. I have a longstanding concern that the BLM inspection and enforcement program does not have the resources necessary to ensure that oil and gas operations are conducted in a safe and environmentally sound manner. How much has been allocated to this program in each of the last 5 years? Have monies from the BLM Permit Processing Improvement Fund been used for the I&E Program? If so, how much has been provided on an annual basis?

Answer. The amount of funding spent on Inspection and Enforcement for the last five years is in the table below. Funds from the Permit Processing Improvement Fund have been used for the Inspection and Enforcement program and are included in the table (row 9141).

FUNDS USED FOR INSPECTION AND ENFORCEMENT (Bureau full cost)

(dollars in thousands)

Activity	Name	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
1310	Oil & Gas Management	28,479	30,024	30,970	33,046	32,663
1630	Law Enforcement	2	31	7	1	8
9131	Geothermal Steam Act Implementation	0	0	40	198	263
9141	Permit Processing Improvement Fund	0	0	3,808	4,197	6,858
9641	Naval Petroleum Reserve Numbered 2	0	0	155	118	96
Total		28,481	30,055	34,980	37,560	39,888

Question 3. An analysis completed in May of 2007 by the GAO at my request concluded that the U.S. federal government receives "one of the lowest government takes in the world" from the production of oil and gas from federal lands and waters. I understand that you plan to review the fiscal terms of federal leases including the royalties being charged by the Federal government. Is that correct?

When do you expect to have this review completed?

Answer. We will be looking closely at the issue of whether or not the U.S. is getting an appropriate return for our national oil and gas resources, both onshore and offshore. At this time, we do not have an established schedule for when this review will be completed, but I hope to have a better sense of timing once my full management team is in place and can focus on the issue.

In looking at this issue, we will consider how the return to the U.S. from Federal lands compares to that of other countries, as well as to the return state and private resource owners in the U.S. receive from development. This involves looking not only at direct bonuses, rents, and royalties collected from Federal lands, but at other revenues (e.g., severance and other taxes) collected from oil and gas operations here and abroad.

There are a couple of ongoing bureau-level efforts that should help inform our analysis. The Bureau of Land Management is currently analyzing various alternatives regarding rents and royalties on oil and gas leases. Factors such as price fluctuation and generally lower prices for oil and gas have complicated the BLM's analysis. The analysis is ongoing and a deadline for its completion has not yet been established.

The Minerals Management Service (MMS) has contracted for a 2-year, independent, extramural study entitled, "Policies to Affect the Pace of Leasing and Revenues in the Gulf of Mexico." That study is evaluating a variety of auction formats and fiscal term conditions as they relate to the objectives of the offshore oil and gas leasing program. The final draft of the extramural study is scheduled to be submitted this August. Subsequently, its findings will be reviewed by various MMS offices and recommendations will be transmitted to the MMS Director and further considered by my management team as we conduct our comprehensive review.

Question 4. I am interested in your concept of renewable energy zones. Could you please elaborate on what criteria you would apply for these zones?

Answer. I support the concept of renewable energy zones, and I am working to further their establishment. The Bureau of Land Management (BLM) and Fish and Wildlife Service (FWS) are currently providing input to the Western Governors' Association (WGA) Western Renewable Energy Zone (WREZ) electric transmission study. The WGA released a preliminary map of renewable energy Qualified Resource Areas in February 2009 for public review and comment. These preliminary maps have considered a variety of exclusion and avoidance areas based on statutory and administrative restrictions, including National Parks, Wildlife Refuges, Wilderness Areas and Wilderness Study Areas, and other special management areas and sensitive lands. The BLM, FWS, and other Federal and State agencies are also involved in a similar effort in California as part of the Renewable Energy Transmission Initiative (RETI) process to assist in electric transmission planning. Other western States are engaged in similar efforts as well.

Question 5. The BLM permit coordination offices—so-called permit processing pilot offices—have been quite successful in facilitating the processing of permits. Do you think it would be helpful to extend this approach with dedicated funding for the permitting of renewable projects on Federal lands?

What level of funding would be required?

Answer. I strongly support committing the resources necessary to support the processing and permitting of environmentally sound renewable energy projects and electric transmission projects on Federal lands. That is why I recently announced that the Department is dedicating $41 million in BLM funds provided under the Recovery Act to support the environmental reviews and analyses necessary to support future decisions on renewable energy and transmission projects on Federal lands.

The establishment of Renewable Energy Coordination Offices will provide an opportunity to focus resources in areas with the greatest workloads and to improve coordination with other Federal and State agencies involved in the permitting process. The President's Budget requests another $16 million for BLM's renewable energy program, including $11 million for staffing and operations of Renewable Energy Coordination Offices. As further evidence of the high priority we place on this work, we recently submitted a reprogramming request to get a jumpstart on the establishment of these offices in 2009.

The oil and gas pilot offices currently receive mandatory funding under the provisions of Section 365 of the Energy Policy Act of 2005 (EPAct). As you know, the President's Budget proposes to terminate (beginning in 2011) the mandatory funding set aside for these pilot offices in EPAct. So notwithstanding the laudable goals, we do not support the extension of this funding concept to renewable energy projects. The oil and gas mandatory funding is derived from onshore rental receipts that are normally deposited in the Treasury, and the year-to-year funding level provided from these receipts is not tied in any way to actual program needs. As explained in the response to question #1, we believe funding for regular operating programs such as this are best decided through the annual appropriations process. In addition, some program costs may be offset by user fees, which unlike rental receipts, are directly tied to the costs BLM incurs in processing permit applications.

Question 6. I understand that some states have leasing programs for solar and wind energy production from state lands. Currently, the federal government authorizes this production through the use of rights-of-way as opposed to leases.

Do you think we should consider a leasing system for wind and solar energy on federal lands?

Answer. The BLM currently issues rights-of-way for the authorization of wind and solar energy projects on the public lands as required by the provisions of Section 501(a)(4) of the Federal Land Policy and Management Act (FLPMA) for electric generation facilities. Individual states use a variety of procedures to authorize wind and solar projects on state lands. Many states use a leasing process, but in many cases, the terms of those leases are negotiated between the State and the lease holder. I am willing to work with the Committee to explore different program options for solar and wind energy development on public lands. Creating a leasing program may be among several options that we could further evaluate in order to increase the revenue to the Federal government and stimulate production of these renewable energy sources. The establishment of a competitive program also may be achieved under the current rights-of-way framework.

Question 7. What role to you think the Interior Department should play in the siting of transmission facilities across lands administered by the Department?

Answer. The BLM should continue to site and authorize renewable energy and transmission projects on the public lands under our Right-of-Way program, pursuant to the provisions of the Federal Land Policy and Management Act (FLPMA). The Department should also continue to play a leadership role in coordinating transmission facilities across Federal lands. I am currently working with the Secretaries of Energy and Agriculture, as well as the Chairman of the Federal Energy Regulatory Commission (FERC) to coordinate our respective efforts to identify renewable energy zones and to facilitate transmission access to them. Siting long-distance transmission lines is a complex exercise that requires coordination among numerous entities, including all levels of government, tribes, transmission planning entities, and the public. For example, FWS is providing information on wildlife and their habitats. In particular, FWS has included federal land management agencies in the review of the proposed recommendations and guidelines from the Federal Advisory Committee on Wind Siting and Development. I have directed my staff to work closely with regional transmission planning entities, such as the Western Energy Coordinating Council, and to continue our participation with state and regional transmission planning efforts such as the Western Governors' Association's Western Renewable Energy Zone project.

Question 8. Please provide for the record the status of wind and solar production from BLM lands and National Forest System lands. With respect to each category of lands and energy type, please provide for the past 10 fiscal years (by state and total) the following:

- Number of projects approved.
- Total number of rights-of-way issued.
- Number of new rights-of-way issued during the year.
- Amount of production during the year.

Answer. There are currently no approved solar projects on either BLM lands or National Forest System lands. There are no approved wind development projects on National Forest System lands. The BLM does not authorize the rights-of-way for National Forest System lands. The BLM has a total of 28 approved wind development projects on the public lands with a current installed capacity of 327 megawatts (MW) and an additional 249 MWs under construction. Annual rents collected for wind energy rights-of-way are based on installed capacity, so the BLM does not collect data on the amount of production during the year; consequently, the data I am providing identifies installed capacity instead of production. The attached table shows that wind development is occurring on BLM land in CA, WY, ID, UT, and AZ.

Question 9. Please provide for the record the following information for the last 10 fiscal years (by state, total, and land category) regarding production of geothermal resources from BLM lands and National Forest System lands:

- Total number of geothermal leases in effect.
- Total number of acres under lease during the year.
- Number of new leases issued during the year.
- Number of new acres leased during the year.
- Number of producing leases.
- Number of producing acres.
- Number of APDs approved during the year.
- Number of lease sales conducted during the year.

Answer. The attached tables include data regarding production of geothermal resources from BLM land and National Forest System land.

Question 10. Please provide for the record the following information for fiscal years 1994 through 2009 (by state and total) regarding production of oil and gas from onshore Federal lands:

- Total number of oil and gas leases in effect.
- Total number of acres under lease during the year.
- Number of new leases issued during the year.
- Number of new acres leased during the year.
- Number of producing leases.
- Number of producing acres.
- Number of APDs approved during the year.
- Number of wells started during the year.

Answer. The Bureau of Land Management does not have data for Fiscal Year 2009 as of yet but the data for FY 1994 through FY 2008 are included in the attached tables.

Question 11. Please provide for the record the following information for fiscal years 1994 through 2009 (by OCS area and total) regarding production of oil and gas from the Outer Continental Shelf:

- Total number of oil and gas leases in effect.
- Total number of acres under lease by year.
- Number of new leases issued during the year.
- Number of new acres leased during the year.
- Number of producing leases.
- Number of producing acres.
- Number of exploration plans approved during the year.
- Number of plans of operation approved during the year.
- Number of wells started during the year.

Answer: Please see the attached statistical information for FY 1994 through March 26, 2009 for the Pacific, Alaska and Gulf of Mexico OCS Regions.

Question 12. Please provide for the record the following information for fiscal years 1994 through 2009 (by state and total) regarding production of coal from Federal lands:

- Total number of Federal coal leases in effect.
- Total number of acres leased.
- Number of new leases issued during the year.
- Number of acres leased during the year.
- Number of producing leases.
- Number of producing acres.

Answer. Please see the FY94-08 Federal Coal Leasing Statistics attachment for these data.

- Number of plans of operation approved during the year.

Answer. A coal lease does not require a "plan of operation" but instead requires a mining plan approval document. A mining plan approval document includes two separate components: 1) a permit under the Surface Mining Control and Reclamation Act of 1977 (SMCRA), which is issued by whichever entity has SMCRA regulatory authority in the state where the mine operation is located; and 2) a Resource Recovery and Protection Plan, which is prepared by the BLM. In addition, permits may be required through the EPA and Army Corps of Engineers under the Clean Water Act. The table below represents the Office of Surface Mining's data on mining plan approval documents that were processed for signature by the Department of the Interior's Assistant Secretary, Lands and Minerals Management, for mining Federal coal within the Fiscal Year indicated. These actions may have included new permits or permit modifications that needed approval. The data are current as of March 31, 2009, but may contain inadvertent omissions, particularly for some of the earlier years.

Mining Plan Approvals Processed by the Office of Surface Mining and Reclamation, FY94 to FY09

	Total	CO	MT	NM	ND	UT	WY	AL	OK	KY*
FY94	16	3				4	3			6
FY95	19	3	1		1	6	2		3	3
FY96	8	2	1		1	2		1		1
FY97	10	1		1		5	1		1	1
FY98	11	2		1	2		1		3	2
FY99	10	2				2	2		1	3
FY00	8	3	1			1	2			1
FY01	11	4		1	1		4		1	
FY02	7	1	2	1	1		2			
FY03	7	2				1	1		1	2
FY04	1						1			
FY05	14	1			1	4	1	1	1	5
FY06	11	1			1	2	5			2
FY07	8	1				4	1		2	
FY08	4	3		1						
FY09	1	1								
TOTAL	146	30	5	5	8	31	26	2	13	26

*OSM acknowledges that data for Kentucky are incomplete for FY94 through FY 05.

Question 13. Please provide for the record a listing and description of the applications submitted to MMS and the approvals granted by the agency to date relating to alternative energy development on the OCS.

Answer. Following enactment of the Energy Policy Act of 2005, MMS assumed responsibility for processing two applications under the "savings provision" of section 388. MMS has conducted a review of the Cape Wind project under the National Environmental Policy Act (NEPA) and other relevant laws, completing a final EIS in January 2009. Additional related reviews and the preparation of a Record of Decision are pending. MMS also began a similar review for the Long Island Offshore Wind Project, but the project developer suspended that project in late 2007.

In November 2007, MMS instituted an interim policy to authorize resource assessment and technology testing activities related to renewable energy development on the OCS. To date we have received 44 nominations for limited leases related to

wind, wave, and current energy resources. Please see attached table entitled, "List of Nominations Received by MMS Under the Interim Policy." In April 2008, MMS selected 16 nominations to move forward for the issuance of noncompetitive limited leases. As of now, after some nominators dropped out, MMS is considering for limited leasing the 13 projects listed in italics in the attached table. On June 23, 2009, the Department issued five exploratory leases for renewable wind energy production on the Outer Continental Shelf offshore New Jersey and Delaware.

Question 14. For the last 10 fiscal years please provide (by state and total) the revenues provided to the states as a result of the production from federal lands of each of the following: federal onshore oil and gas; geothermal resources; coal; and oil and gas from the OCS (display separately the 8(g) revenues, Coastal Impact Assistance Program revenues, and revenue sharing pursuant to the Gulf of Mexico Energy Security Act).

Answer. Please see attached spreadsheets presenting onshore and offshore oil, gas, coal, and geothermal revenues distributed to the states for FY 1999 through FY 2008. In addition to the revenues shown in these tables, certain coastal states will also receive additional payments under the Coastal Impact Assistance Program (CIAP) and from revenue sharing pursuant to the Gulf of Mexico Energy Security Act.

Because CIAP is operated as a grant program and requires MMS approval of state spending plans, the CIAP payments shown below are not included in the attached revenue allocation tables. After a State's plan has been approved, grant funding applications are filed for each individual project and funds are approved and disbursed. There is also a lag between the year in which funds are authorized and when states receive this funding for specific projects, so the majority of the CIAP funds shown below have not yet been released to the states.

Coastal Impact Assistance Program (Total Allocation, including coastal political subdivisions)

	FY07-08	FY09-10
Alaska	$2,425,000.00	$37,471,876.48
California	$7,444,441.75	$4,923,124.98
Alabama	$25,551,607.04	$19,728,257.36
Louisiana	$127,547,898.57	$120,911,588.83
Mississippi	$30,939,850.55	$23,819,815.26
Texas	$48,591,202.09	$35,645,337.09
Total	$242,500,000.00	$242,500,000.00

Gulf of Mexico Energy Security Act 2006 (Total Allocation, including political subdivisions)

	FY09*
Alabama	$7,723,845.31
Louisiana	$7,934,151.41
Mississippi	$6,882,794.75
Texas	$2,699,249.57
Total	$25,240,041.04

* FY09 shows first payments under the Gulf of Mexico Energy Security Act of 2006. GOMESA called for disbursement to occur in the Fiscal Year following the Fiscal Year of receipt.

Question 15. There are several circuit court decisions, which basically hold that the construction and operation of certain structures—such as oil platforms, drilling barges, and the like, that are permanently or temporarily fixed to the seabed of the OCS—do not require the use of U.S. workers in constructing, operating, or maintaining these facilities. What is the view of the Administration on this issue? Would the Administration support policy or statutory changes to require such foreign employees to obtain visas, which would require certification by the Secretary of Labor that American workers are not available to construct and operate these structures, before oil companies are allowed to hire foreign workers?

Answer. The OCS Lands Act (1356(a)(3)) requires that rigs, platforms, and vessels be manned by U.S. citizens or aliens lawfully admitted to the U.S. for permanent residence. Section 1356(c) provides for limited exceptions to these provisions. We believe the U.S. Coast Guard has administered these provisions in a balanced manner that has protected the interest of U.S. workers without compromising OCS safety and pollution prevention objectives.

RESPONSES OF HON. KEN SALAZAR TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. MMS and FERC have reached a resolution on the jurisdictional issue to develop ocean energy resources, rather than asking Congress to intervene legislatively. Please explain the "Agreement in Principle" DOI has reached with FERC. When do you expect a Memorandum of Understanding to be signed by the two agencies?

Answer. The agreement in principle between DOI and FERC is that MMS will issue leases for hydrokinetic activity on the OCS, and FERC will issue licenses regulating construction and operation of energy-generating facilities on those leases. The two agencies also have agreed to coordinate the leasing and licensing processes to ensure efficiency.

On April 9, 2009, Federal Energy Regulatory Commission Chairman Jon Wellinghoff and I signed an agreement which establishes a cohesive process through which Interior's Minerals Management Service (MMS) and the FERC will lease, license and regulate renewable energy development activities from hydrokinetic sources (wave, tidal and ocean current) on the OCS,

Under the agreement, MMS has exclusive jurisdiction with regard to the production, transportation, or transmission of energy from non-hydrokinetic renewable energy projects, including wind and solar. MMS also has exclusive jurisdiction to issue leases, easements, and rights-of-way regarding OCS lands for hydrokinetic projects. MMS will conduct any necessary environmental reviews, including those under the National Environmental Policy Act, related to those actions.

FERC has exclusive jurisdiction to issue licenses and exemptions from licensing for the construction and operation of hydrokinetic projects on the OCS and will conduct any necessary analyses, including those under the National Environmental Policy Act, related to those actions. FERC's licensing process will actively involve relevant federal land and resource agencies, including Interior.

A copy of the Memorandum of Understanding is attached.

Question 2a. Your announcement on prioritizing renewable energy from public lands includes a commitment to assign a high priority to identifying renewable energy zones and completing the permitting and appropriate environmental review of transmission rights-of-way applications. Please explain your Secretarial Order more fully.

How will DOI identify and define these renewable energy zones?

Answer. The Bureau of Land Management (BLM) and Fish and Wildlife Service (FWS) are currently providing input to the Western Governors' Association (WGA) Western Renewable Energy Zone (WREZ) electric transmission study. The WGA released a preliminary map of renewable energy Qualified Resource Areas in February 2009 for public review and comment. These preliminary maps have considered a variety of exclusion and avoidance areas based on statutory and administrative restrictions, including National Parks, Wildlife Refuges, Wilderness Areas and Wilderness Study Areas, and other special management areas and sensitive lands. The BLM and other Federal and State agencies are also involved in a similar effort in California as part of the Renewable Energy Transmission Initiative (RETI) process to assist in electric transmission planning. Other western States are engaged in similar efforts as well.

Question 2b. Are you proposing that DOI handle the siting for renewable energy projects and needed transmission as well?

Answer. The BLM will continue to site and authorize solar and wind projects and renewable energy transmission projects on the public lands under our Right-of-Way program, pursuant to the provisions of the Federal Land Policy and Management Act (FLPMA). As discussed above, we are coordinating transmission siting on Federal lands through a multi-stage process involving all relevant Federal and State permitting agencies. For renewable energy project sites, we will identify locations as suitable for development as part of our land use planning process and in compliance with all relevant laws, including the National Environmental Policy Act, and we will review and authorize specific renewable energy and transmission projects in accordance with pertinent laws, regulations, and policies. The Department does not have authority to site renewable energy projects or transmission on non-Departmental lands, but has coordinated closely with other entities through the Federal Advisory Committee on Wind Siting and Development, chaired by the FWS, to ensure that Departmental actions are consistent with regional planning and development objectives.

As you know, Section 368 of the 2005 Energy Policy Act directed DOE and the land management agencies to designate Rights-of-Way Corridors on Federal western lands for oil, gas, and hydrogen pipelines, as well as for electricity transmission lines.

Question 2c. How does your announcement comport with the Rights-of-Way work DOI just completed?

Answer. My Secretarial Order comports well with the work just completed to designate energy transport corridors on Federal land pursuant to Section 368 of the Energy Policy Act of 2005. We engaged in an intensive interagency process to site and designate over 5,000 miles of energy corridors on BLM lands, out of a total of over 6,000 miles on Federal lands in the eleven contiguous Western states. These corridors form the backbone for future transmission planning in the region but were completed prior to the definition of renewable energy zones as specific areas for future renewable energy development. Therefore, the Department will continue to work with our interagency colleagues to review and, where appropriate, amend the Section 368 corridors as necessary to ensure they provide access to renewable energy. In addition, the Department is currently participating in the second phase of the Section 368 process, to designate energy corridors on Federal lands in the rest of the United States, including Alaska. The goals expressed in my Secretarial Order also apply to this phase of the Section 368 process.

Question 2d. How would this work with Majority Leader Reid's transmission proposal that calls for the development of renewable energy zones with 1 gigawatt of energy potential?

Answer. Section 3 of the Clean Renewable Energy and Economic Development Act (S. 539) would amend provisions of the Federal Power Act, specifically Section 402, to provide for the designation of national renewable energy zones by the President. Section 402 (e) of S. 539 allows for the use of "existing processes" for the designation of these renewable energy zones. The WGA Western Renewable Energy Zone study, the California RETI process and other similar western State planning efforts, and the land use planning efforts of federal land management agencies (as described above) are examples of those "existing processes" that could be considered in the designation of renewable energy zones. Section 402 (a) (3) of S. 539 also identifies the types of land with special resource values that would be excluded from potential designations as renewable energy zones. These types of land are very similar to the types of land that are being identified as exclusion or avoidance areas in the WGA study, the RETI process and other State planning efforts, and in federal land use planning efforts.

Question 3. Your announcement cites the need to "steer the nation in a new energy direction" in order to preserve jobs. At the same time I am worried that oil and natural gas jobs are in jeopardy when they are faced with a one-two punch of low prices and restricted access. Conoco Phillips just had a major layoff in my state. Will the Department of the Interior commit to preserving all energy jobs—meaning that we aren't trying to switch out oil and natural gas development for the potential jobs in renewable projects?

Answer. Developing domestic oil and gas resources remains critical to strengthening our economic and national security. Traditional fossil fuels will continue to be used for the foreseeable future as the United States expands its renewable energy capacity. Renewable and non-renewable energy resources are essential components of a comprehensive and effective national energy strategy, and both provide important jobs that are vital to our economy.

Question 4. The Department of Energy's loan guarantee program provides an important source of government support to a wide range of clean energy technologies including wind, solar, and nuclear energy. The loan guarantee program allows these clean energy projects to obtain advantageous financing at very low risk to the taxpayer. You may be aware that the Congressional Budget Office recommended language be added to the 2009 Omnibus Appropriations bill that would have restricted loan guarantees for projects that used Federal Government property. This would be a significant restriction for many renewable energy projects as well as some nuclear energy projects. While the appropriators attempted to solve the problem created by CBO, they recognize that it is only a partial solution. What impact do you believe the current language will have on the loan guarantee program and its ability to support clean energy projects in the future?

Answer. The financing available under the loan guarantee program is a tool that can facilitate development of important alternative energy projects. The program is administered by the Department of Energy, and is not a program with which I am intimately familiar as the Secretary of the Interior. However, my understanding is that projects to be located on Federal land pursuant to a lease or a right-of-way agreement are eligible for the program under the Omnibus Appropriations Act of 2009 so long as the fair market value (as determined by the head of the relevant Federal agency) of the lease or right-of-way is paid to the Treasury.

Question 5. Your announcement correctly points out that we have to connect the sun of the deserts and the wind of the plains with the places where people live. The

shipping lanes, roads, and pipelines we use to transport oil, gas, and coal are not going to transport renewable electricity, so we are entering into a new generation of environmental consultations, siting concerns, and probably litigation from people who do not want these projects in their backyards. Should renewable projects receive the same level of scrutiny as conventional energy development?

Answer. Yes. Renewable energy projects and electric transmission proposals will be reviewed to ensure consistency with Federal land use planning efforts and will require compliance with all laws and regulations. The review of these projects will include compliance with the requirements of the National Environmental Policy Act and other laws and provide for opportunities for public review and comment as part of the decision-making process. These review procedures will ensure that we are permitting environmentally sound renewable energy projects and electric transmission projects on the federal lands.

Question 6. You were recently quoted as saying that directional drilling, from what you've seen, would not work well enough as a way to access ANWR's oil reserves from outside the restricted area. My question is what have you seen as far as directional drilling, and if it won't work well enough, what would work well enough to produce this huge energy resource?

Answer. While advancements in directional drilling show promise for reducing the impacts of oil and gas production, I am not convinced that directional drilling in the Arctic National Wildlife Refuge can be done in a way that eliminates the possibility of impairing its ecological values. I share President Obama's position that the Arctic Refuge is a very special, treasured place, and that some special places we will not disturb.

RESPONSES OF HON. KEN SALAZAR TO QUESTIONS FROM SENATOR WYDEN

Question 1. On March 11, 2009, you issued Order No. 3285, "Renewable Energy Development by the Department of Interior." Although the Order repeatedly references specific renewable energy technologies in its individual instructions, at no point are ocean energy technologies included in such references. As a result, ocean energy is not included in the charge to quantify potential contributions (Sec. 5(a)(1), identify and prioritize specific locations (Sec. (5(a)(2), or reassess existing policies (Sec.(5(a)(7). In light of the announcement this morning that Interior and the Federal Energy Regulatory Commission reached an agreement in principle for offshore energy development that included wave and tidal energy, this omission appears to have been an oversight. Nonetheless, ocean energy technologies remain excluded from the scope of the order. What steps will you take to ensure that ocean energy technologies are included in your directives and policies governing renewable energy development?

Answer. I fully intend to ensure that ocean energy technologies are covered in the Department's implementation of Secretarial Order No. 3285. Section 5 states that the Task Force on Energy and Climate Change will develop strategies applying to renewable energy development on the OCS.

Question 2. Order No. 3285 calls for the Department to develop specific policies for the development of solar energy on public lands. I agree that the Department should develop such policies. Currently the Department is developing a programmatic environmental impact statement that addresses solar energy development in six Southwestern states and excludes other states with solar potential such as Oregon. What steps will you take to ensure that Departmental policies assist in the development of solar energy in all states with solar energy potential, not just the six Southwestern states currently under consideration?

Answer. The Programmatic EIS focuses on those areas that have utility-scale solar energy applications and the highest potential for solar energy development. However, we recognize that there are opportunities for distributed solar energy development and other solar energy uses on public lands outside of the six southwestern states. Opportunities for potential development in these other areas will not be precluded by the current scope of the Programmatic EIS. The Programmatic EIS will also assist in the identification of best management practices to mitigate potential environmental impacts and resource conflicts from solar energy development on the public lands. Those best management practices would be applicable to distributed (decentralized) solar energy projects in other areas as well.

Question 3. As discussed in the hearing this morning, biomass development needs to be part of a much larger effort of sustainable use of forest resources, forest management and hazardous fuels reduction. It also needs to be coordinated across Federal agencies because of the role the U.S. Forest Service in managing adjacent forest lands. As such, biomass energy development presents a challenge at least as great as other technologies for which you have called for the development of specific poli-

cies, such as solar. Would you agree to develop a more directed and comprehensive Federal biomass energy policy than we have right now and than appears to have been proposed in your renewable energy order?

Answer. The Department of the Interior (DOI) recognizes the importance of a coordinated biomass policy, and we are working to expand biomass utilization on public lands. An MOU signed in 2003 between the DOI and the Departments of Agriculture and Energy, established eight policy principles for the increased utilization of woody biomass. The BLM developed a biomass utilization strategy in 2004 and is currently updating the strategy to increase its focus on renewable energy, and to concentrate biomass use in areas that have a long term supply and the potential for utilization. Additionally, DOI, DOE, the U.S. Forest Service, and other departments and agencies have chartered a Woody Biomass Utilization Group under the Biomass Research and Development Board, which is working to coordinate and increase the utilization of woody biomass from restoration treatments across forested landscapes. The group has developed desk guides and common websites and is coordinating strategies for biomass utilization. Biomass is an abundant resource that is an important part of a comprehensive renewable energy strategy, and I would be interested in discussing your ideas for improving the DOI's biomass energy program.

RESPONSES OF HON. KEN SALAZAR TO QUESTIONS FROM SENATOR MCCAIN

Question 1. Please provide a complete and precise map of the areas within the Outer Continental Shelf that the Department of Interior is currently leasing or ready to open for lease sales.

Answer. Attached is a page size map showing OCS planning areas that have been available for leasing and the areas open for leasing, but not offered in the current 5-Year Leasing Program. The following is a link to this same map: http://www.mms.gov/ld/assets/JPG/ocs—status—map—8f.JPG

The D.C. Circuit Court of Appeals has recently issued a decision in litigation over the 2007-2012 5-Year Plan requiring reconsideration of that leasing schedule.

Question 2. Is the technology available and viable for horizontal drilling in the areas inside and surrounding the Arctic National Wildlife Refuge?

Answer. Currently available drilling and infrastructure technology do not appear advanced enough to eliminate the possibility of impacts to the Arctic National Wildlife Refuge from the production of oil and gas using directional drilling.

RESPONSE OF HON. KEN SALAZAR TO QUESTION FROM SENATOR BURR

Question 1. Secretary Salazar, during the hearing you indicated several times that we do not have current or complete data on offshore resources off the Atlantic coast. What steps is the Department of the Interior taking to ascertain the oil, gas, wind and tidal resources off the Atlantic coast so that we can make more educated decisions about exploration?

Answer. With respect to oil and gas resources, the MMS has acquired virtually all of the existing exploration seismic data in frontier OCS areas from prelease exploration permits as well as selected datasets from neighboring areas (such as, Canada (Scotian Shelf), Bahamas, Cuba and various adjacent coastal State waters). Most of the seismic data acquired in the Atlantic OCS are more than 25 years old. While these data provide for a reasonable resource assessment, newer, more sophisticated data would improve our assessment and provide a better idea of the oil and gas resources that we could expect to be found in specific areas of the Atlantic OCS, especially in the deeper water areas of the easternmost Atlantic OCS where data coverage is exceptionally sparse to non-existent. Currently, the MMS is reassessing some of the Atlantic oil and gas information as well as moving forward to find a way to prepare the environmental analysis needed prior to issuing any permits for new seismic data to be acquired. MMS has received ten permit applications from six geophysical companies to acquire seismic data on the Atlantic OCS. Thee applications total 270,000 line miles of 2-D data, covering all or part of the three Atlantic Planning Areas from Maine to Florida.

With respect to renewable energy, MMS has been consulting with the Department of Energy's National Renewable Energy Laboratory to obtain their most up-to-date resource estimates. In addition, as we authorize resource assessment activities by developers under our interim policy, we will have access to the data they collect, which could contribute significantly to our knowledge about OCS wind, wave, and current resources.

In response to President Obama's vision for energy independence for our Nation, I have outlined a four-part strategy for developing a new, comprehensive approach to energy resources of the OCS. This approach includes development of a report by the MMS and United States Geological Survey (USGS) on conventional and renew-

able offshore energy resources. The report assembles the information that is currently available regarding the nature and scope of offshore oil and gas and renewable energy resources on the OCS and identifies information regarding sensitive environmental areas and resources in the OCS. The report also identifies information gaps regarding available data on conventional and renewable resources on the OCS and environmental issues connected with OCS development. A copy of the report can be found at: http://www.doi.gov/ocs/report.pdf.

RESPONSES OF HON. KEN SALAZAR TO QUESTIONS FROM SENATOR BARRASSO

Question 1a. I believe that a energy task force that does not incorporate all of our energy resources—including nuclear, clean coal, oil and natural gas—into its strategy is doing a disservice to American families and American small businesses, whose budgets are dramatically impacted by high energy costs.

Your Energy and Climate Change Task Force focuses only on renewable energy. Given the vast amount of fossil energy available in America, what is the logic behind ignoring these vital resources as part of your Energy task force?

Answer. Under my leadership, the Department of the Interior will continue to responsibly develop fossil energy resources on public lands. An important goal I had in mind when I established the Energy and Climate Change Task Force is developing our Nation's non-carbon emitting sources of energy. With this focus, the Energy and Climate Change Task Force can facilitate a rapid and responsible move to large-scale production of solar, wind, geothermal, and biomass energy. These new clean energy projects will help to create new jobs and put America out in front of new, growing industries, promoting investment and innovation here at home.

Question 1b. The Task Force is assigned a high priority for identifying renewable energy zones. How do plan to identify and define a renewable energy zone?

Answer. We have to connect the sun of the deserts and the wind of the plains with the places where people live. I have directed the Energy and Climate Change Task Force to identify and prioritize the specific locations in the United States best suited for large-scale production of solar, wind, geothermal, incremental or small hydroelectric power on existing structures, and biomass energy avoiding environmentally-sensitive areas, such as wildlife refuges or National Parks.

Question 2a. I think it is preferable to utilize public land over private land, where possible, for the siting of transmission lines. We need to expedite the permitting and environmental review process for permitting all transmission lines on public lands, not just renewable energy.

Answer. Do you agree that using public land in lieu of taking land from private owners should always be the top priority?

Answer. I support the siting and development of transmission facilities on Federal land where such uses of the land do not conflict with sensitive resource values or other constraints. However, I cannot guarantee that siting transmission facilities across Federal lands is the best possible option in every instance. There are circumstances that preclude development on Federal land. For example, in many places, there are landscape constraints such as dangerous or difficult topography, where lands are withdrawn for military operations or national security, or where environmental considerations predominate such as designated wilderness areas or National Parks. In such instances, the Department can and will work with all concerned parties to strive for the best locations for transmission, and to fully examine options and alternatives on the public lands. Takings can often be avoided when private landowners agree to the use of their land, with payment, for transmission facilities.

Question 2b. What ways will the review process for putting transmission on public land be improved?

Answer. The BLM currently has in place a Right-of-Way (ROW) program to process applications for transmission projects across the public lands. The Department has also recently completed an intensive interagency effort to designate over 5,000 miles of energy corridors on BLM-managed lands out of a total of 6,000 corridors in eleven Western states. These corridors were sited to avoid land use and environmental conflicts to the maximum extent possible, to connect across agency boundaries, and to provide coordinated, consistent management practices across jurisdictions for those companies that use them.

We have good practices in place but more can be done to improve the review process for transmission projects on public lands. My recent Secretarial Order establishes a Departmental Task Force on Energy and Climate Change that is charged, among other things, to develop a strategy to increase development of renewable energy transmission on public lands and to review and, if necessary, revise the West-Wide Corridors. We plan to establish Renewable Energy Coordination Offices, mod-

eled after the pilot offices established for oil and gas permit processing under Section 365 of the Energy Policy Act of 2005, to process renewable energy and transmission applications. The Departmental bureaus are working to facilitate and coordinate their expertise to support transmission planning, siting, and development while protecting significant environmental values. We are also engaging with multiple entities on regional transmission planning to identify and facilitate essential transmission development. Improving the process for authorizing transmission on the public lands is a top priority, and I will continue to explore appropriate ways to accomplish it.

Question 2c. How much more State, local, and landowner participation do you plan to provide?

Answer. I plan to provide maximum opportunities to states, local entities, and landowners to participate in a transparent and open process to plan, site, and authorize transmission projects across public lands. Any additional planning to identify or revise transmission corridors on public lands will be accompanied by consultation with affected stakeholders, consistent with land use planning and National Environmental Policy Act (NEPA) policies and regulations. Actual project development must also undergo NEPA review, and is subject to an open process for public review, consultation, and comment.

Question 3a. More than 50 percent of Wyoming is public land. There is great potential for wind energy development in Wyoming. As we explore ways to utilize this land for energy production, we must give careful consideration to the impact on the landscape.

Do you know how many windmills will be needed to offset the annual production of a major coal power plant, which can generate 7,000 gigawatt-hours of electricity over the course of a year?

Answer. An average 1000 MW coal plant operates at 80% capacity, producing approximately 7,000 gigawatt-hours of electricity annually. This would be approximately equivalent to a 2,300 MW-sized wind energy facility that operates at 35% capacity. The number of wind turbines required depends on the turbine size, but if each turbine were capable of producing 2 MW, it would require the construction of 1,150 large capacity wind turbines to replace the coal generating facility.

Question 3b. According to the American Wind Energy Association, a utility-scale wind plant will require about 60 acres per megawatt of installed capacity. How many acres will be needed to generate 7,000 gigawatts of wind electricity per year?

Answer. The land requirements for a wind energy facility vary significantly depending on the topography of a site, the wind energy resource, the layout or spacing of the wind turbines, the size of the turbines, and other factors. Using the American Wind Energy Association average of 60 acres per MW of installed capacity would result in a total land requirement of approximately 138,000 acres for a 2,300 MW-sized wind energy facility. It should be noted, however, that the actual footprint or land disturbance required for a wind energy facility is much less than the total acreage of a wind farm area. The actual footprint or land disturbance is typically less than 10% of the wind farm area, and the land not covered by actual development can often continue to be used for other purposes (e.g., grazing).

Question 3c. Do you believe there must be a balance between renewable energy sources and conventional resources like coal, given the cost and land required to develop renewable resources like wind and solar?

Answer. It is important that we proceed ahead aggressively to develop a new energy strategy for our country and create a clean energy-based economy to ensure our future energy security. The development of our renewable energy resources will reduce our dependence on foreign oil, provide for the responsible use of our other domestic energy resources, and reduce greenhouse gas emissions. At the same time, I recognize that we will likely be dependent on conventional energy resources—oil, gas and coal—for a significant portion of our energy needs for many years to come. All energy development must be done in a thoughtful and balanced way, and in a way that allows us to protect the environment, signature landscapes, natural resources, wildlife and cultural resources.

Question 4a. There are currently 2,675 applications for drilling permits in the Bureau of Land Management office in Buffalo, WY. Many of the small, independent producers in my state have waited longer than months, if not years, to receive a decision. What is the problem? How are you going to fix it?

Answer. A variety of factors account for the number of pending Applications for Permits to Drill (APD) in the Buffalo Field Office. The APDs are located in areas with complex wildlife and Greater Sage-Grouse issues. Accordingly, the Plan of Development (POD) processes and National Environmental Policy Act (NEPA) document preparation require more in-depth study, resulting in a longer processing time.

In addition, there is an overall slowdown in development in the Powder River Basin. The Buffalo Field Office has an excellent working relationship with operators and has been coordinating with them to prioritize work on APDs and PODs based on operator priorities. The BLM has stopped work on other APDs and PODs at the operators' request when operators are unprepared to work on those PODs or APDs. As a result of this flexibility, BLM has allowed APDs and PODs to remain on the pending list versus returning them and clearing them off the list. The operators have appreciated this flexibility.

Question 4b. Do you think this backlog takes BLM attention away from its other core responsibilities?

Answer. The pending APDs are not diverting BLM's attention from its other core responsibilities. The pilot office staffing has allowed BLM to maintain an overall resource balance in this and other programs. It also allows us to put an emphasis on important environmental inspections.

RESPONSES OF HON. KEN SALAZAR TO QUESTIONS FROM SENATOR SESSIONS

Question 1. Can we access oil shale it in a way that makes environmental sense?

Answer. We need to push forward aggressively with research, development and demonstration of oil shale technologies to see if we can find a safe and economically viable way to unlock these resources on a commercial scale. The research, development, and demonstration leases can help answer critical questions about oil shale, including the viability of emerging technologies on a commercial scale, how much water and power would be required, and what impact commercial development would have on land, water, wildlife, and communities.

Question 2. Given that as a Senator, you voted against oil shale development 33 times, how confident should we be that the Department of Interior will move forward with oil shale development?

Answer. As Secretary of the Interior, I want to see if we can find a safe and economically viable way to unlock these resources on a commercial scale. On February 27, 2009, the Department published a notice in the Federal Register seeking advice from industry, local communities, states and stakeholders, on what the terms and conditions of a second round of oil shale research, development and demonstration (RD&D) leases should be. That 90-day comment period remains open. Based on sound policy and public input, the Department will then move forward with a solicitation for RD&D leases.

Question 3. If the oil shale regulations are reopened for any reason and the royalty rates in the oil shale regulations are increased, do you believe that developers will choose to continue to invest in research and development in the US? Will increasing the royalty rate improve or hurt American energy security.

Answer. I believe that it remains to be determined, through the RD&D leases, whether there is an economically viable way to develop oil shale on a commercial scale. If oil shale technology proves to be viable on a commercial scale, taxpayers should get a fair rate of return from their resource.

APPENDIX II

Additional Material Submitted for the Record

STATEMENT OF FORREST MCCARTHY, OUTDOOR ALLIANCE

Mr. Chairman and Members of the Subcommittee:

I am Forrest McCarthy. I live in Jackson Hole, Wyoming and I am the Public Lands Director of Winter Wildlands Alliance. I also serve on the Teton County Planning Commission, and have been an alpine mountain and backcountry ski guide for almost twenty years. As a mountain guide, I have had the privilege to spend a great deal of time in places like Antarctica, South America, Alaska and my home state of Wyoming.

Today, I submit this written testimony on behalf of the Outdoor Alliance, a coalition of six national, member-based organizations devoted to conservation and stewardship of our nation's public lands and waters through responsible human-powered outdoor recreation. Outdoor Alliance includes: Access Fund, American Canoe Association, American Hiking Society American Whitewater, International Mountain Bicycling Association, and Winter Wildlands Alliance and represents the interests of the millions Americans who hike, paddle, climb, backpack, mountain bike, backcountry ski and snowshoe on our nation's public lands, waters and snowscapes.

Not unlike indicator species, human-powered outdoor pursuits can be seen as "indicator activities" with respect to climate change because we are some of the first people to experience the impacts of climate change on our public lands. Declining snowpack shortens ski and snowshoe seasons, makes alpine climbing more dangerous and can eliminate ice climbing altogether. Less snowpack also means less water in our creeks, rivers and lakes for paddling. Higher temperatures and prolonged droughts create severe imbalances in forest, alpine, desert, and river ecosystems that stress native species and degrade the quality of the outdoor recreation.

The outdoor community's interest in climate protection is axiomatic—the places where we conduct our outdoor pursuits and that support the $730 billion annual outdoor recreation economy are imperiled by a warming climate. Our self interest in combating climate change, however, is coupled with some distinct insight as to how our federal lands can help us meet this challenge, particularly with respect to renewable energy development on federal land.

THOUGHTFUL RENEWABLE ENERGY DEVELOPMENT ON FEDERAL LAND

To adequately reduce carbon emissions, alternative energy sources and technologies must be developed and much of this development will take place on federal land. While the outdoor community heartily welcomes the chance to reduce the nation's reliance on energy sources and technologies that compromise our climate, we insist that this path is pursued in a manner that takes into account other aspects and values of federal land. Given the scale of renewable energy projects needed to adequately deal with climate protection, the landscape impact of renewable energy projects, including solar arrays, wind farms (and the necessary transmission lines) may very well dwarf the landscape impacts of traditional energy projects.

As evidenced by our nation's current hardrock mining policy, when a single use of federal land is generally allowed to trump all other uses, the costs will eventually outweigh the benefits. Thankfully, there are other federal laws on the books that balance the multiple uses of federal land more evenly, such as the Federal Power Act, 16 U.S.C. § 791a, et. seq. In outlining the powers of the Federal Energy Regulatory Commission (FERC) to issue licenses for the construction of hydropower projects, the statute requires FERC to:

> [G]ive equal consideration to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of, fish and wildlife (including related spawning grounds and habitat), the protection of rec-

reational opportunities, and the preservation of other aspects of environmental quality.

Federal Power Act § 797(e), 16 U.S.C. § 791a (2008). The practical effect of the equal consideration language, and the fact that hydropower projects are subject to a fixed term of 30 to 50 years, is that FERC must balance power and non-power values in their decision process. When rivers are developed for hydropower, mitigation measures ensure that the needs of fish and wildlife are addressed, recreational opportunities on the river are provided, and local communities' needs are considered. In other cases where ecosystem and recreation values outweigh the value of the river for hydropower development, projects are not constructed or in some cases removed at the end of their license term.

The outdoor community believes that analogous language to the Federal Power Act's equal consideration clause should be used to guide the pending development of alternative and renewable energy projects on federal land, including transmission projects.

REINVESTING SOME OF THE REVENUES GENERATED FROM ENERGY DEVELOPMENT ON PUBLIC LAND BACK INTO PUBLIC LANDS AND WATERS

More than forty years ago, Congress created the Land and Water Conservation Fund. The underlying concept is well known and straight forward—authorize some of the revenues generated in the process of recovering our nation's offshore energy wealth to be spent on preserving and protecting open space for habitat and recreation across the country on both federal and state lands. This core concept is even more relevant these days as the nation takes another long, hard look at our federal lands and the energy potential that they contain. We thus encourage Congress to explore not only new, renewable energy resources, but also the possibility that some material part of the potential royalties may be reinvested into our public lands and waters to preserve habitat and protect open space.

Climate protection will be a decades-long process and create uneven costs and burdens across society. A number of recent legislative proposals seek to use the proceeds from a carbon trade or tax system to help address these costs, especially to regions and communities that need the most help. However, some of these legislative proposals also direct part of the trade or tax proceeds back towards public lands and waters, particularly to assist with flora and fauna adaptation.

The Outdoor Alliance and our members feel that among the many prudent and appropriate uses of potential royalties associated with new energy development on public lands, funding for the protection of open space should be included especially considering the direct and indirect ways that open space can assist with climate protection efforts. Furthermore, because new energy development and transmission will plainly impact the landscape, a federal effort to mitigate against these impacts seems appropriate to consider.

First, open space can facilitate ecosystem and wildlife adaptation. A warming climate will stress the nation's ecosystems and the flora and fauna residing therein. Migration corridors are one way to alleviate some of this stress, but require preserving long tracts of open space. Potential royalties from energy development on federal land and waters may be able to help secure the protection of contiguous public lands and conservation easements to private lands (from willing landowners) in an effort to further adaptation policy.

Second, securing open space will enhance the ability of federal forests and grasslands serve as carbon sinks. Protecting and enhancing forest carbon sinks can be pursued in a number of ways, but primarily through land designations and strategic acquisitions that protect existing forests and reduce development sprawl. We support a portfolio approach to land designation that includes wilderness areas, national scenic areas, national recreational areas, and especially open space designations in close proximity to population centers.

Third, open space on healthy public lands provides a tangible reward for our sacrifices and commitment to protecting our climate and the ecosystems that depend on it. Public lands provide citizens with the opportunity to view wildlife, play in the rivers and snow, test one's skills on a steep rock or a single track, and experience first-hand the natural world. The importance of our public lands transcends the simple sum of energy production potential, refuge space for wildlife and carbon sinks—they enable Americans to stay connected to the natural world. Only through this connection will we have the commitment and collective endurance to achieve the goal of stabilizing our climate.

CONCLUSION

Thank you for the opportunity to submit this written statement to the Committee.

STATEMENT OF THE AMERICAN WIND ENERGY ASSOCIATION

Federal agencies have a key role to play in enabling the rapid growth in renewable energy development. The Senate Energy and Natural Resources Committee is to be commended for holding this important hearing. The American Wind Energy Association would like to work with the Committee going forward to ensure federal agencies have the right policies in place to meet President Obama's near-term and long-term renewable energy goals.

AWEA is the national trade association of America's wind industry, with more than 1,900 member companies, including project developers, manufacturers, and component and service suppliers.

The wind energy industry is extremely grateful to President Obama, Secretary Salazar, and this Committee for the priority you have placed on the deployment of clean, renewable energy resources.

BACKGROUND

The growth in the wind energy sector in the United States over the last several years has been incredible. Wind energy is no longer a boutique energy source. It is mainstream and deployable immediately on a wide scale. We do not need to wait for a new energy future. It is here.

Last year was the 4th straight year of record growth in the wind industry. More than 8,300 megawatts of wind energy were installed, second only to natural gas for the fourth year running. Total wind energy capacity is now over 25,000 megawatts.

Our industry employs at least 80,000 workers in good paying jobs. We are the backbone of the new energy economy. And, we're just getting started.

In May 2008, the U.S. Department of Energy (DOE) released a report on the feasibility of achieving 20% of our nation's electricity from wind energy alone by 2030. The DOE concluded that it is doable with no technological breakthroughs and that achieving that level of deployment would have significant benefits for the environment and our economy, including employing 500,000 people.

But, to achieve this potential, we need federal land management agencies to have policies that facilitate responsibly sited wind farms and associated transmission.

The Department of Interior (DOI) and its agencies, the Bureau of Land Management (BLM), the Minerals and Management Service (MMS), and the Fish and Wildlife Service (FWS), are playing an increasingly important role in siting wind farms. The Department of Agriculture, through the U.S. Forest Service (USFS), is also actively considering proposed wind projects.

This testimony summarizes AWEA's recommendations for policies related to federal land management agencies. We are pleased to say that one of the recommendations in AWEA's New Wind Agenda document has already been seized upon by Secretary Salazar: issuing an executive order prioritizing development of responsibly sited renewable energy projects on federal lands. A fuller explanation of this and other recommendations can be found at www.newwindagenda.org

KEY RECOMMENDATIONS

Government-wide

- Agencies should have a mandate to annually assess requirements associated with accommodating the 20% wind vision.

  DOE's 20% report identifies delays and limits associated with government review as a potential barrier to increased wind energy development. Some agencies do not have sufficient resources to handle expansion of wind development. Other agencies are likely to be unaware of the impacts that an annual wind power installation rate of 16 gigawatts will have on their operations.

  A larger issue is the cumulative effect of overlapping land use restrictions put in place by different agencies. For example, if you overlay wildlife setback areas and military airspace restrictions with macro wind resource data, you may end up with very little land available for wind development. Agencies should consider their collective actions within the context of the overall national goal of expanded wind energy development to achieve environmental, economic and energy security objectives.

- Agencies should be directed to proactively engage with the wind energy industry and the Department of Energy, consistent with existing federal law, when drafting policies that impact the siting, construction or operation of wind energy facilities, to ensure that the resulting policies are workable and will not unnecessarily limit wind energy deployment.

Bureau of Land Management (BLM)

- BLM leaders should offer clear directives to field offices about the importance of accurate and consistent implementation of the wind development policy, additional staff training for field staff, and hiring of staff dedicated to processing wind energy permits.

  In 2003, BLM initiated a Programmatic Environmental Impact Statement (PEIS) to address and plan for the impacts of future wind energy development on public lands. The wind industry supports the BLM's Wind Energy Development Policy, but the agency needs to more effectively and consistently administer it.

- To help deal with staffing constraints at the BLM, Congress should consider legislation to dedicate rental revenue from wind and solar projects on BLM lands expressly for the purpose of increasing staff to process additional wind and solar applications.

  As of November 2008, there were more than 215 applications pending with BLM for wind energy permits, including both applications for site testing (to set up temporary poles to test wind speed) and to construct actual wind farms. This is up from 150 pending in January 2008. Due to limited staffing, site testing permits for wind energy are taking 18 months or longer (by contrast, application for development permits for oil and gas drilling generally take 6-7 months). Given the time-limited incentives for renewable energy included in the American Recovery and Reinvestment Act (P.L. 111-5), delays of this magnitude can make or break the economic viability of a project.

  Wind and solar energy development are the only major activities on BLM lands for which there is neither revenue nor staff dedicated solely to ensuring the timely processing of permit applications. For other activities, including oil and gas, geothermal, film production and communications towers, a portion of rental and/or royalty payments is recycled back into the BLM to fund staff specifically to process additional applications for that activity. Legislation is needed to dedicate rental revenue from wind and solar development on BLM lands back to the agency for the purpose of processing additional renewable energy applications.

U.S. Forest Service

- The USFS should release an "interim final" draft of siting guidelines so the industry has an additional opportunity to comment to help create a workable final document.

  In September 2007, the USFS released draft directives to guide wind energy development on National Forest Service land. The draft directives included a number of suggestions that are unworkable for the industry. Given the significant flaws in the first draft, the wind power industry has serious reservations as to whether the necessary changes will be made in the next draft to make it workable. In order to give the wind industry another opportunity to comment on and improve the proposal before it becomes final, the next draft should be an "interim final" document.

Minerals and Management Service (MMS)

- MMS needs to complete offshore wind regulations in a timely manner and to address any remaining concerns by amending the regulations after adoption rather than delaying them further.

  In the Energy Policy Act of 2005, Congress directed MMS to complete regulations for siting offshore renewable energy projects within one year. Completing the necessary review process and drafting the regulation has taken considerably longer—four years and counting. It is our understanding that the issuance of the final rule is held up due to a dispute with the Federal Energy Regulatory Commission (FERC) over jurisdiction of siting ocean energy projects. AWEA does not have a position on how this dispute should be resolved, only that it needs to be resolved immediately as the delay in issuing the final rule is unnecessarily slowing the advancement of offshore wind energy in the U.S.

Fish and Wildlife Service (FWS)

- Support the work of the Wind Turbine Guidelines Advisory Committee

  The Department of the Interior established the Wind Turbine Guidelines Advisory Committee in October 2007. The 22-person federal advisory committee has been charged with making recommendations to the Secretary of the Interior to minimize impacts to wildlife from wind project development. The Committee

has a two-year charter through October 2009. The membership is divided among the wind energy industry, federal agencies, state agencies, and environmental organizations.

The USFWS intends to use the Committee's recommendations to inform a rewrite of the 2003 interim guidance document, criticized by the wind industry and others as not including wind/wildlife expertise. As it stands, the 2003 interim guidance is still the official policy of the USFWS with regard to siting wind energy projects in a manner which protects wildlife.

In the context of achieving 20% wind energy in the U.S., wildlife issues will continue to be a concern among permitting officials and policymakers. The work of this Committee is necessary to allow for industry expansion without overly restrictive mandatory regulations. It will be critical for the final recommendations to protect wildlife while not overly constraining wind energy development. Committee deliberations are progressing in a positive direction, and their work is now reaching the question of how the voluntary guidelines will be balanced with incentives for wind companies to follow them. The new Administration should continue this work and incorporate its final recommendations into a new voluntary federal guidance document.

STATEMENT OF TOM FRY, PRESIDENT, NATIONAL OCEAN INDUSTRIES ASSOCIATION

Mr. Chairman and members of the Committee, thank you for inviting me to speak before you today about leasing and development of oil and natural gas resources on the nation's Outer Continental Shelf (OCS). My name is Tom Fry, and I am the President of the National Ocean Industries Association, which represents nearly 300 companies working to explore for and produce energy resources from the OCS in an environmentally sensitive manner.

I am here today also representing the Independent Petroleum Association of America, the US Oil & Gas Association, the American Exploration and Petroleum Council, the International Association of Drilling Contractors, the American Petroleum Institute, the Natural Gas Supply Association, and the Petroleum Equipment Suppliers Association. Together, we represent thousands of companies, both majors and independents, engaged in all sectors of the U.S. oil and natural gas industry, including exploration, production, refining, distribution, marketing, equipment manufacture and supply, and other diverse offshore support services.

Through the development and application of technology, as well as adherence to a scientifically rigorous regulatory process, the companies of the offshore industry continue to improve their ability to bring new supplies of oil and natural gas online. For over fifty years, these companies have learned how to operate in deeper and deeper waters and locate resources that were once not accessible. At the same time, the technological advances pioneered by these companies have allowed for less impact on the environment and a wise stewardship of the resources beneath the ocean.

The need to safely harness these domestic energy sources is amplified by recent trends which show still-increasing American dependence on foreign sources of oil amidst a global economic downturn which has stifled energy prices from their record highs of last year. But when global economic conditions improve in the future, demand for energy will increase and we must begin preparing for this reality today.

Certainly, conservation and efficiency gains are the most immediate means to lowering energy use and helping to moderate prices in the short term. Simultaneously, renewable and alternative energy sources are growing every day and aggressive investment in these sectors must continue. As witnesses from the U.S. Energy Information Administration and the International Energy Agency recently testified before this committee, we must also face the fact that traditional fossil energy will continue to play the predominant role in meeting our energy needs for decades to come.

This reality dictates that responsible domestic production of these resources be encouraged, not hindered; and that risk and innovation aimed at improving our understanding of how better to find and produce oil and natural gas be rewarded, not punished.

Simply stated, given renewable energy sources' limited contribution to the current energy portfolio, and the massive investments and long time horizons needed to grow them to any meaningful level, the world will require more oil and natural gas to meet future energy demand. The oil and gas industry can increasingly produce these resources here in America safely and cleanly, including from the OCS.

NEW AREAS HOLD UNKNOWN POTENTIAL

The United States' OCS is conservatively estimated by the Minerals Management Service (MMS) to hold undiscovered technically recoverable resources of over 419 trillion cubic feet of natural gas and 86 billion barrels of oil.

That's estimated to be enough natural gas to heat 100 million homes for 60 years, and enough oil to drive 85 million cars for 35 years or to replace current Persian Gulf imports for almost 60 years.

In fact, there may be even more than that. In the parts of the Gulf of Mexico (Gulf) where industry has been allowed to buy leases and explore, they have found about five times as much oil and three times as much natural gas as was once thought to be there. In 1987, MMS estimated that the Gulf of Mexico held about 10 billion barrels of oil and 100 trillion cubic feet of natural gas; yet, earlier this decade the Gulf was estimated to have 45 billion barrels of oil and 230 trillion cubic feet of gas yet to be discovered, in addition to the 6 billion barrels of oil and 75 trillion cubic feet of gas already produced since the 1987 estimates. The more industry explores, the more they find.

I know the Chairman has personally seen OCS oil and gas facilities such as Independence Hub and Thunder Horse on a past offshore trip with MMS officials, and recommend that all committee Members see it for themselves. Twenty years ago, the part of the Gulf visited by the Chairman was not well understood and exploration had not started, thus explaining the significantly underestimated resources.

Technology and the actual act of drilling led to some of the incredible finds of the OCS. Independence Hub has the capability of producing a billion cubic feet of gas per day. Thunder Horse has the capacity of producing 250,000 barrels of oil per day. The five fold estimate increase may not be the case in all places, but it does appear to be clear that the more industry looks, the more they find. Imagine the potential of those places where exploration has been off-limits for over 25 years. We need that information and we can have it with no cost to the taxpayer.

Another way to quantify the energy potential held within new OCS areas is to examine the size of those offshore areas producing our energy now. The OCS currently is producing 27% of the entire U.S. oil production. However, that 27% of domestic oil production comes from only one half of one percent of the 1.7 billion acres of OCS lands.

When you consider how much oil is coming from a comparatively small amount of land, it becomes increasingly clear just how much potential resource may exist in areas in which we haven't looked.

As decision makers, Congress doesn't have all of this information. The information we do have is often over thirty years old and reliant on outdated technology. We know there are plenty of areas where oil and gas exploration may not be compatible with the landscape. We also know there will be parts of the ocean where resources will not be present or will not be economic. With talk of opening up areas or closing some down, shouldn't we increase our knowledge base so we can have an informed discussion about the consequences?

SAFELY PROVIDING ENERGY AND JOBS

Producing energy from previous moratoria areas in the OCS also holds the potential for hundreds of thousands of jobs and hundreds of millions of dollars in revenue. According to a recent study, oil and natural gas resources in former or current OCS moratoria areas could generate $1.3 TRILLION in additional federal, state, and local government revenue, and over 76,000 jobs. Importantly, we already know that these will be family-supporting jobs, as oil and gas exploration and production wages averaged $93,575 per year, according to 2007 Bureau of Labor Statistics data—over twice the average annual pay of $44,458 across all US industries.

These are significant resources that can be developed safely and that we ignore to our consumers' disadvantage. Yet until last year, more than 85 percent of the nation's OCS around the lower 48 states was off limits to oil and gas exploration because of presidential withdrawals and congressional moratoria, even though 1.4 million barrels of oil is produced from the OCS every day with less than .001 percent spilling into the ocean from drilling and extraction, according to MMS.

Similarly, as Chairman Costa often notes, a 2002 National Academy of Sciences (NAS) report entitled "Oil in the Seas III" found that less than 1% of oil in North American waters is from drilling and extraction, while 63% comes from natural seepage and the remainder from non-point sources. Cleary, the offshore oil and gas industry enjoys an enviable environmental record, and we appreciate committee members and witnesses alike recognizing this fact in hearings earlier this year.

MOVING BEYOND SLOGANS

Also mentioned in earlier hearings was the Chairman's desire to move beyond the "Use It or Lose It" and "Drill, Baby, Drill" slogans of last year. I agree it is important to have a serious discussion about the pace and development of offshore leases and appreciate these hearings presenting such a forum. Perhaps citing a real world example may help in this regard.

In the mid 1990's deep water was considered anything over 1,000 feet and not terribly far offshore, operating on what is known as "the shelf". But at that same time some companies bought leases in thousands of feet of water over a hundred miles from shore. They essentially placed a bet on themselves and advancing technology that might allow them to deal with water depths of almost two miles and drilling and producing depths of six miles or more. In addition, much of this area beneath the ocean floor is patterned with thick layers of salt, in some cases thousands of feet, that at the time prevented accurate seismic readings.

While some of these leases ended up having producible resources, many did not. Even many of the leases that had economically recoverable quantities were too technically difficult to produce for many companies. This resulted in leases that were turned back into the government because either the lease term had run its course or the tract was not deemed prospective enough.

Then in March of last year, the federal government conducted the largest lease sale in OCS history. Why? While not the only factor, a large part can be attributed to the availability of some of these same deep water tracts that had been turned back in. Seismic technology has greatly improved to get a better understanding of resources below the salt. Platforms and drill ships now can work and handle the water depths and pressures associated with 10,000 feet of water and total depths over 30,000 feet.

That sale is the very essence of "use it or lose it." The companies that made it work are producing. The ones that could not turned in their leases after having previously paid bonuses and rentals, while those same blocks were leased back out for a combined sale of over $3.6 billion dollars to the taxpayer.

Looking at utilization rates of offshore drilling rigs can also help to illustrate the pace with which offshore leases are being developed. Toward the end of last year, nearly 90 percent of the roughly 700 offshore drilling rigs in the global fleet were being utilized. In the U.S. Gulf, about 90 rigs were working, including a record of close to 15 drillships in deep water and ultra-deep water. Daily rental rates for the newest generation of drillships reached as high as $650,000 a day.

While the global economic downturn is expected to lead to some reductions in the exploration and production budgets of some companies, the drilling market in the deep Gulf should remain fairly positive, according to many drilling contractors. At the start of 2009, about 120 rigs were on order in shipyards. Subsea equipment suppliers predict an active year for components such as subsea completions and shut off valves.

A PROCESS SHAPED BY SCIENCE AND STAKEHOLDERS

Another commonly discussed issue in previous committee hearings is the desire that science-based decision making guide our national energy and environmental policy. This standard certainly is worthy of following, and indeed the current process of allowing for offshore exploration and production of natural gas and oil is rich with public input, deliberate in its manner, and is certainly exposed to the utmost scientific scrutiny and examination.

In order for oil and gas to ultimately be produced from the offshore, the process must essentially go through four separate phases: development of a Five Year OCS Leasing Program, planning for a specific lease sale within that Program, preparation of an Exploration Plan, and finally the preparation of a Production Plan. During the course of these various phases, no less than half a dozen separate environmental reviews are conducted.

Additionally, under the Coastal Zone Management Act (CZMA), all these activities must be consistent with a given coastal state's science-based Coastal Zone Management Plan. Enacted in 1972, the CZMA created a national, science-driven program intended to comprehensively manage and balance competing uses of, and impacts to, coastal resources. The CZMA's consistency provisions require the federal government to certify that its activities are consistent with the scientific policies of a state's federally approved coastal management plan.

In fact, when working their way through the regulatory processes inherent with offshore production, oil and gas companies must abide by a long series of statutes which ensure science-based decision making, including: CZMA, the National Environmental Policy Act, the Endangered Species Act, the Marine Mammal Protection

Act, the National Marine Sanctuaries Act, the Outer Continental Shelf Lands Act, the Clean Air Act, the Clean Water Act, and many others.

Stringent regulatory oversight helps maintain environmental performance, as offshore operators work under at least 17 major permits and must follow numerous sets of federal regulations from across several different federal agencies—including MMS, the Environmental Protection Agency, the U.S. Coast Guard, the National Oceanic and Atmospheric Administration, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service—each of which impart their own scientific rigor into their various rulemaking and permit granting processes.

For decades, the offshore oil and gas industry has relied upon science-based decisions to guide their operations; and will continue to do so as new innovations allow them to explore more areas.

A SOURCE OF CONSTANT TECHNOLOGICAL INNOVATION

Today's offshore technology allows us to produce more energy by reaching places that would never before have been possible. New world records are always being set.

Industry recently set one of these records by drilling a well in water depths exceeding 10,000 feet. That's the equivalent of successfully navigating nearly two miles down from the surface of the ocean before even beginning to drill, sometimes another 30,000 feet into the earth below the sea floor. The technology required to drill, complete and produce this type of well must overcome an environment of high pressure (in excess of 20,000 pounds per square inch) and high temperature (exceeding 350°F). Deep wells such as this are expensive, costing as much as $100 million apiece.

After coming from the ground, the oil or natural gas then travels through a pipeline where the temperature is just above freezing and the formation of ice crystals threatens to block the flow unless constantly supervised and adjusted. At depths far beyond where humans can travel, sometimes as much as 5,000 feet or more below the ocean surface, Remotely-Operated Vehicles (ROVs) are used to perform maintenance and repairs.

All this is possible with fewer facilities and less impact—even visual—than ever before. For example, multiple subsea wells can be connected by tiebacks to a single platform over great distances. Such an installation is capable of reaching wells on the ocean floor dozens of miles away in all directions while connecting to an ocean surface platform one mile above.

Directional drilling also allows for extraction of resources which are miles away from the point where the actual well is drilled.

This cutting edge technology doesn't come cheap, however. The total cost of this type of project, including wells drilled and the subsea connection system, can exceed $5 billion.

AN EXEMPLARY RECORD OF ENVIRONMENTAL PROTECTION AND STEWARDSHIP

The outstanding environmental record of U.S. companies operating offshore around the world is well recognized as . . . technologies are allowing the offshore industry to venture into deeper waters than ever before, while protecting marine life and subsea habitats. . . [1]—even in the most challenging areas such as the Arctic and North Sea and in otherwise catastrophic weather.

Off the part of our coast in which exploration and production has historically been allowed, the safety of our operations was recently demonstrated in the most severe hurricane situations. Though many of the exploration and production facilities in the Gulf of Mexico were severely damaged or destroyed, the high-tech safety and environmental protection equipment and processes worked.

Careful scientific environmental study and operational planning always precede OCS activity. For example, our offshore geophysical companies, which conduct seismic work that allows us to "see" geologic structures beneath the seabed, have worked with the National Marine Fisheries Service and MMS to implement many procedures and practices designed to avoid harm to marine mammals, including:

- Monitoring for the presence of animals of concern
- Shutdown or no start-up when they are too close
- Slow, gradual ramp-up of operations just in case

During exploration, jack-up or semi-submersible rigs and drill ships have multiple systems and physical barriers to ensure that no spill occurs. Most important, along with multiple, redundant remote control systems, are "blowout preventers" which in

[1] Clinton Administration DOE report: Environmental Benefits of Advanced oil and Gas Exploration and Production Technology, 1999.

deepwater are installed on the well at the seabed and are capable of immediate closure in event of any emergency.

Also, a "downhole safety valve" in the well itself below the seabed provides an added protection barrier in the event of some catastrophic event.

As a result of these safeguards, the offshore oil and gas industry has a laudable environmental record, as noted in the previously mentioned "Oil in the Seas III" NAS study, which finds that although the amount of oil produced and transported on the sea continues to rise, improved production technology and safety training of personnel have significantly reduced both blowouts and daily operational spills.

The industry remains under intense scrutiny by its two primary regulators—the MMS and the U.S. Coast Guard—as well as a host of other governmental agencies with oversight responsibilities such as the Environmental Protection Agency and the National Oceanic and Atmospheric Administration. However, it is the MMS that regulates all exploration, development, and production activities on about 8,000 active leases to ensure that these activities are conducted safely and in an environmentally sound manner. The MMS reviews and approves industry exploration and development plans before allowing any operations to commence, monitors all lease operations to ensure that industry is in compliance with relevant requirements, and conducts scheduled and unscheduled inspections. In 2008, MMS conducted over 25,000 inspections of OCS facilities.

To summarize, the latest technology and sound management practices not only allow for the continued production of domestic energy resources, but they have also made the U.S. offshore industry the envy of the world. Its environmental record is superb:

- Since 1985, more than 8 billion barrels of oil were produced in federal offshore waters with less than 0.001 percent spilled—a 99.999 percent record for clean operations.
- There has not been an incident involving a significant oil spill from a U.S. exploration and production platform in nearly 30 years (since 1980).
- Government statistics show that the injury and illness rate for offshore workers is about 70 percent lower than for all of private industry.
- Today's modern technology includes such environmental protections as automatic subsea well shut-in devices, including sub-seabed safety valves.

As mentioned earlier, the industry's performance during the 2005 hurricanes, which moved through a core area of offshore operations, is instructive. While it is true that 115 platforms were destroyed, the storm threatened over 3,000 facilities, the vast majority of which survived. Despite sustained winds reaching 170 miles per hour and towering waves and the resulting destruction of numerous platforms and rigs, there was no significant spill from production wells and no injury or loss of life among the 25,000—30,000 workers who are offshore at any given time.

Because today's weather forecasting capabilities provide ample lead-time as storms approach, operators are able to follow routine shutdown and evacuation procedures. In the case of the Katrina, Rita, Gustav, and Ike hurricanes, 100% of oil production was shut-in ahead of the storms.

CONCLUSION

The offshore oil and natural gas industry will continue to make advances in the development of new technologies, and to abide by the science-based regulatory processes which guide their operations. This innovation and adherence to scientific rigor will allow the industry to keep bringing reliable supplies of energy to market while also ensuring the safe and efficient management of the nation's energy resources.

Thank you for allowing me to be here with you today.

[Supplemental materials have been retained in committee files.]

STATEMENT OF THE INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA

This testimony is submitted on behalf of the Independent Petroleum Association of America (IPAA). The IPAA represents independent oil and natural gas explorers and producers, most of which are small business entrepreneurs with fewer than 20 employees and operate in more than 30 states and offshore. Our members develop 90 percent of America's natural gas and oil wells; produce 82 percent of U.S. natural gas and 68 percent of our nation's petroleum and hold 90 percent of the leases in the Gulf of Mexico.

It is essential to understand the role of oil and natural gas in America's energy supply, now and in the future. They are critical. Currently, natural gas and oil ac-

count for about 65 percent of America's energy supply. Clearly, people recognize the role that oil plays in fueling most of the nation's transportation. Similarly, the role of natural gas for heating is widely understood. But, it is equally important to understand that natural gas is an essential feedstock for many chemical processes and for fertilizer manufacturing. It is a key source for process heating in both the chemical and manufacturing segments of American industry. Consequently, in addition to their direct role in energy supply, natural gas and oil are linked to the success of other energy supply options. Ethanol requires fertilizer for the crops and natural gas for processing. Windmills and solar cells must be manufactured and transported. Moreover, these are technologies that are intermittently available and when they are not providing power, it is most likely that natural gas will be the fuel used to meet that power need.

Through aggressive development efforts, IPAA members helped to increase American natural gas production by nine percent in 2007. The Energy Information Administration (EIA) forecasts that U.S. energy consumption will grow by 30 percent over the next 25 years. Even with major increases in renewables like wind and solar, the nation's energy mix stays roughly the same because of the overall growth in demand. Natural gas and oil will be an integral part of the solution to develop cleaner energy, improve national energy security and restore the economic strength of the nation.

Many anti-development groups claim that domestic oil and natural gas producers should not be issued new federal offshore and onshore leases until current ones are developed. These groups also claim that companies are sitting on leases simply to inflate their reserve estimates. Natural gas and oil exploration is not a business of rash decision making. Detailed planning, permitting timetables and regulatory requirements must be met and that takes time. Producers simply don't buy a lease and begin drilling—and they certainly don't drill every lease all at once. There is a process that balances business decisions with safety and environmental concerns. It would be irresponsible to conduct business any other way. Companies must conduct detailed environmental assessments, secure permits, collect seismic data and do various other "pre-production" activities on leases.

Unfortunately, independent producers face many challenges from Washington that inhibit production of American natural gas and oil. It is important for Congress to understand the federal energy policy issues important to small business producers. These issues include:

1. The importance for the federal government to develop reasonable environmental regulations that create sound and cost effective regulations with real environmental benefits;
2. Federal tax policy designed to enhance American energy security that does not reduce critical investment capital which equates to less new production;
3. The federal leasing and permitting processes determine the pace of access to onshore and offshore federal natural gas and oil resources. Unfortunately, both the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA) are being used to stall, disrupt and stop responsible resource development on federal lands.

The entrepreneurs of America's natural gas and oil industry will continue to make advances in the development of new technologies that will keep our nation on the cutting edge of energy production. Through the use of cutting-edge technology innovation and tireless efforts to increase efficiency independent producers will keep bringing reliable supplies of energy to market while also ensuring the safe and efficient management of the nation's energy resources.

Our nation needs to develop an energy policy that utilizes all of our nation's abundant energy resources. Instead of punishing one sector of the energy industry by implementing new and ineffective taxes, environmental regulations and restrictions on independent natural gas and oil producers, we should be striving to utilize all of the pieces in America's energy "puzzle." The challenges are too steep and the stakes are too high for our country to ignore the reality of our national energy picture. Natural gas and oil cannot be the only pieces in our nation's energy puzzle, but we also cannot ignore the essential role they will play now and in the foreseeable future.

Thank you for the opportunity to submit this testimony.

AMERICAN RIVERS,
Washington, DC, March 16, 2009.

Hon. JEFF BINGAMAN,
Chairman, Energy and Natural Resources Committee, U.S. Senate, Washington, DC.
Hon. LISA MURKOWSKI,
Ranking Member, Energy and Natural Resources Committee, U.S. Senate, Washington, DC.

DEAR CHAIRMAN BINGAMAN AND RANKING MEMBER MURKOWSKI: On behalf of American Rivers' 65,000 members and supporters across the nation, thank you for scheduling a hearing on March 17 to address energy development on public lands. While new renewable energy development must be a top priority, energy projects must also be designed, sited, operated, and managed in a manner that also protects local ecosystems.

As you conduct this oversight, we urge you to consider how the Federal Energy Regulatory Commission (FERC) has exercised its authority under the Federal Power Act to license hydroelectric facilities. In our experience, the Commission frequently fails to live up to its mandate of giving "equal consideration" to the environmental and social consequences of energy development, particularly over the past eight years.

In its analysis of license applications for hydropower projects, FERC regularly fails to identify and analyze an adequate range of reasonable alternatives to the proposed action. FERC's environmental documents prepared pursuant to the National Environmental Policy Act (NEPA) typically feature only one action alternative in addition to the applicant's proposal. Of the nineteen NEPA documents prepared by FERC for licenses issued over the past two years, we found that FERC did not give detailed consideration to a single action alternative other than the applicant's proposed action and FERC's staff recommendation. This practice is inconsistent with the plain language of NEPA and the Council on Environmental Quality's (CEQ) implementing regulations, which direct agencies to "rigorously explore and objectively evaluate all reasonable alternatives."[1]

Instead of performing a transparent analysis of complete action alternatives, FERC considers proposals from state and federal environmental and public land managing agencies and other interested parties in a piecemeal, "black box" fashion. FERC frequently avoids quantifying the benefits of environmental resources or the costs imposed on the public by the loss and damage of these resources. Instead, FERC routinely rejects proposed mitigation measures, claiming that they are not worth the costs of implementing them. When asked to provide supporting evidence for these assertions or even documentation of how it performed its calculations, FERC refuses to show its work, even to other Federal and state agencies with regulatory responsibilities in the same proceeding.[2]

FERC also consistently fails to give serious consideration to evidence submitted by the expert agencies or consultants retained by third parties into the decisional record for a proceeding, all the while relying upon evidence supplied by the applicant. For example:

- In its Final Environmental Analysis for the Augusta Canal project, FERC staff accepted the applicant's projected water use information while rejecting without adequate explanation conflicting evidence submitted by federal agencies that demonstrated that actual use was significantly less.
- In its Draft Environmental Assessment for Pacific Gas and Electric's Poe project, FERC accepted the applicant's argument that a segment of river left dry by a hydropower project had limited potential for boating use. It failed to acknowledge a declaration submitted by a recreational planner with decades of experience that demonstrated a potential use of 100,000 recreation-days per year.
- During FERC's analysis of the Klamath Project, the Department of the Interior pointed out to FERC that contrary to the applicant's characterization of the Project as dependable, the applicant had argued before the California Public Utility Commission in 2005 that the project was highly unreliable. FERC not only failed to respond to DOT's comment, it cited the Project's dependability—without any supporting evidence—as justification for the Staffs preferred alternative in its Final EIS for the project.

[1] 40 C.F.R. § 1502.14(a)
[2] See November 9, 2006 letter response to a Department of Interior request for working papers and other information (enclosed).

- After a Federal Administrative Law Judge ruled in favor of federal natural resource agencies in a dispute over the merits of supporting evidence for environmental conditions to the Klamath project, FERC refused to accept that determination. FERC instead relied upon the license applicant's discredited evidence.

Even where FERC is required by law to include state and federal agency environmental conditions in its licenses, it does so grudgingly. It has taken multiple federal court decisions to force FERC to include these conditions in thenr licenses as a matter of practice.

We believe that these issues are not confined to FERC's analysis of hydropower projects. Indeed, Commissioner Jon Wellinghoff—now the Commission's acting Chair—identified a number of similar flaws in FERC's analysis of energy projects in a September 18, 2008 dissent to FERC's order issuing a license for the Bradwood Landing Liquefied Natural Gas Terminal. We applaud Acting Chairman Wellinghoff for his willingness to conduct a thoughtful independent review of staffs conclusions. and we hope that he will continue to ask similar questions in the future.

As you address the critical question of energy development on public lands and in public waters, we urge you to consider carefully how the Commission exercises its authority to permit such development. American Rivers stands ready to work with you and other members of the committee on this important issue.

Sincerely,

JOHN SEEBACH,
Director, Hydropower Reform Initiative.

TROUT UNLIMITED,
Washington, DC, March 31, 2009.

Hon. JEFF BINGAMAN,
Committee on Energy and Natural Resources, U.S. Senate, Washington, DC.

DEAR CHAIRMAN BINGAMAN AND MEMBERS OF THE COMMITTEE: We appreciate the opportunity to comment on the full Committee's hearing on March 17, 2009 to evaluate energy development on public lands and the outer Continental Shelf. Trout Unlimited (TU) is the nation's largest coldwater fisheries conservation group dedicated to the protection and restoration of our nation's trout and salmon resources and the watersheds that sustain them. TU has more than 140,000 members in 400 chapters across the United States. Our members generally are trout and salmon anglers who give back to the waters they love by contributing substantial amounts of their personal time and resources to fisheries habitat protection and restoration. As Congress considers new energy legislation and the promise of renewable energy resources, we encourage you to ensure that renewable energy development is done in a prudent manner that protects key fish and wildlife habitats and we ask that our comments be included in the record.

A great opportunity exists to develop renewable energy in a responsible manner, involving the public and carefully siting the developments and transmission corridors in areas that minimize damage to fish and wildlife habitats. The development of renewable energy provides the opportunity to reduce the impact of traditional oil and gas by replacing developments that are planned in sensitive habitats. We also request that energy legislation this year include an onshore oil and gas title. Over the past several years, expedited oil and gas development has strained our valuable fish, wildlife and water resources—causing untold damage to our public lands and vital natural resources. Immediate legislative action addressing traditional oil and gas resource development, as well as renewable energy sources, will help ensure the security of our energy supply while alleviating many of the threats to our public lands.

Specifically, a new onshore oil and gas title should require the following:

1) The BLM should evaluate the long-term, cumulative effects of oil and gas development projects. This evaluation should include a comprehensive assessment of foreseeable future projects and a comprehensive assessment of existing projects and mitigation measures.

2) The BLM should review all oil or gas leases currently under protest or in litigation to ensure there was adequate analysis of impacts to fish, wildlife, water and air resources. The BLM should rescind any leases with inadequate analysis.

3) The BLM should conduct a review of all resource management plans (RMP) for oil and gas lands issued within the last five years to ensure they adequately consider potential impacts to fish, wildlife, water and air resources from oil and gas development. The BLM should refrain from issuing any new leases or per-

mits for oil or gas operations under any RMP that the BLM determines to be inadequate until the RMP is revised.

4) The BLM should seek to promote public participation and input throughout the planning, leasing and permitting process. Energy Development on public lands can have a dramatic affect on local communities and the fish, wildlife, water and air resources upon which they depend. Public involvement is critical to ensure oil and gas development on public lands is conducted in a responsible manner without sacrificing important natural resources.

5) The BLM should improve the monitoring and mitigation of oil and gas lands. This requires the BLM to develop a set of consistent, widely endorsed monitoring protocols that identify baseline information, short-term inventories and long-term inventories for important fish, wildlife, plant, water and air resources, and a process for regular review of data and information.

6) The BLM should mandate protective stipulations and conditions of approval for all new projects that are sufficient for the protection of fish, wildlife, water and air resources. These stipulations and conditions of approval should be based on the best available scientific data and provide a reasonable expectation that they will be effective in protecting important fish, wildlife, water and air resources. These conditions of approval should include best management practices that prevent the spread of exotic and invasive species. The BLM should refrain from issuing waivers, modification or exception to existing and future lease stipulations or permit conditions unless there is adequate evaluation of the consequences, public participation, and the documented assurance that the action will not compromise important fish, wildlife, water or air resources.

A responsible energy policy will provide for our energy needs while protecting the important fish, wildlife, water and air resources that sustain our communities and the western way of life. While we support the responsible development of renewable energy resources and recognize the important role they should play in our national energy policy, expedited oil and gas development continues to threaten our public lands. Our valuable natural resources and public lands require immediate attention.

On behalf of our members, we thank you for your commitment to the protection of our vast natural resources and encourage you to include an onshore oil and gas title that protects important fish, wildlife, water and air resources in this year's energy bill.

Sincerely,

BRAD POWELL,
Energy and ORV Director,
Sportsmen Conservation Project.

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