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THE FISCAL YEAR 2017 DEPARTMENT OF ENERGY BUDGET

WEDNESDAY, MARCH 2, 2016

House of Representatives,
Subcommittee on Energy and Power,
Committee on Energy and Commerce,
Washington, D.C.

The subcommittee met, pursuant to call, at 10:06 a.m., in Room 2123, Rayburn House Office Building, Hon. Ed Whitfield [chairman of the subcommittee] presiding.

Present: Representatives Whitfield, Olsen, Shimkus, Latta, McKinley, Kinzinger, Griffith, Johnson, Long, Ellmers, Mullin, Hudson, Upton (ex officio), Rush, McNerney, Tonko, Capps, Doyle, Castor, Sarbanes, Welch, Yarmuth, Loeb sack, and Pallone (ex officio).

Staff Present: Gary Andres, Staff Director; Will Batson, Legislative Clerk, Energy & Power, Environment & Economy; Sean Bonyun,

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Communications Director; Leighton Brown, Deputy Press Secretary; Patrick Currier, Senior Counsel, Energy & Power; Tom Hassenboehler, Chief Counsel, Energy & Power; A.T. Johnson, Senior Policy Advisor; Ben Lieberman, Counsel, Energy & Power; Brandon Mooney, Professional Staff Member, Energy & Power; Mary Neumayr, Senior Energy Counsel; Annelise Rickert, Legislative Associate; Chris Sarley, Policy Coordinator, Environment & Economy; Dan Schneider, Press Secretary; Peter Spencer, Professional Staff Member; Andy Zach, Counsel, Energy and Environment; Christine Brennan, Minority Press Secretary; Jeff Carroll, Minority Staff Director; Rick Kessler, Minority Senior Advisor and Staff Director, Energy & Environment; Josh Lewis, Minority EPA Detailee; John Marshall, Minority Policy Coordinator; Matt Schumacher, Minority Press Assistant; Andrew Souvall, Minority Director of Communications, Outreach and Member Services; and Tuley Wright, Minority Energy and Environment Policy Advisor.

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Mr. Whitfield. I would like to call this hearing to order.

Of course, today, we are having a hearing on the Department of Energy's fiscal year 2017 budget. We are delighted that Secretary Moniz is here with us today, to I guess I will say, defend the budget because we do have some differences of opinion.

But, at this time, I would like to recognize myself 5 minutes for an opening statement. And, Mr. Secretary, we are delighted you are here. And we enjoy working with you even though, as I said, we do have some significant differences on some of the policies.

My concerns about prior years' budgets are repeated in this year's budget. I take serious issue with the nearly 10 percent increase in overall funding level requests. And I personally still question the direction DOE is taking on energy policy. I should note that there are issues that we certainly agree with DOE, at least in principle, and there is much in the agency's Quadrennial Energy Review that I think we all support. We all agree on the need to modernize, and protect the Nation's energy infrastructure and the need to have a well-trained and diversified energy workforce with the skills that energy markets will demand in years to come.

We all recognize the importance of a more integrated North American energy system, and the benefits of engaging in energy diplomacy, and conducting ourselves like the energy superpower really that we have become. We agree on taking steps to improve energy efficiency and accountability, especially as regard the Federal

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Government's own use of energy, as well as the functioning of DOE itself. And most of us agree on the agency's commitment to research and development.

But on many areas, and the direction, in which this agency is taking with its energy policy, I personally, respectfully, disagree. Most significantly, this budget continues to reflect the President's priority to treat climate change as the number one issue facing America and is DOE's overriding concern.

One of DOE's stated priorities, in the fiscal year 2017 budget request, is to support ongoing implementation of the President's climate action plan. We see this in the programs that have received proposed budget increases, like the \$2.9 billion, for the Office of Energy Efficiency and Renewable Energy, a 40 percent increase. A 63 percent increase for wind energy, a 22 percent increase for corporate support, at the same time, a reduction of nuclear R&D by 23 percent, a reduction in nuclear technology by 20 percent.

And I might add that the administration has chosen to make climate an agency priority without any statutory authority from Congress directing DOE to focus on global warming. As part of the Paris Agreement, a nonbinding agreement, Obama and 19 other countries launched a program known as Mission Innovation in order to accelerate global energy innovation by doubling the amount of our taxpayer dollars in clean energy R&D over the next 5 years. And so the things included in Mission Innovation we have used before, but there is a 21 percent

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increase in the budget request.

The budget also evidences a misguided perspective on the proper role of government in energy policy. A cleaner, more advanced and efficient energy system can be achieved through primarily private sector innovation and markets, supported by government-backed research and development, not a top-down government-mandated approach. Yet, almost everywhere in this budget, we see DOE trying to expand its role and impose its own preferences on the private sector. And I might say that I personally take responsibility, I went back and looked at, certainly it is not all up to me, but since 2009, there has been a 35 percent increase in budget requests from DOE.

During that same time, household median income has gone down by 2 percent since the President has been in office. So that reflects really what is happening in government. We keep getting all these requests for increases. And, yet, the American people, they, their household income actually is decreasing. And I take responsibility for it because here I am, chairman of the Energy and Power, we should be working closer with the appropriators. Because the appropriators seem to just keep following down, giving more money. And, yet, we should be, as a committee, be pressing them on what we think. We have as much jurisdiction over energy as certainly the appropriators do. They appropriate the money.

But I personally, this year, I am going to try to have a more interchange with them, exchange of ideas, dialogue with them to give

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them our very strong views on where we think the President is wrong on his priorities for DOE. With that, at this time, I would like to recognize the distinguished gentleman from Illinois, Mr. Rush, for a 5-minute opening statement.

[The prepared statement of Mr. Whitfield follows:]

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Mr. Rush. Thank you, Mr. Chairman. I want to thank you for holding today's hearing on DOE's fiscal year 2017 budget request. And, as always, Mr. Chairman, it is my pleasure to welcome to this subcommittee Secretary Moniz, who I like to refer to as our super star secretary. Mr. Secretary, your legacy at the Department of Energy is unsurpassed, in my opinion, as you have left your mark on a wide range of critically important issues, from your outstanding contribution in negotiating the Iran Nuclear Deal, to reopening the agency so that it can more effectively address the challenges of the present and the future.

There is no doubt in my mind, Mr. Secretary, that you have set the gold standard as Energy Secretary in terms of your effectiveness and forward-looking policies. And I, for one, will evaluate future heads of the agency by the great legacy that you have established. Mr. Chairman, before Secretary Moniz took over the reins of the Department, there were millions of Americans who had no idea of what the Department of Energy even did, and many more who mistakenly believed the agency's policies had little to no impact on their lives. And I am proud to have been able to partner with the Secretary and his agency on a number of important initiatives that will affect the lives of many American families for years, if not decades, to come.

Mr. Chairman, following a private meeting in my office some years ago, rather than giving the customary lip service, and go on conducting his business as usual, Secretary Moniz went back to the agency and

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created the Minorities in Energy Initiative. Mr. Chairman, this single most important initiative, which was designed to increase DOE's outreach, engagement, and access for minority communities, recently celebrated its 2nd year anniversary, with Minorities in Energy ambassadors from all across the country, representing all sectors of the energy industry and beyond.

I am proud to inform the Secretary that on this past Monday, with the help and support of Chairman Whitfield, Chairman Upton, Ranking Member Pallone, and many others of my colleagues on this subcommittee, the House just passed the 21st Century Workforce legislation which, among other important priorities, Mr. Secretary, would also codify the Minorities in Energy Initiative.

Mr. Chairman, I must also commend Secretary Moniz for significantly expanding the Minority Internship Program at the Department, from only 50 candidates a few years ago, to over 100 interns who participated this past summer. This important program provides young men and young women with invaluable exposure, networking opportunities, and critical work experience that can be parlayed into important career opportunities down the line.

Mr. Chairman, I also look forward to engaging the Secretary on the important work that we both have been intimately involved in regarding opening up the National Research Laboratories and all of their resources to all segments of the American population. Secretary Moniz and I have both expressed our desire to see these labs become

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more diverse in terms of their leadership, their hiring practices, their contracting, and vending opportunities, as well as, providing internships and outreach programs to 10 to 12 schools and minority-serving higher education institutions.

So, Mr. Chairman, I look forward to hearing about the progress that has been made in these areas. And with that, I yield back the balance of my time. And thank you, Mr. Chairman.

[The prepared statement of Mr. Rush follows:]

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Mr. Whitfield. The gentleman yields back. At this time, the chair recognizes the chairman of full committee, Mr. Upton, for 5 minutes.

The Chairman. Thank you, Mr. Chairman. Secretary Moniz, welcome back. Let me first say how much I truly have appreciated your efforts as Secretary to come before this committee and work with us on both sides of the aisle. Never been one to shy away from coming up to the Hill, engaging us, even when we might disagree. I credit you and your staff with the great work that you have done, particularly with the Quadrennial Energy Review, which helped shape our bipartisan approach to energy legislation in this Congress.

While some of the provisions we worked on together were enacted as part of an energy security title in the highway bill, I still am hopeful that similar legislation can and will get through the Senate, perhaps as early as tomorrow, so that we can get a conference negotiation underway.

We look forward, Chairman Murkowski and myself, to working with you on an incredible new era of abundance, as it is important that our policies reflect these 21st century realities. We should be promoting and embracing our resources to keep energy affordable for folks in Michigan and across the country. I will take note that the President's budget takes a slightly different approach, particularly as it relates to the gas tax as it impacts the most vulnerable. However, our abundance on coal, oil, and natural gas, along with nuclear, hydro,

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and renewables does put us in charge of our energy destiny and makes the future of affordable and reliable energy an achievable one for the country.

The biggest threat to this bright future is no longer OPEC or any other outside menace. It is, instead, the misguided policies that sometimes pick winners and losers. And, unfortunately, we see much of that in this budget. One area in which I am interested in learning more about is the administration's recent commitments to double government-wide research and development over the next 5 years as part of the Mission Innovation.

Continued breakthroughs in the way that we produce, transmit, and consume energy are needed in order to meet 21st century threats, be it from cyber, severe weather, physical attacks on our infrastructure. Many in the private sector are leaping at the challenge, including Bill Gates, and some of our leading innovators and entrepreneurs as part of the breakthrough coalition. And the recent announcements and financial commitments appear to be very promising. And I look forward to hearing from you on that.

Congress, however, will need more information before responding to the budget requests as to how limited DOE research dollars will work to augment the commitments made by the private sector. In a challenging budget environment, we will need to ensure there is no duplication. And the transparency, competitiveness, and impacts of consumer costs and reliability are front and center and that the

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technologies and pathways considered are truly resource neutral.

As always, I know you and your staff will continue to be ready to assist us, to work with us. And I look forward to your testimony. And I yield back.

[The prepared statement of The Chairman follows:]

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Mr. Whitfield. The gentleman yields back. At this time, the chairman recognizes the gentleman from New Jersey, Mr. Pallone, for 5 minutes.

Mr. Pallone. Thank you, Mr. Chairman. I would like to also welcome Secretary Moniz back to the committee this morning. Our Nation faces many challenges as we work to lead the global coalition of countries committed to addressing the threat of climate change. The Department of Energy is at the forefront of these efforts here in the United States. And I commend your achievements as Secretary that are helping to make our country a global leader in combatting climate change.

In December, over 190 countries came together to address the common goal of limiting carbon emissions, a threat to all nations. Accelerating clean energy innovation is essential to achieving the goal of limiting the rise in global temperatures to below 2 degrees Celsius. Thanks in part to your continued leadership, we are now on a pathway to a safer, healthier planet for future generations, while creating an enormous opportunity for economic growth.

The fiscal year 2017 Department of Energy budget proposal requests \$32.5 billion for the agency, which represents a \$2.9 billion increase from the 2016 enacted level. And this is a 10 percent increase over 2016 levels and represents a significant investment in your agency.

The bulk of this increase will support Mission Innovation, an

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initiative launched by the administration in conjunction with the Paris Climate Agreement. Mission Innovation would double research and development in clean energy technology for 5 years. And the bulk of this significant initiative will be led by the Department of Energy. In order to meet the aggressive goals outlined in the Paris Climate Agreement, our country must be seriously dedicated to investment in clean energy technologies. And to that end, Mission Innovation will mark a significant investment in our economy, our environment, and public health.

I support this budget request because it provides the Department of Energy with the tools necessary to catapult our country to the forefront of 20th century clean energy innovation. These robust increases in funding for the agency are critical to achieving our long-term climate objectives. Mission Innovation also holds the promise of creating an economic opportunity for our country on the scale of the Apollo Program.

There are some requests in this budget that are of specific interest to my State and district. In particular, I strongly support the \$110 billion in the request to support a new competition to establish 10 regional clean energy innovation partnerships around the country. Our country has many hubs of energy research and industry knowledge that can greatly contribute to furthering our clean energy future.

In New Jersey, we have leading academic research institutions,

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like the Rutgers Energy Institute and Princeton University. A number of renewable, or major renewable energy companies, are headquartered in our State. And we are home to the Princeton Plasma Physics Laboratory, a DOE facility, doing cutting-edge research on fusion energy. I know that New Jersey would be uniquely qualified to host one of these 10 regional partnerships.

I continue to support funding for the Northeast Gasoline Supply Reserve and, again, commend the Secretary for taking action to create this important stockpile of gasoline in the Northeast. As many know, when Hurricane Sandy struck in 2012, access to gasoline was severally limited in the aftermath of the storm, causing major problems in the region, impacting homeowners, businesses, and emergency personnel. And I am pleased that we learned this hard lesson and put in place a plan to make the region more resilient when another storm strikes.

All in all, the critical investments in clean energy included in the budget proposal will put our country on the right track to meet our carbon reduction goals and protect our environment and public health. It sets the stage for renewable energy innovations that will bolster America's clean energy economy. Mr. Secretary, I commend you for your leadership in this area, particularly during the negotiations that led to the landmark climate accord in December.

And I look forward to working with you on these exciting new initiatives, to take action on climate change, and expand our clean energy economy. Thank you again. I yield back.

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[The prepared statement of Mr. Pallone follows:]

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Mr. Whitfield. The gentleman yields back. And that concludes the opening statements.

And so, Mr. Secretary, once again, we are delighted you are here. We look forward to your testimony and appreciate your providing answers to questions that we will be asking.

Sir, you are recognized for an opening statement.

STATEMENT OF THE HONORABLE ERNEST J. MONIZ, SECRETARY, U.S. DEPARTMENT OF ENERGY

Secretary Moniz. Thank you, Chairmen Upton and Whitfield, Ranking Members Pallone and Rush, and members of the subcommittee. I really appreciate the opportunity to be back with you again to discuss the budget.

Mr. Whitfield. Is your microphone on?

Secretary Moniz. It says it is on. Closer? Then I can't read. Okay. The fiscal year 2017 budget request, as you said, totals \$32.5 billion, up from the \$29.6 billion in the fiscal year 2016 appropriation. However, I want to break it up into 2 pieces.

The request for annual appropriations is \$30.2 billion, an increase of \$.6 billion or 2 percent above the fiscal year 2016 enacted appropriation. In fact, both the National Security and the domestic appropriations requests are for 2 percent increases. And certainly this is part of the President's budget that satisfies the budget caps.

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Now, this is supplemented by a request totaling \$2.3 billion in new mandatory spending authority. It includes \$750 million for R&D within that, and \$674 million for uranium enrichment D&D to which I will return.

Just briefly turning to the major mission areas, the first, Building the Future Through Science and Energy, this total is \$11.3 billion in discretionary funding and \$1.6 in new mandatory. The principal driver for our science and energy budget increase is Mission Innovation. And I will return to this in more detail.

The second general mission area, ensuring nuclear security, the fiscal year 2017 budget request for the National Nuclear Security Administration is for a 3 percent increase, supporting our broad programmatic objectives of maintaining the stockpile without testing now and well into the future, reducing the threat of nuclear proliferation, including support for implementation of the Joint Comprehensive Plan of Action, and proposing a major shift in our plutonium disposition strategy. And, finally, supporting the safe and reliable operation of our nuclear Navy.

Our third major mission area is organizing, managing, and modernizing the Department to better achieve its enduring missions. The fiscal year 2017 budget request provides \$6.8 billion for these activities, including \$6.1 for the Office of Environmental Management. That includes \$5.45 in appropriations and \$674 million in mandatory spending from the USEC Fund.

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The \$1.6 billion USEC Fund is an existing, now new, mandatory spending account. And our proposal is in keeping with the spirit of the current authorization that revenues from the beneficiaries of past uranium enrichment services, rather than taxpayers at large, be used to pay the cost of D&D of the now shuttered facilities. And, indeed, Congress recognized in 2000 the applicability of the USEC Fund to Portsmouth and Paducah D&D.

The USEC Fund is, in fact, one of three funds that total nearly \$5 billion that can be used in this manner. Finally, in this introduction, I want to acknowledge that underpinning all of these priorities is stewardship of the Department as a science and technology powerhouse for the American people, the American economy, with an unparalleled network of 17 national laboratories harnessing innovation to successfully address national security, boost manufacturing competitiveness, mitigate and adapt to climate change, and enhance energy security. And we are working very hard to strengthen the strategic relationship between the Department and our national laboratory network.

I will also mention that starting last year, we highlighted cross-cutting R&D initiatives in the budget. Among these, in this year's request, our largest increases are for grid modernization and for the energy-water nexus initiative. The supporting budget details are provided in the 40-page statement for the record that I asked be inserted into the record. And I will use the rest of my time to describe

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Mission Innovation in a bit more detail.

The fiscal year 2017 budget includes an increase of 21 percent for clean energy R&D, in the discretionary accounts, supporting the U.S. Mission Innovation pledge. The Mission Innovation is an unprecedented global initiative by 20 countries that have pledged to seek to double, public clean energy, research and development over 5 years. The countries represent over 80 percent of global government investment in clean energy R&D. So this initiative entails a highly leveraged situation for increasing R&D.

Mission Innovation is long overdue. In 2010, the American Energy Innovation Council, a group comprised of CEOs of major American companies from multiple sectors, recommended that the government triple its investment in clean energy R&D. The council made three key points: Innovation is the essence of America's strength, public investment is critical to generating the discoveries and inventions that form the basis of disruptive energy technologies, and, third, the cost of RD&D are tiny compared with the benefits.

The pledge to seek to double the level of government investment over 5 years is ambitious but needed. As was mentioned, Bill Gates, who was a leader of the AEIC, has recently met with a number of Members of Congress and has reiterated the need for greatly increased government-sponsored energy R&D. The objective is to greatly expand the suite of investable opportunities, so opportunities for the investment sector, in clean energy to support economic growth and

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competitiveness, energy security, clean and affordable energy access, and enabling us and others to meet our environmental goals.

I want to emphasize the scope of Mission Innovation. It spans the entire innovation cycle, from the earliest stage of invention, through initial demonstration, with a weighting towards the earlier stages. It includes all clean energy technologies, renewables, efficiency, nuclear, coal with carbon capture, and enablers, such as the 21st century grid.

It is complemented by another leveraging opportunity, the Breakthrough Energy Coalition, a parallel initiative, launched simultaneously, spearheaded by Bill Gates, including 28 investors from 10 countries, putting billions of dollars on the table, to invest in the new technologies originating from the expanded innovation pipeline in the Mission Innovation countries.

These investors are prepared to be unusually risk tolerant, patient in getting their returns, they talk as long as 20 years in the energy business, and are prepared to take the most promising technologies end to end, of past values of debt, all the way to the marketplace.

I would just single out what was already mentioned, the \$110 million to establish regional clean energy innovation partnerships as not-for-profit consortia, competitively selected, to manage regional clean energy R&D programs focused on the energy needs, policies, resources, and markets of different regions of our country. The

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program design and portfolio composition for each partnership will be based on our regional priorities and set regionally. As research portfolio managers, not performers, the partnerships will link the resources and capabilities across universities, industry, innovators, investors, and other regional leaders to accelerate the innovation process and, frankly, to help develop the innovation ecosystems in different regions.

This approach tracks recommendations from the National Research Council's "Rising to the Challenge," which noted that until very recently U.S. Federal agencies have done little to support State and regional innovation cluster initiatives and recommended that, quote, regional innovation cluster initiatives by State and local organizations should be assessed and, where appropriate, be provided with greater funding and expanded geographically.

I will just conclude in saying the Mission Innovation budget proposal also supports increased investments in successful, ongoing innovation programs, such as ARPA-E, Energy Frontier Research Centers, Advanced Manufacturing Centers, Bioenergy Centers, Advanced Transportation Technologies, Advanced Nuclear Reactor Technologies, Next Generation Carbon Capture Technologies, and more.

With that, I will conclude my summary. I thank the subcommittee for its interest and support of our programs and look forward to our discussion. Thank you.

[The prepared statement of Secretary Moniz follows:]

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Mr. Whitfield. Mr. Secretary, thank you for that statement.

And at this time, I would like to recognize the gentleman from Texas, Mr. Olson, for 5 minutes.

Mr. Olson. I thank the chair. A special welcome, Mr. Secretary, on the anniversary of Texas Independence Day.

Secretary Moniz. And post primary day.

Mr. Olson. Yes, sir. As you all know, I work for over 800,000 people, Texans, in the still-exploding suburbs of Houston. When they heard about President Obama's proposal to put a tax of \$10 on a barrel of American crude oil, they all said what the heck, what is he thinking? This is insane.

Now, a good friend and neighbor in the business said if we impose a tax on somebody, let's impose a tax on Saudi Arabia, OPEC, Iran, Russia. I have to know your role in this decision. Were you personally consulted before that proposal was announced?

Secretary Moniz. I am not free to discuss, you know, internal administration discussions.

Mr. Olson. Were you involved, I am asking you, were you involved in this decision? Not what the discussions were, were you involved as our Secretary?

Secretary Moniz. No, but I mean the processes that go on involving presidential decisions are confined in the administration.

Mr. Olson. Was anyone at DOE involved in that decision, anyone at all?

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Secretary Moniz. Well, the same, the same response applies I am afraid.

Mr. Olson. Okay. I see reports that this will increase pipes that pump, the Obama working poor, of 1 quarter per gallon of gasoline, 1 quarter. How do you think this so-called hit will affect these people? Do you think it will be good, bad? Any idea what is going to happen to the American people if this tax increase if it happens?

Secretary Moniz. I would just put this in the context, if I may, of the transportation bill discussions that took part at the end of last year. And, of course, it is very good that we got at least a transportation bill for some years. But just to note that I think we all recognize, and had, many discussions with Chairman Upton that funding our transportation infrastructure is, you know, it is something that is always there. It is a structural issue we need to address. And given that there has not even been an inflation correction to the traditional support for that fund for a quarter century, all I am saying is we need some kind of structural solution which the Congress will have to re-address now in a few years.

Mr. Olson. How does this tax impact our global competitive? Are we stronger or weaker with this tax on American crude oil? Any idea?

Secretary Moniz. Well, again, the extent to which the result is a greatly strengthened infrastructure means that our whole economy will be able to function more efficiently. That was the whole motivation

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in the end for both security and economy for the highway fund in the first place.

Mr. Olson. One further question: I have a slide comparing the budget to the applied energy programs, in this 2007 budget, compared to the 2006 enacted budget. There are 17 programs here. Fourteen have increased funds for 2017. Three have decreased funds.

One with the decrease, is the fund for cybersecurity for our grid. It goes down from, let's see, it goes down from \$62 million to \$46 million, a 26 percent decrease, this upcoming year. A few weeks ago, Israel, their administrator confirmed that a cyber attack had threatened their grid. This week, the first of this month, New York Times wrote an article confirming for the first time ever, in the world's history, a successful attack had been carried out, by cyber warfare, to shut down the power grid in Ukraine. It has happened.

We know the Atlantic, Pacific can't protect us from these attacks. And, yet, you want to decrease funding for this necessary thing to keep the grid open, going, going, going. How can you justify cutting funds in this world environment of cyber attacks on grids?

Secretary Moniz. In fact, our overall cyber program, I will have to get the numbers assembled, is going up. Cybersecurity is a huge focus area for us. It appears in multiple places both in our national security side and our grid side. Frankly, one of the first things I did when I came to the Department was establish a cross-cutting cyber council.

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Our deputy secretary chairs a group with the utilities that meets I think 3 times a year. Cybersecurity is a major focus. We have given security clearances to select members of that utility community to share information. We are doing multiple exercises with the community. So cyber is actually a major focus area. I think maybe we will have to organize a few pieces together. And we would be happy to come and talk with you.

Mr. Olson. I hear your words through actions, on Page 38 of your budget document, the third line, you decrease cybersecurity by 26.6 percent. It is right there in your document. I yield back.

Mr. Whitfield. The gentleman's time has expired. At this time, I would like to recognize the gentleman from Illinois Mr. Rush, for 5 minutes.

Mr. Rush. Thank you, Mr. Chairman. Mr. Secretary, I have many questions and few moments. So I would appreciate it if your staff would follow up with my office with specific details on some of the programs and initiatives that you and I have been engaged on.

I would like for them to provide an update on the progress being made with the research labs in terms of their outreach and diversification initiatives. And I would like to see them focus on contracting and vending opportunities at the Argonne National Laboratory and at the Fermi National Laboratory, as well as any other labs you might, that you think might be significant.

I also would like for you to forward information regarding

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diversity plans in terms of laboratory leadership, hiring practices, as well as providing internships and outreach programs to 10 and 12 schools and minority-serving higher education institutions.

And, finally, I would like to get more information on the minority internship program so that I and others on this committee can ensure that this program is being continually strengthened well within the next administration, regardless of who might or might not be in the White House.

Mr. Secretary, can you speak to the subcommittee on the importance of continuing the work of the MIE initiative, regardless of what administration is in office? And also what type of impact might the 21st Century Workforce Bill have on the many institutions with its focus on minorities, women, veterans, and displaced coal workers on the energy industry and on those targeted communities as well as on the U.S. economy as a whole?

Secretary Moniz. Thank you, Mr. Rush. Actually, if I may, first, Mr. Olson, just note that I believe our cyber cross-cut total budget is \$333 million proposed, which is an increase over fiscal year 2016. But we can provide that together.

So if I may go back to the question, first of all, thank you, of course, for your constant support in all of our efforts. If I may mention a few things: Well, first of all, continuing the Minorities in Energy Program, I certainly hope that is something that the next administration does. I think we are gaining traction. I think it is

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absolutely critical. In fact, as you said, it is minorities in energy, women in energy. It is addressing the jobs opportunities and challenges we have. Veterans, displaced workers, like in coal country, these are all part of our focus area.

Minorities in Energy, I think, is making great progress. In fact, today, as part of that, actually right now, this week, is My Brother's Keeper week at the laboratories. We have 11 laboratories working on that. I might say the lab directors in terms of diversity have really stepped up. It took a little bit of a nudge, but they have really stepped up.

Sixteen out of the seventeen, physically attended a full workshop in terms of diversity, with professionals coming into help, how to go there. And also we think very important is transparency. So now we have some of -- the labs are posting their employee composition, women and minorities. Sometimes they don't look so good yet. Argonne, for example, is about 15 percent women and 10 percent minorities. Berkeley is about double that in both categories. But I think this idea, this transparency means there is a real commitment to understand where we are and to improve it.

Mr. Rush. Mr. Secretary, I only have a few minutes -- a few seconds left. Would you address the relationship between the coal workers in Appalachia and the urban displaced and out-of-work workers in districts like mine? Because there seems to be a straight line between displaced coal workers in Appalachia and the south side of

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Chicago and other urban districts. How do you view that relationship?

Secretary Moniz. I have to say, I don't know the numbers. I don't know quantitatively, although that is a very interesting question. But I can imagine, frankly, there has been a historical pattern of that type in terms of outflow, for example, to major urban centers like Chicago when there have been job losses, job challenges elsewhere.

We are trying to address I would say on both sides, for example, in Chicago specifically, the work of Argonne Laboratory in opening up to minority contractors, et cetera, I think is important.

In coal, the POWER Plus Plan has many, many components where we are trying to help, it is not only DOE, of course, this is an administration, Department of Labor, et cetera, in providing training opportunities, looking at new economic opportunities. In fact, I would mention, and this is of direct relevance to Kentucky, for example, we formed 2 years ago a jobs strategy council because of the whole dynamic issue of jobs in the energy sector. We are proposing in the fiscal year 2017 budget, that that become, very modestly funded, but become an office, a budget line to establish a function in the Department that is specifically looking at jobs and pulling it together.

Mr. Rush. I yield back.

Mr. Whitfield. At this time, I recognize the gentleman from Michigan, Mr. Upton, for 5 minutes.

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The Chairman. Thank you, Mr. Chairman. Secretary Moniz in 2012, Congress passed the American Medical Isotope Production Act of 2012. And in testimony before this committee in 2009 as that legislation moved through the committee, the Department of Energy's representative projected domestic production facilities that DOE was funding could come online as early as 2013. To date, we know that none of the projects DOE was funding have come online. And a number have been canceled.

I am interested to know what is the status of domestic production facilities? And can you help us really move this forward?

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Secretary Moniz. There are, yes, for the, particularly for the moly-99 issue, which is the important one, there are three programs that we are supporting with three different technologies. One of them, SHINE, is an accelerator that will use low enriched uranium. General Atomics is developing a technology. And a company called NorthStar Medical Radioisotopes is developing pathways through neutron capture, et cetera. The NorthStar schedule is to go to first production in October of this year. I think General Atomics is looking to 2018. And SHINE is looking to the beginning of 2019. So, over the next 3 years, we should have three different companies coming on with moly-99.

The Chairman. Good. Good. Last week, our Subcommittee on Oversight took testimony that highlighted how critical Cabinet-level leadership, particularly through you, is for the success of DOE and particularly its nuclear security mission. So I know that our committee is going to continue to look carefully at what is necessary to ensure that the Department is managed to meet its nuclear weapons responsibility and structured to ensure that they are executed to their full potential. I just want an assurance from you that if it does require legislative change, if you come to that conclusion, will you be able to provide us the technical assistance to enable for you to get the job done?

Secretary Moniz. I certainly will, absolutely. If I may just

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say --

The Chairman. It should be an easy yes.

Secretary Moniz. Excuse me?

The Chairman. It should be an easy yes.

Secretary Moniz. The answer is yes. Could I add to the yes?

The Chairman. Yes, you can.

Secretary Moniz. I just want to note that I would recommend that you might take a look at the letter I wrote to the Congress at the beginning of the Mies-Augustine report, where I spell out very, very clearly our posture with regard to the overarching recommendation of the Mies-Augustine report. And I think that gives you the flavor of the assistance that I would be happy to provide.

The Chairman. Great. I think we put it into the record as well, so all members can see it.

[The information follows:]

***** COMMITTEE INSERT *****

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The Chairman. Thanks, again, for being up here. And, again, as I talked to Chair Murkowski earlier in the week, we are encouraged that they may be able to finish that bill as early as tomorrow. And I look forward to working with you as we work on the conference to get it done.

Secretary Moniz. And, again, I am happy to provide as much technical assistance as possible to both Chambers.

The Chairman. Thank you.

I yield back.

Mr. Whitfield. The gentleman yields back.

At this time, the chair recognizes the gentleman from New Jersey, Mr. Pallone, for 5 minutes.

Mr. Pallone. Thank you, Mr. Chairman.

Mr. Secretary, last week, this committee's Subcommittee on Oversight and Investigation held a hearing on two valuable reports by distinguished panels that examined DOE's labs and the Nuclear Security Enterprise. And, in particular, I found the findings of the Congressional Advisory Panel on the Governance of the National Security Enterprise, also known as the Augustine-Mies panel, to be quite sobering. Both the panel and the panel witnesses who testified before our committee reported that the National Nuclear Security Act, which created a separately organized National Nuclear Security Administration within DOE, had not worked as intended. And the panel also reported that this has led to a number of serious structural and cultural problems within the nuclear complex. The panel further

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concluded that if not addressed, the dysfunctional governance practices could put the entire Nuclear Security Enterprise at risk over the long term.

Obviously, you are familiar with this. So, Mr. Secretary, the panel studied various approaches to fix the problems they found. After evaluating several governance models, the panel concluded that Congress should reintegrate NNSA into DOE, clarify confused authorities, and place the responsibility and accountability for the nuclear mission back on the shoulders of a qualified Secretary.

Mr. Secretary, I know you are familiar with this recommendation. So let me just ask, do you support that recommendation? And why do you think the panel thought it was so important?

Secretary Moniz. That is a very sophisticated question and challenging. I think the issue is that their primary recommendation, as you said, after evaluating different governance models, to look at the reintegration pathway, which was, to be perfectly honest, the opposite of what many thought was going to be the recommendation, is that, upon looking at it, they found that there were two problems, which I think we are working to overcome, but, you know, in terms of the long term, it might need a congressional look. One is management inefficiencies. But probably most important is the role of a Cabinet member in representing that mission at the highest levels. And I do serve on the nuclear national security subgroup of the National Security Council, for example.

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So what they found was that I think an unintended consequence of the legislation is that, to be perfectly honest, the Armed Services Committees do not spend as much time, shall we say, with the Secretary anymore. So I think that is really the point. And I think that what -- I think that we have -- by the way, I should say the President has appointed four people, frankly, me; Deputy Secretary Sherwood-Randall; General Klotz, NNSA Administrator; and Madelyn Creedon, the Deputy, the four leadership positions with substantial national security experience, but the question is, what is going to happen over time? And that is where I would certainly invite the discussion.

Mr. Pallone. All right. Well, I just want you to know that the committee intends to continue its bipartisan oversight into how we can make the Nuclear Enterprise function more effective and efficient. And we certainly intend to further examine the panel recommendations and hope to work closely with you to strengthen this critical national security endeavor.

And I did want to thank you, you know, for all you have done as Secretary. I think your work on the nuclear negotiations with Iran, among other efforts, demonstrate how you are precisely the type of qualified Secretary that the Augustine-Mies panel discussed. Thank you.

I yield back, Mr. Chairman.

Mr. Whitfield. The gentleman yields back.

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At this time, I will recognize the gentleman from Illinois, Mr. Shimkus, for 5 minutes.

Mr. Shimkus. Thank you, Mr. Chairman.

Welcome, Mr. Secretary. We are both getting old. We both have reading glasses now. It is good to have you.

On Monday, Chairman Upton and I requested that the Government Accountability Office assess DOE's plan to resume consideration of the Yucca Mountain license application, including assuring DOE maintains the necessary infrastructure, contractors, personnel to assure that the Yucca Mountain project can resume. Do I have your commitment that the Department will cooperate in good faith with the GAO as they conduct this review?

Secretary Moniz. We will always cooperate with Congress and the GAO.

Mr. Shimkus. And your microphone is probably -- I don't know if it is turned on.

Secretary Moniz. We will, yes. The answer was --

Mr. Shimkus. I heard you. But for our transcribers. We wanted that in the record.

Do you commit that the Department will not take any unilateral actions that will set back the Yucca program further, including anything to alter the physical structure or by allowing contracts that support the Yucca Mountain project to lapse?

Secretary Moniz. I will have to -- I don't know exactly the

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situation of that contract that you are referring to. I would have to get back to you for the record.

Mr. Shimkus. Please do. Because, as you know, I monitor this as closely as I can.

Secretary Moniz. Yes, sir.

Mr. Shimkus. Now I want to move to boreholes for a second. You have strongly advocated for the development of boreholes to dispose of a small amount of DOE's inventory of defense nuclear waste. This initiative is concurrent to your initiative to develop a, quote-unquote, "consent-based" siting process, which, as you know, contradicts the Nuclear Waste Policy Act -- contradicts, or it is not in compliance with. There is no provision for this in the current law.

In January, you, DOE announced it was awarding a contract to drill a test borehole in North Dakota. I am sure you are aware that there has been substantial public pushback on that project. I would like to ask a couple of questions about boreholes and your proposal for consent-based siting. In the interest of time, if you can, you know, I would like a yes or no so I can get -- there are only about four or five of them here.

Are you aware of the Office of Nuclear Waste Negotiator that was established by the Nuclear Waste Policy Act?

Secretary Moniz. Yes. I am aware of it.

Mr. Shimkus. Are you aware that the negotiator made available funding to study the potential of interim storage nuclear waste storage

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facilities? They did --

Secretary Moniz. Historically. Historically, to start with.

Mr. Shimkus. Are you aware that in 1991, 1991, county commissioners in Grant County, North Dakota, applied for these grants?

Secretary Moniz. No, I was not aware of that.

Mr. Shimkus. Okay. But they did. Are you aware that after applying for the DOE grants, all the county commissioners were recalled by their constituents?

Secretary Moniz. Well --

Mr. Shimkus. They were. Based on historical experience in North Dakota, why did you choose to even try to award a grant to a North Dakota-based team?

Secretary Moniz. Well, obviously, I wasn't involved in the selection. But there was a competition. There were a number of proposals. And the scientific review team felt that this was scientifically a very good place. And, of course, we are now working in terms of another location that is appropriate.

Mr. Shimkus. Well, it is important because, as you probably know, yesterday the Pierce County commission in North Dakota unanimously rejected your borehole project. How does this now impact your deep borehole proposal?

Secretary Moniz. Well, as I said, it is actually in the contract that if for any reason the site is unavailable, that we will have another site. And that work has been going on now since the initial problems --

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Mr. Shimkus. Okay. Here is my problem. When I taught high school, the executive branch, per the Constitution, is designed to enforce the laws of the land. We do that telling kids that they have agencies and Secretaries that help enforce the law. It is unfortunate that you have been part of an administration that is not enforcing the Nuclear Waste Policy Act. And it is subverting the intent of the law. And it is particularly troubling in that this, quote-unquote, "consent-based" process, which you use to discourage, attack, obfuscate the long-term location of Yucca Mountain and use a State-based discussion where you now talk about boreholes, you try to ram it through county-based organizations without even a State-based discussion. So the Department of Energy continues to hypocritically move to obfuscate, delay, break the law. And I wish, for the sake of the republic, that the administration would abide by the law.

And I yield back.

Secretary Moniz. Chairman, may I respond? It is a very important point.

Mr. Whitfield. Yes.

Secretary Moniz. First of all, as we have said before, we are following the law. But I want to specifically address --

Mr. Shimkus. Mr. Chairman -- you are not following the law. The Nuclear Waste Policy Act is pretty clear: there is no authority for interim storage or interim sites.

Secretary Moniz. And that is why we don't have the interim

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storage site.

Mr. Shimkus. The Nuclear Policy Act is a conjunction of both spent fuel and defense waste. There is no bifurcation of where nuclear waste goes.

Secretary Moniz. Well, may I just focus on the --

Mr. Shimkus. If you are going to spend additional time, then I will spend additional time.

Mr. Rush. Mr. Chairman?

Mr. Whitfield. Yes, Mr. Rush.

Mr. Rush. You granted the Secretary's request to respond. So I think we should allow him to respond.

Mr. Shimkus. Would my colleague yield?

Mr. Rush. No. I want to --

Mr. Shimkus. Your questions were about wouldn't -- the administration following the law on minority hiring. And we have an administration that is not following the law from a different administration. It is hypocritical. And it is wrong.

Mr. Rush. Mr. Chairman, will we allow Mr. Secretary to answer the question and to respond to the question? That is the reason why you granted him the time. So please allow him to respond without any interference from any member of the subcommittee.

Mr. Whitfield. Well, let me just say that I think Mr. Shimkus raised an important point. I know there is legal action on this as well.

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Mr. Secretary has asked for an opportunity to respond, so I will grant him that opportunity.

Secretary Moniz. Thank you, Mr. Chairman.

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EDTR SECKMAN

[11:04 a.m.]

Secretary Moniz. Thank you, Mr. Chairman.

I will just respond narrowly to the North Dakota borehole. That's all I was responding to. I want to emphasize that the statement that this somehow is not consistent with a consent-based approach does not apply. This is not a nuclear facility. This is a scientific experiment which clearly may have, depending upon results and where analysis goes, may have implications as a useful high-level waste disposal approach. It also may be useful for engineered geothermal systems. This is a science experiment. It did not have any consent-based process. And we never do that for grants for science experiments. So it is apples and oranges.

Mr. Whitfield. Okay.

At this time, I recognize the gentleman from California, Mr. McNerney, for 5 minutes.

Mr. McNerney. Thank you, Mr. Chairman.

Thank you for coming to see us, Mr. Secretary.

I share my colleague from Illinois' concern about the nuclear waste lack of progress and the urgency to move forward on that. Are you still required to recuse yourself from questions on fusion?

Secretary Moniz. No.

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Mr. McNerney. Good. Well, the superconductor technology advancements have presumably increased the progress of fusion. Could you talk about where we are with that fusion research? Is there any sort of timeframe where we can expect to see good results and maybe commercialization?

Secretary Moniz. Well, we are still, certainly in terms of the large tokamak approaches, we are still quite some ways away. The ITER project, which is at a critical point, we need to have a report to Congress on May 2. It has new leadership, by the way, which has really, I think, improved dramatically the project. But even with their new plan, they are talking about first plasma at the earliest in 2025, but deuterium-tritium only into the 2030s. So that is just even to begin on the big ITER experiment. Domestically, we are continuing the work at Princeton and in San Diego. The MIT program shuts down this fiscal year, which accounts for some of the decrease in the budget.

Now, what is interesting is how in nuclear, both fission and fusion, there is a lot of innovation going on in the private sector, including in California. I cannot guess when this might become commercially feasible. But there is a lot of both building major demonstrations, like ITER, like what is going on in Germany, Princeton, California, but also with novel concepts.

Mr. McNerney. Well, I am eternally optimistic --

Secretary Moniz. I am sorry, and another thing is our ARPA-E program, which takes risky technologies, also issued grants last year

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to novel fusion ideas that would operate in some intermediate density range, which we can come and discuss with you if you would like.

Mr. McNerney. I would like to ask you about the DOE's effort to expand work on the water-to-energy nexus. What are the Department's priorities in that regard? And I am developing legislation sort of parallel to that, so I am kind of interested in this subject.

Secretary Moniz. Yes. Well, this is one of -- our two biggest increases, I said earlier, for our crosscutting activities is grid modernization and energy-water. The energy-water, we are proposing roughly a tripling of the budget. We think this is -- the more you look at it, the more important it becomes. And it would be the very wide-ranging, everything from competing for a new desalination hub to research and system analysis for things like wastewater treatment and the like. So it would be a pretty comprehensive program. The last thing I will just say on that is I don't know if this will materialize, but just 2 weeks ago, when Minister Steinitz was here from Israel, where they are very advanced in managing water, we are talking about the possibility of strong collaboration there.

Mr. McNerney. Well, we should collaborate as well in our offices.

Secretary Moniz. Great.

Mr. McNerney. I want to talk about carbon capture and sequestration. The technology has had some setbacks. I think one of the projects canceled. But, in my opinion, the coal industry, mining,

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coal burning in the future is going to depend on some sort of carbon capture and sequestration. Do you share that view that the future of the coal industry depends upon a good carbon capture and sequestration?

Secretary Moniz. Absolutely. And I would note some good news, actually. There are three major projects, a megaton of CO₂ per year scale, one that we have helped support in the United States. One is in Texas. It is Air Products. So these are industrial facilities. That has been operating for 3 years. The second one in Illinois, ADM, that probably will start within a month. And, third, is a coal project, coal powerplant in Texas, again, Petra Nova, which will start probably in a year or so, maybe a bit less. So those are all going forward.

Also, I want to emphasize: In the budget, we also propose new smallish scale pilot plants to look at novel technologies like oxy combustion and chemical looping. And we also are reproposing to the Congress what would ultimately be about a \$5 billion set of tax incentives for carbon capture and sequestration.

Mr. McNerney. All right. Thank you, Mr. Secretary.

I yield back.

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

At this time, the chair recognizes the gentleman from Ohio, Mr. Latta, for 5 minutes.

Mr. Latta. Thank you, Mr. Chairman.

And, Mr. Secretary, good to have you back before us in the committee. Mr. Secretary, in order to develop the next generation of

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advanced nuclear technologies, private industry, the Department of Energy nuclear research activities, and the NRC have all aligned efforts to research, demonstrate, and license advanced nuclear technologies. I am drafting legislation to examine the nexus between DOE's nuclear research programs and the NRC's licensing capabilities, and earlier this week, my office sent over the discussion draft. And I look forward to your department reviewing it with technical comments. I would like to ask, how is DOE communicating with NRC to provide a pathway for your research activities to be carried through the NRC's licensing process?

Secretary Moniz. First of all, of course, we would be delighted to help with assistance on your draft. With the NRC, there are several things. One is, I should say, this is not advanced -- this is not novel reactors, but we have from the beginning had NRC directly engaged in our nuclear simulation hub at Oak Ridge, because in the end, the products of that will be very important for licensing of at least evolutionary new technologies. In terms of alternatives, we have a workshop coming up -- I believe coming up, or maybe it already happened -- with NRC in terms of more advanced non-light water reactor technologies. We are funding two companies, company-led consortia: one to develop pebble bed reactors and one to develop molten salt reactors. We are in very strong communication with NRC, because I think you put your finger on something that is critically important. If they are not involved early on in the work, then the regulatory

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process could go on much, much longer.

Mr. Latta. Thank you.

And if I could kind of switch over to cybersecurity, because as you know, here on the committee we have had multiple hearings, especially when we are talking about how the infrastructure could be affected by cyber attacks. I served on a couple different cybersecurity task forces. And what is the Department's strategy for addressing potential cybersecurity challenges presented by existing and future grid and energy infrastructure technologies? And one of the things also I would like to ask is, because I am looking at it on your budget, it shows a decrease from about \$62 million to \$46 million this year for cybersecurity for energy delivery systems. So you had a decrease. And so our concern is we want to make sure that we are beefing up. And I know, across not only my district or the State of Ohio but across the country, there is always that great concern as to what is happening on the cyber side because of how vulnerable we could be to an attack.

Secretary Moniz. That is one budget line. As I said earlier, if you actually look at our cyber cross-cut, I have to say, it is not a major increase, but we do have an increase proposed for our cyber cross-cut. We are working in the technology space, but we are also carrying out a number of other activities with the energy infrastructure people, with the heads of utilities.

Mr. Latta. Could you just kind of go into detail what that might

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be, what some of those might be that you are working on?

Secretary Moniz. Perhaps we could come by and have some people come to your office and describe that in detail. But, for example, the Deputy Secretary, again, convenes regularly a group specifically on energy infrastructure protection. Cyber is a big part of that. It involves -- I can say it -- it involves people like Tom Kuhn, the head of EEI. On the private utility side, the chair of that now is Tom Fanning, the head of Southern Company. And there are quite a few others. And they are engaged in table top exercises that we run. They are engaged in -- because they have been given some clearances, they are briefed on some cyber attacks and what are best practices to try to avoid that. The fact is, I mean, you know, cross your fingers, obviously, the intensity of cyber attacks on U.S. energy infrastructure is certainly increasing year by year. So far, we have not had a major hit. But we have seen in other parts of the world, there have been some pretty serious cyber hits. And so we are always looking into those. Frankly, we had a team in Ukraine after their incident, analyzing that and sharing that with our utility leaders, for example.

Mr. Latta. Thank you very much.

Secretary Moniz. We could say more in a different context.

Mr. Latta. Thank you.

Mr. Chairman, I see my time has expired, and I yield back.

Mr. Whitfield. The chair now recognizes the gentleman from Iowa, Mr. Loeb sack, for 5 minutes.

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Mr. Loebsack. Thank you, Mr. Chair.

Good to see you, Mr. Secretary, as always. Thanks for taking the time to come and testify today. I do want to add my thanks for your work on the Iran deal. I thought that was really wonderful on your part, all the effort you put in. I want to focus a little bit on renewable energy today. As you might imagine, I am from Iowa, got some thoughts about that. As you know, recent data from the U.S. Information Administration showed that Iowa now is the first and the only State in the Nation to generate more than 30 percent of its energy from wind power. Last year, we hit 31 percent. I am very proud of that. Something I bring up quite often in these fora. It is great news, not only for my home State but, of course, for the Nation's renewable energy sector. When we invest, I think we can all agree, when we invest in renewable energy, like solar and wind, we do lower our dependence on foreign oil, and we rein in CO2 mission. In fact, last week, your agency released a report stating that the wind production tax credit, which I am thankful we got extended for 5 years --

Secretary Moniz. We are too.

Mr. Loebsack. -- and solar investment credit, the investment tax credit, will drive a net increase of 48 to 53 gigawatts of energy from renewable sources by 2020. And these investments not only do help to produce clean energy, more clean energy, but they also help to produce thousands of jobs. And I was happy to push as hard as I could for both

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of those tax credits. We got 5 years for each, as you know.

You also know that my State is a leader on biofuels. You are very aware of that. And along with your agency's bioenergy technology program, which develops and advances America's energy future, it has positively affected I think our domestic energy sources. And I thank you for all the great work you have done there. I also note that U.S. Department of Agriculture, under the leadership of Tom Vilsack, our former Governor, has already made investments in terms of infrastructure through the biofuels infrastructure program.

But I am going to introduce a bill later today to help Americans have a greater choice at the pump. And that has already been done to some extent through the BIP program, and I am very appreciative of what USDA has done on that front. But I think we have got to go further. My bill is the REFUEL Act, Renewable Fuel Utilization, Expansion and Leadership Act. And it will create new and retrofit existing infrastructure, including pumps for biofuels and hydrogen, tanks, piping, and electric vehicle chargers. Too often, I think we have got infrastructure constraints out there. I know a lot of this has to do with USDA, not necessarily with DOE, but it is something that I still want to bring up, make sure that folks know that this act I think is going to help bridge the divide by making important investments in the infrastructure needed to provide consumers with choices at the pump. I am going to come back to that.

But I first want to ask you -- because that will be my second

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question, if you see any more opportunities on the part of the administration to advance the infrastructure aspect of this. But the first question has to do with the budget of DOE in terms of energy efficiency and renewable energy programs that the President has requested \$156 million for the wind energy program. And I support that fully, as you might imagine. But, last year, roughly \$4 million was set aside for distributed wind energy, something that we really don't talk that much about. We talk about the big projects, projects that MidAmerican Energy is doing, for example, in Iowa. But this type of wind energy I think is particularly important to my constituents and throughout the country. And I am curious to know if you plan to invest more in distributed wind, and if so, what are you hoping to achieve with the greater investment?

Secretary Moniz. Well, thank you, and by the way, I will be in Iowa in the beginning of May.

Mr. Loebsack. Fantastic.

Secretary Moniz. That will be great.

There are many directions in wind that remain very, very interesting for development. I will come to the distributed, but I would also note that a report last year noted how really pushing to higher hub heights could be a major -- open up major resources. Of course, there is the offshore wind that we are still working to try to get costs down. There are really more unusual options, like ARPA-E funded something called a flying wind turbine, which would go to a

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thousand feet. But distributed wind, I completely agree with you, has been kind of sometimes lost in the shuffle. And I think part of it is also one is not never quite clear what one is talking about with distributed wind.

Mr. Loebsack. I understand.

Secretary Moniz. Should it be defined in terms of scale of the wind, or is it just that it happens? It could be a large wind turbine that happens to be close to the load. So I think it is pretty complicated. I believe this year, in fiscal year 2017, we do continue distributed wind. It is at a modest scale; it is \$4.5 million or something like that, but something we would be happy to discuss more with you.

Mr. Loebsack. Thank you. I do appreciate that. I have run out of time, but I will submit another question for the record having to do with infrastructure.

Thank you, Mr. Chairman.

Mr. Whitfield. The chair now recognizes the gentleman from West Virginia, Mr. McKinley, for 5 minutes.

Mr. McKinley. Thank you, Mr. Chairman.

And, Secretary, just to get started on a series of questions, but the first one --

Secretary Moniz. I am having a hard time hearing you.

Mr. McKinley. First question, just a yes or no, if you could, before I get into a little bit more meat. With the NETL facility, now

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that the CRENEL Commission has made a recommendation that we go from a GOGO to a GOCO, do you support their final decision, or are you going to maintain it as a government-owned, government-operated?

Secretary Moniz. No. I have answered that in the past, and the answer is the same, that we will continue with the GOGO arrangement.

Mr. McKinley. Thank you. That gives some assurance to everyone. The earlier statement from Chairman Whitfield that he was concerned about the direction of the Department, DOE -- and I share that, because I think that the focus has been trying to force the existing coal-fired powerplants to add carbon capture and storage as an after-market retrofit, even though virtually every nation on the globe has turned their backs on CCS. Yes, they will do it in research, but they are not going to force it like we are. So it seems that DOE is really hell-bent on pushing CCS. Even China and India, for example, they are not forcing CCS on their facilities, but rather, they are, as you know -- I assume you know -- they are building new high-efficiency coal-fired powerplants instead of CCS.

We recognize that energy efficiency is the best short-term solution to our emission controls, and CCS is a long-term solution to this. And the President has said, as recently as back in February, the carbon capture is just really expensive right now. So I don't understand why DOE continues to chase this rabbit, I think the wrong rabbit, of pushing CCS on our utilities when they should be encouraging high-efficiency facilities.

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Now, just some quick examples. Our two most efficient powerplants in America -- Turk in Arkansas and Longview in West Virginia; one an ultra-supercritical and the other one being just an advanced supercritical -- they are built at half -- at half -- the cost of Kemper. So it just kind of makes me think about -- it feels like DOE is trying to retrofit pushing in a \$50,000 engine into an old car instead of just buying a new car. It is just simply we keep trying to make people retrofit, because you put up so many roadblocks, other people in the administration, in building new coal-fired powerplants.

So shouldn't the DOE switch its priorities? Or what would be the problem with switching its priorities so that we would be more focused on the high-efficiency, low-carbon-emitting, advanced supercritical and advanced supercritical plants across this country? Are we missing something? Why aren't we doing the one that is more immediate that we can get some success with?

Secretary Moniz. Well, first of all, of course, I completely agree with your focus on energy efficiency as critical. That is a given. And by the way, I would say that India, with India, you are certainly correct; India is not pursuing CCS. But China actually is.

Mr. McKinley. I just came back from China in October, and the NEA in China said they are not going to promote CCS. We had that very clear in our meetings with him. They said it is too expensive; they are not going to do it.

Secretary Moniz. Well, I will be there in a couple weeks, and

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I will check in. The last time we met with them, which was recently, they said the opposite. Okay.

Whatever the case, in terms of our program, obviously, look, our main focus at DOE is in the kind of the technology development and RDD&D with the long-term view, preparing options for the future. We don't make, in the end, the marketplace choices.

Mr. McKinley. Could we not be developing with fluidized bed combustion using calcium oxide as an additive in the formula? That is a very economical solution that other people are looking at. It is one with fluidized bed; you can use some pretty low-grade coal. That is one of the things that China said they were considering using it because they don't have the same quality coal that we have here in America. Now, I am running out of time on this.

Could I just make sure that I ask at the very end, could we get you to come to Longview and see the tremendous efficiency that is operating there without CCS, and how effective they have been able to do that at half the cost of a CCS facility? Would you be willing to go?

Secretary Moniz. I am sorry; where is Longview?

Mr. McKinley. Three and a half hours away.

Secretary Moniz. No, is it in West Virginia?

Mr. McKinley. Yes, it is. Maybe when you and I get to NETL again --

Secretary Moniz. What I have said is I would definitely like to

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get to West Virginia.

Mr. McKinley. It is within a stone's throw of NETL facility that we could go to --

Secretary Moniz. Congressman, I would like to go to West Virginia, and we will work on the itinerary.

Mr. McKinley. Thank you very much. I appreciate it.

Secretary Moniz. But I would just add, if I may, I won't go into detail, but we do have a bunch of R&D going on that is quite relevant to higher efficiency coal plants: supercritical CO2 cycles, advanced materials that you need to go to higher temperatures and the like. We can discuss that.

Mr. McKinley. I am told from the people there it is sort of a drop in the bucket. It is more window dressing than sincere. So you and I can have more of a conversation.

Secretary Moniz. We can discuss that. But we have a substantial increase in the supercritical CO2 cycle, for example.

Mr. Olson. [Presiding.] The gentleman's time has expired.

The chair recognizes the gentlelady from Florida, Ms. Castor, for 5 minutes.

Ms. Castor. Thank you, Mr. Chairman.

Welcome, Mr. Secretary. It is good to have you here.

Could you please provide the committee with an overview and your outlook on how we are doing on reducing carbon pollution? How are we doing here in the United States? What are our challenges and

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opportunities? And after the Paris agreement, give us a short sketch of the world community and whether or not you have seen countries begin to implement their commitments.

Secretary Moniz. Yes. Well, overall, if you look over the last years, we are doing quite well in CO2. This last year, we did have a little bit of an increase. Low oil prices had something of an effect. But, overall, we would say we are still on track for being about 17 percent lower CO2 in 2020 relative to 2005, which was the first target for us to hit. So that is going on, but it will mean continuing to push. In fact, following on Mr. McKinley's question, certainly on the demand side, the efficiency side will be absolutely critical for maintaining the momentum.

Internationally, I think if you look at the major emitters, of course, the EU as a whole is making tremendous progress. China is the largest individual emitter, and they are making progress as well. And, of course, they have also announced -- we will see what the implementation plan is -- but they have announced a cap-and-trade system to put into place, actually I think later on this year or maybe next year.

So I think, you know, I think countries are taking this quite seriously. In fact, I would argue that the progress made in Paris was enabled by things like the U.S.-China announcement. But they had impact only because both countries were actually walking the talk.

Ms. Castor. And I understand here in the U.S. that, even with

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the hiccup on the Clean Power Plan at the Supreme Court, still, utilities overall and States and communities are moving toward the carbon reduction goals in any event because they know it is critical to the future of our country. Is that your understanding, too, that the markets are changing; the market for clean energy innovative solutions is growing at this time?

Secretary Moniz. Absolutely. Again, I would just reiterate what you implied, the Supreme Court ruling was simply a stay; it was not a judgment, obviously, on the plan. And we feel pretty confident about it. But independent of that, it is not uniform, but many States and utilities are continuing with their planning for implementation because, frankly -- and look, much of our industry is acting already as -- in the conviction that there will be increasing constraints on carbon emissions. In fact, for years, some of the major companies have included that in their capital planning because, you know, they commit capital for a long time. What they would like to get is some assurances, some stability, and then -- they know how to run a successful business if you just give them the rules.

Ms. Castor. Right. Sometimes there is a disconnect between what happens here on Capitol Hill and what is really happening out in the business world and locally, too. But I want to compliment you for what you have proposed to do in the upcoming budget. On Mission Innovation, you have launched this -- after the landmark global agreement in Paris, you proposed double funding for governmentwide

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clean energy R&D over the next 5 years. Your agency is set to be the leader in this effort. And I look forward to working with you to make this a reality. I was pleased to see robust funding for this initiative in the budget request.

Talk to us a little bit more about what you envision for Mission Innovation and how this is going to benefit all facets of our energy economy.

Secretary Moniz. Well, maybe the best thing is just to use an example of the kind of thing that we have in mind here. And I will use ARPA-E, and by the way, for all the members, the ARPA-E summit is going on as we speak out at the Gaylord Nelson Convention Center. And I invite all of you to go out there and see really neat technologies. But we just announced the new performance results of ARPA-E. And of the first roughly 200 projects that were funded, roughly a quarter have received \$1.25 billion of private sector funding. Another quarter has received follow-on government funding and not only from DOE but DOD. Thirty-six companies have been formed. There are 9 or 10 products out there already in the marketplace in a program that has only been operating essentially 5 years.

The last round of proposals, the so-called open call in 2015, very successful in terms of the projects funded. The trouble was it was just barely over 2 percent of the applicants. We are leaving a lot of innovation on the table. And so with the formation of these clean markets -- and again, look, one can argue for or against, however you

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wish, the Paris agreement. But the fact is essentially every country in the world committed to going towards lower carbon. And that means the already growing clean energy marketplace is only going to take off even faster. And we should stay ahead of that train, stay at the head of the train and continue our innovation tradition and capture the benefits of it domestically and globally.

Ms. Castor. I agree. Thank you.

Mr. Whitfield. [Presiding.] The gentlelady's time has expired.

At this time, the chair recognizes the gentleman from Illinois, Mr. Kinzinger, for 5 minutes.

Mr. Kinzinger. Thank you, Mr. Chairman.

And, Mr. Secretary, thank you for your service to your country and for being here. I appreciate it.

I just want to kind of briefly talk about something, and then I want to get into LNG a little bit more. Included in the budget are plans to finalize DOE's multiyear program plan for grid modernization, which will create an integrated R&D program that will help ensure the future grid will deliver reliable, affordable, secure, resilient, and clean electricity to consumers. What specific kind of projects will be undertaken in this program do you foresee?

Secretary Moniz. Well, I should note that a major piece of it -- not all of it -- but a major piece of it is also a lab consortium that came together to outline a program. There will be technology

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component R&D. We have a lot of stuff still to do. We have very large-scale power electronics, for example, managing grid flows in a new, smarter way. There will be the integration of information technology, particularly on distribution systems, including going behind the meter. But another kind of effort will be a real focus on doing, partly through large-scale modeling and simulation, system designs and trying to find the ways of working with that that it helps also the ISOs, the State regulators, et cetera, in terms of building that new grid. I might add, if I may, that resilience is also critical. And some of the utilities are already making tremendous progress.

Mr. Kinzinger. And then, just very briefly, what is kind of your timing to launch and finalize? And then what opportunities for State and local municipalities will there be in participating? And are there going to be funding opportunities that you foresee?

Secretary Moniz. Well, it is already going. So fiscal year 2016, we have launched it. We have asked for a significant increase in fiscal year 2017. As I say, we want to, especially on the systems side -- I mean, as far as the technology goes, those will be competitive --

Mr. Kinzinger. And then what about like local municipalities and States to participate?

Secretary Moniz. So I think, right now, our focus has been more at the State level and things like the ISOs who manage, obviously, the system. But if there are good ideas as to how we can effectively bring

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in localities, that would be great. Frankly, the urban challenge is so great for the economy, for the environment, and the integration with things like electric vehicles.

Mr. Kinzinger. All right. Thank you.

I am going to switch subjects. LNG exports and crude oil exports put the U.S. well aligned to help the energy security of our allies in Europe and Asia. What steps are being taken to increase global access to reliable and affordable energy from us? And then also maybe when you are looking into Europe, for instance, and, frankly, that Russia has a grip on Eastern Europe and Europe, what are we doing to kind of help Europe develop their own energy as well as our exports?

Secretary Moniz. A lot of questions there.

Mr. Kinzinger. Yeah.

Secretary Moniz. First of all, in terms of LNG exports, as you well know, last Wednesday, a week ago today, was the first ship that left the United States. Kind of a major milestone in our gas revolution.

Mr. Kinzinger. Great.

Secretary Moniz. So, right now, there are several other facilities being built. And so we see the LNG exports -- we have licensed for non-free-trade-agreement countries now 10.8 BCF per day. And we just finished the public comment period on the economic analysis of going up to 20 BCF per day. So we are now analyzing those comments. So that is going forward.

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On the oil side, well, okay, oil exports are now going. And I have been consistently saying that at least for the foreseeable future this would have a relatively small impact. I see nothing so far to change that. It is a question of market structures and market prices.

As far as Europe goes, if I might say, and we would be happy to come by and talk about this more, already going back to May of 2014, we worked in the G-7 context plus the EU to establish kind of a template of what are the new -- what is the new energy security principles of the 21st century? We are working with them. The European Commission put out an energy security plan that very much follows that set of principles. So we continue that. There is in the FAST Act a requirement that DOE, working with State, come back to the Congress with an energy security report. We are working on that. And, specifically, we continue our work with Ukraine in terms of helping them with their integrated energy planning.

Mr. Kinzinger. Thank you. I only have 20 seconds, so I won't ask my next question, but I will just make the statement that it is very appreciated. You know, I see our energy as a very important part of our national defense structure, of our soft power, which prevents the use of hard power in many cases, and a very important part of posturing against the Russians and strengthening our NATO allies. So to the extent that you can continue to partner with that in development in terms of utilizing our blessed resources that we have would be very appreciated. So I appreciate you being here again, and thanks for your

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service.

And I will yield back.

Secretary Moniz. Thank you.

Mr. Whitfield. The gentleman yields back.

And sorry my phone was so loud.

At this time, I would like to recognize the gentlelady from California, Mrs. Capps, for 5 minutes.

Mrs. Capps. Thank you, Mr. Chairman.

And thank you, Mr. Secretary, for your testimony and your presence here.

As you well know, climate change is real. The effects are real, and the time to act is now. Communities across the country and around the world are already facing the consequences. And it is going to take great leadership and political will to do what is necessary to act decisively to change this troubling trajectory.

This past December, almost all the world's countries came together to forge a path forward to respond to this fact. At the heart of this need is the requirement that we recognize the dangers associated with a business-as-usual approach to our energy landscape and embrace and implement the renewable energy technologies as quickly and broadly as possible. I was glad you spoke to this in your opening remarks.

This is needed twofold. First, we need to rapidly expand on the implementation of existing green technologies, such as solar power, increased energy efficiency, but we also need to invest in developing

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new technologies that will help us transition to renewable energy sources. This is important, of course, for the environment, but also it really is a boost to our economy with the good-paying jobs that it can create.

But in order to lead in green tech innovation, we must actively support our researchers, scientists, startups, and investors. For example, the universities in my district have been integrally involved in research into developing green technologies. And you mentioned the Energy Frontier Research Centers designed by DOE in 2009. And UC Santa Barbara in my district was one of the first to apply and receive this boost. Since then, the center has made significant advances in key energy technologies, like photovoltaics and LEDs. Similarly, Cal Poly in San Luis Obispo has recently been awarded a DOE grant to conduct research into energy-generating offshore wave technology as part of the CalWave project.

So, Secretary Moniz, Mission Innovation, you have described it as a landmark commitment to dramatically accelerate public and private global clean energy innovation. Will you just give an example or two of how -- I know you have already done so, but expand on that a bit -- how this will help develop technologies required to move us toward a greener future? Specifically, I think how we can incentivize. To me, it is so much about our universities and research institutions.

Secretary Moniz. Thank you. And maybe I will start by apologizing that yesterday we stole from your district Mike Witherell

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to become the director of the Berkeley Laboratories.

Mrs. Capps. I know you did.

Secretary Moniz. Mission Innovation, again, obviously, it is going to be a very broad approach to energy technologies. But some of the high points, I think, are -- well, for one, I have to say that I think the regional innovation partnerships are really important. They will lead to portfolio diversification and I think help build innovation ecosystems more broadly in the country.

If you go to specific areas, one of the focal points is, certainly on the EFRCs, we want to expand that program. It has been a great success. The ARPA-E, here I would note: I mentioned early on in the discussion that the budget has a fairly modest discretionary increase, 2 percent, although with a priority attached to Mission Innovation, but also some mandatory requests. I say that now if we turn to ARPA-E, the request for ARPA-E is for a 20-percent increase in discretionary funding to \$350 million. I think the track record, I said earlier, more than justifies that. But it also suggests \$150 million of mandatory so that ARPA-E could also take on some different dimensions. In terms of some projects, for example -- I mean one of the advantages of mandatory funding is that it can give more certainty about a long-term commitment. And that is something that could be taken in this case. There could be scale up to more systems integration of different technologies. So I think we have thought this through in ways that are complementary. But then, of course, I mean, the specific

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technologies, frankly, across the board, we will look to get more innovation. Again, as I said earlier, there is a lot of innovation that we are leaving on the table.

Mrs. Capps. Thank you.

My second question, Mr. Chairman, was going to be to ask you to elaborate even more on ARPA-E, but you have already done so. If you want to submit anything more for the record. I am so taken by the significance of ARPA-E to our national security. The more we become energy independent as a Nation, the better it is for the world and for certainly our place in the world. But thank you again.

Secretary Moniz. In fact, if I may just add -- I am sorry, Mr. Chairman, but just add, if you go out to the Gaylord Nelson Center and see these technologies -- I was there yesterday -- and you see everything from novel renewables to an incredible small compact methane detector that can be used in hydrocarbon production and other settings. It is really great stuff.

Mrs. Capps. Thank you.

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

Mrs. Capps. Maybe he is suggesting a field trip for the committee.

Mr. Whitfield. Mrs. Capps, you lead that field trip, and maybe we can get it going out there.

Secretary Moniz. After lunch.

Mrs. Capps. Thank you, Mr. Chairman.

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Mr. Whitfield. At this time, I recognize the gentleman from Virginia, Mr. Griffith, for 5 minutes.

Mr. Griffith. Thank you very much.

Let me start, Mr. Secretary, in saying you were here a previous time and indicated, after hearing a number of us from coal country talk about the problems that we were having, that your team was willing to work with us. They sat down with us. They even come to my district. Very much appreciate it. And we have a symposium that we are working on to have some of your folks come in and talk to the people who are in the industry in the district to figure out where we go in the future. So I greatly appreciate that. I appreciate you have already commented on my favorite, chemical looping, and other technologies that are out there.

In regard to the R&D, the Mission Innovation initiative that was launched by the administration in November to try to accomplish global clean energy innovation is working with a number of countries, China, South Korea, India, Indonesia, and Germany, who also recognize that coal is an important part of their electric generation into the future, and they share our northern hemisphere air with us. And I am just wondering what we can do because they are looking at coal long term. How do you intend to work within the initiative to develop cleaner coal technologies domestically so that then we can support international efforts to do the same? Be brief, because I got lots of questions.

Secretary Moniz. First of all, Congressman, I want to thank you

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for hosting our people to go to your district and following through on that. That is the way we like to work with the Members whenever possible.

Mr. Griffith. Thank you. You are one of the few who has followed through when they have said something in the committee about helping or at least looking at the problem.

Secretary Moniz. We try.

Mr. Griffith. Look, I recognize that and commend you for it and appreciate it.

Secretary Moniz. Thank you.

In terms of developing the coal technologies, again, I do want to emphasize something that we have said before, that in the budget there are many, many different ways -- it is not just the fossil energy R&D program. But in the fossil energy R&D program, we have, I think now, you know, basically streamlined in terms of the very large CCUS demos and now, in 2017, focused on developing these more advanced technologies, which could be big breakthroughs. So that is number one.

But we have things in science. We have things in ARPA-E. And we have things, like incentives, like the \$5 billion tax incentive that is being proposed for carbon capture and sequestration.

Mr. Griffith. I do appreciate that, and I will come back to that in a minute.

I am also concerned, Gina McCarthy, the Administrator of the EPA, has said that she is still going to move forward with expending taxpayer

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resources, despite the Supreme Court's recent ruling staying implementation of the Clean Power Plan. Is DOE following the letter and spirit of the stay request and stopping any coordination on the State level when it comes to compliance with the Clean Power Plan?

Secretary Moniz. Well, again, of course, again, as we said earlier, the Supreme Court action was a stay; it was not a judgment. We have ongoing work with States. It is longstanding. We give grants to States, the State energy offices. We do technical assistance to State energy offices. We established a program with labor unions to provide them technical assistance in terms of how State implementation plans could maximize job creation, something that, again, could be of interest to you. So we continue those kinds of activities.

Mr. Griffith. I appreciate that. Can you tell me how many carbon capture and storage commercial-scale power projects are up and running today?

Secretary Moniz. Up and running? Well, there is Boundary Dam in Canada. There are a variety of industrial facilities that have CCUS here and globally. There is one operating in the United States; one about to operate; and Petra Nova in probably less than a year, as a coal powerplant in Texas with enhanced oil recovery.

Mr. Griffith. All right. Because talking about Boundary Dam, my understanding is that the project --

Secretary Moniz. I should have said Kemper is coming as well.

Mr. Griffith. Okay. But my understanding is Boundary Dam is

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currently the only operating post-combustion capture system in the world. And the EPA relied on that to make its determination that CCS is adequately demonstrated for commercial power production. But I am reading all these articles that say they are only hitting about 40 percent of where they thought they would be. I am just wondering if you can say, is that accurate to your understanding? Are they doing better than hitting about 40 percent of what they projected?

Secretary Moniz. I think, frankly, it is not different from many other of these technologies where we are pushing, you know, pushing forward where it takes engineering know how. I mean, you know, when the first -- forget carbon capture -- when the first integrated gasification coal plant started operating in Florida, for example, and the same experience was in other -- in Spain and elsewhere, that IGCC plant, it took 3 years to reach its operating because you are learning, you are breaking it in. And so I think this is nothing unusual.

Mr. Griffith. I think --

Secretary Moniz. The same is true, by the way, for CSP plants.

Mr. Griffith. I would just say that, while you would expect some, 40 percent seems awfully low. And I think it may take them a little bit longer than 3 years.

Secretary Moniz. I could come and show you the IGCC histories, no carbon capture, just IGCC, and you will see maybe it is on track.

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

At this time, the chair recognizes the gentleman from Maryland,

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Mr. Sarbanes, for 5 minutes.

Mr. Sarbanes. Thank you, Mr. Chairman.

Mr. Secretary, I can't tell you how much confidence you give me in the Department of Energy's role in the environment portfolio, all of these innovations. And I think your positive impact in so many ways around the country is probably unrivaled in terms of someone serving in your capacity. So I want to thank you for that. I just get excited listening to all the things that you are working on and proposing, because I do think it puts --

Secretary Moniz. It is a great department.

Mr. Sarbanes. You are on the cutting edge. I think you are having a field day. So I did want to talk about I noticed in the budget that you proposed consolidating the Department's efforts in a new Office of Energy Jobs Development. I wanted to speak about that for a moment. And that office is going to do a number of things: manage the collection of energy jobs data, which is critical, and then issue an annual report on our progress there; coordinate the ongoing energy workforce development activities across the Department and in this amazing network of National Labs that you alluded to; and, thirdly, provide technical advice and support to States and localities to advance energy workforce training and economic development.

And we have already seen examples of that in Baltimore. And I want to support the DOE's investment in these sorts of activities. In particular, the clean energy sector has tremendous potential, as you

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know, to be the next big growth industry that can spur the economy. We have an amazing partnership that has come together in Baltimore recently that has begun to be developed between the Department of Energy, that is providing its expertise and technical assistance, the city of Baltimore, the Maryland Clean Energy Center, and a variety of nonprofits to create a sustainable low-income solar installation workforce training initiative, which would accelerate home weatherization, the deployment of solar energy, with a focus on low-income housing in the city of Baltimore, train underemployed or unemployed community members to step up into these job opportunities as part of an energy industry workforce, and then secure full-time employment for trainees within the growing energy industry in Maryland. In that sense, this project or initiative really models the kinds of things that you are already doing across the country and can increase efforts around the country in a like manner.

So can you just give me some of your thoughts? Because, obviously, the Department views this as a priority and just a basic economic development initiative, particularly one that can focus on some hard hit and neglected economic areas around the country. It offers great promise.

Secretary Moniz. Well, thank you, Congressman. And also thank you for your personal engagement in the Baltimore solar initiative. Also, Congressman Cummings and Senator Cardin as well. But you have been particularly deeply engaged, which we appreciate. So the

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Baltimore initiative was, I think, as you say, a good model. We are working with the local institutions, Morgan State University being just one of them. And the idea is here, for the members, is to try to integrate solar deployment with the weatherization of homes for higher efficiency in low-income areas. And, obviously, Baltimore has had its challenges over the last year.

So I would like to use that to go to your opening statement about establishing the Energy Jobs Development Office. Again, about 2 years ago, we brought in I think two outstanding individuals. And they were prime movers for the Baltimore thing. But they have done a terrific job on jobs broadly. You mentioned data. It is very hard to get data on what energy jobs are. So we have been working with the Department of Labor to do this, as you say, in an annual report. And that is a foundation for understanding not only what is happening, but what can we do to make it better? So that is just one example. So I do ask the Congress to allow us to have a separate budget line, rather than passing a tin cup around, to have this jobs focus. I just mention, the last thing I will say is, again, you have raised it, is in this case of the solar, it would be great to link that then to training local citizens to do things like solar installation. In November, this country passed 208,000 direct jobs in solar alone. And on the installation side, you could be talking -- you are certainly talking north of \$20 an hour for an installer. Get some training. We will do a community college program to do that. I think this is what we

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have to do in more urban areas.

Mr. Sarbanes. Thanks very much. We look forward to working with you.

Mr. Whitfield. The gentleman yields back.

At this time, the chair recognizes the gentleman from Ohio, Mr. Johnson, for 5 minutes.

Mr. Johnson. Thank you, Mr. Chairman.

And, Mr. Secretary, it is good to see you again. Before I get into my questions, I would like to engage in a topic that you and I have had a conversation about many times before. And I would be remiss if I didn't highlight my disappointment with your Department's recent decision to withdraw support for the American Centrifuge Project down in Piketon, Ohio. I think this is a very seriously flawed decision. I believe that by allowing the ACP to shutter operations, we are essentially seriously further hindering our ability to readily provide domestically enriched uranium for national security purposes.

And one of my biggest concerns is the contradictory nature of the decision in light of the very report that your Department produced upon which the decision was made, because one of the viable options in that report that was discounted was discounted because of the loss of the workforce from a previous facility. And I worry about how this loss of this uniquely skilled workforce is going to play out over time, and how that could be detrimental when DOE eventually decides, once again, that we need to build out our domestic uranium enrichment capability.

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That workforce is not going to sit there and wait. Those people have got to find jobs somewhere, and they are not going to be sitting idly by.

So I just wanted to reiterate one more time, Mr. Secretary, that I believe that is a very flawed decision. And I hope you will take that under consideration. And if there is any way to reverse it, you certainly have my support, and I believe many of my colleagues as well.

Secretary Moniz. Should I comment?

Mr. Johnson. Certainly.

Secretary Moniz. I won't go through the entire decision process, but just to note that, first of all, the program continues. Unfortunately, for the Portsmouth side -- and it is not nice; it is not happy about it -- but the spinning of the existing old centrifuges has stopped. But key skills will be sustained. But the real issue is that we do need -- I have been totally consistent and agree with you, we need -- at some point for sure we need a national security enrichment train. And, right now, the ACP is the only candidate at the moment for sure. And the Portsmouth facility remains uniquely suited and designed to house that national security train. The thing is it costs billions of dollars, which have not been made available at the moment. And with the long --

Mr. Johnson. If I could interrupt you, Mr. Secretary, they have been made available, because Congress continues to fund that project. How can you say they are not available?

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Secretary Moniz. Billions of dollars to build a new national security train. That is the issue.

Mr. Johnson. Well, I don't think I grasp that.

Secretary Moniz. I would be happy to get together with you and do it again.

Mr. Johnson. We will take that offline, because that is a new one that I am not familiar with. Because the cascade is there now. And the cost to change that cascade to an operational one seems to me would be a lot cheaper than starting from scratch.

Secretary Moniz. No, but the problem is that -- well, again, we should maybe go offline. But that cascade will not be part of a national security train. We can discuss that.

Mr. Johnson. Okay. Let's talk about it. Now, another USEC-related question, you said that Congress gave DOE authority in 2000 to use the USEC funds, which is the American Centrifuge Project, for the D&D cleanup. But from 2000 through 2015 or 2016, that was never proposed. Why now would the budget propose using the D&D -- or the USEC funds to fund the D&D? Just a clarification.

Secretary Moniz. There were proposals in 2000 to use the USEC fund. They, in the end, were not approved to use the fund. And in the intervening period, of course, the utilities then stopped paying into the UE D&D fund. Congress has essentially chosen to appropriate out of discretionary funds. We are suggesting that it is time, when we have \$5 billion in three funds, we think it is time to go back and

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to think about what might be, frankly, also a kind of a stable way potentially of addressing this. See, we currently estimate -- one of the differences to when the utility payments were ceased upon agreement was that the full cost of the D&D was not known. Now we see about a \$22 billion to go on UE D&D. So it is a big number. And there is about \$5 billion in those three uranium funds today in the Treasury. And by the way, one of the ironies, we would say, is that interest is charged. So they sit in the Treasury. Interest is charged. The amounts keep growing. We are just proposing maybe it is time to start using those.

Mr. Johnson. Okay. We will talk offline. Thank you.

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

At this time, the chair recognizes the gentleman from Pennsylvania, Mr. Doyle, for 5 minutes.

Mr. Doyle. Thank you, Mr. Chairman.

And I want to thank my two colleagues for their courtesy in letting me speak today.

Secretary Moniz, thank you for being here. It is always a pleasure to have you here in front of our committee. And I want you to know how much I appreciated your visit last year to Pittsburgh. And you didn't get a chance to tour the NETL, so I want to invite you to come back as soon as possible so that you and I can visit the NETL in Pittsburgh and the incredible workforce that is down there.

Let me ask you a question. This is the first DOE budget to

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distinguish or delineate between the NETL's infrastructure program versus the research and operations program. Can you explain this distinction in a little greater detail and the reason why you have decided to structure the budget this way?

Secretary Moniz. Well, one of the principal reasons is that the outstanding relatively new director of NETL urged us to do it this way. And I think she is right. Previously, the budget was kind of -- it was hard to figure out what it was. A piece of it was in the CCS line. A piece of it was in program administration. And now I think this gives greater transparency into what I would call -- because, of course, as you well know, NETL has got two very different functions: one is the R&D, and one largely is kind of a contract manager, not only for FE but for other programs as well. This gives kind of identity to the research program. And we remain very interested in strengthening it. In fact, there is an increase this year particularly to, finally, I think, address the supercomputer needs at NETL.

Mr. Doyle. So, as far as the impacts on the workforce and the organizational structure at NETL, you are saying this just helps distinguish funding lines for program management versus R&D?

Secretary Moniz. Yes. Correct. And, in fact, there has been an increase in the R&D.

Mr. Doyle. I certainly support increased funding for the NETL that is featured in the budget. But I am a little concerned that the request seems to represent an overall decrease in funding for fossil

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energy R&D and so, specifically, a significant decrease in funding for CCS and advanced power systems at NETL. Can you explain a little bit the reasoning for this decrease?

Secretary Moniz. See, part of that is the -- we can call it restructuring, but it is the, frankly, the termination of some of the large demonstration projects that could not reach financial close. And so those funds have been redirected to supporting now what I would call more R&D as opposed to the demonstration projects. So that is where the pilot projects, for example, for chemical looping, which NETL is actually working on right now -- they have a smallish facility -- and oxycombustion and the like, so I think this actually strengthens what I would call more of the basic R&D program.

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[12:04 p.m.]

Mr. Doyle. So, also, in the budget, you are basically adding natural gas carbon capture under the carbon capture heading that was previously reserved for coal-related research.

Secretary Moniz. Right.

Mr. Doyle. Could you just expand a little bit on your thought process for that?

Secretary Moniz. Well, so that is a relatively small amount of funding -- I forget the exact number, maybe \$15-million-something -- to go into the design of what could then be a natural gas carbon capture demonstration of some undetermined scale at the moment.

Because the reasoning is quite simple. Clearly, carbon capture with coal, whether it is direct as we are now doing or some of the new approaches, is important. But, also, with natural gas, as we -- and, again, we have a long view in terms of our technology development. And, right now, gas, one can argue, has been contributing to lower carbon emissions, but if we are going to practically decarbonize the electricity sector, ultimately natural gas would have to have carbon capture as well.

So this is the early stages of design.

Mr. Doyle. Yeah.

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And, finally, I was pleased to see the administration's initiative to increase investment and research dollars in clean transportation systems. Can you explain how, under the 21st Century Clean Transportation Plan, stakeholders like our universities or companies in the area can work with the administration?

Secretary Moniz. Oh, I think there would be substantial calls for proposals to do that. The proposal in that plan is for \$500 million additional in transportation. So it would be very, very broad-based. And that is quite separate from the infrastructure, the fuels infrastructure issues. It is really R&D on those areas. So, certainly, if I am issuing that, there will be plenty of chances for the universities to --

Mr. Doyle. Great. Thank you. And let's get a date to go down to NETL in Pittsburgh.

Secretary Moniz. You got it.

Mr. Doyle. Thank you.

Mr. Chairman, thank you very much.

Mr. Whitfield. Thank you.

The gentleman yields back.

At this time, I recognize the gentleman from Missouri, Mr. Long, for 5 minutes.

Mr. Long. Thank you, Mr. Chairman.

And thank you, Secretary Moniz. It is always a pleasure to see you here and hear from you. You kind of brighten my day when you come

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in and talk to us, so thank you.

One of the --

Secretary Moniz. Uh-oh.

Mr. Long. -- new projects announced at the Paris climate conference is the Mission Innovation program. Now, I am taking my family down to Disney World later this month, and if I saw a ride there, Mission Innovation, it would not surprise me because that sounds like something you would ride at Disney World. But this involves the U.S. and 19 other countries. A key component of the program is the Breakthrough Energy Coalition, which is a group of international private capital investors.

Could you expand on how this investment coalition is comprised and what the level of involvement is or cooperation between the Department of Energy and this breakthrough group?

Secretary Moniz. Certainly. The 2 initiatives or coalitions, if you like, the 20 countries and the 28 investors from 10 countries, they are independent. Now, there is communication. So they were formed in parallel, and the idea was, because they have the opportunity to feed off of each other, we increased the innovation pipeline, that gives more investment opportunities, and these investors declare, well, yeah, if you guys give us more opportunities, we are going to be there with billions of dollars to come and invest.

But I want to emphasize that, whatever information is generated, for example, it is possible that -- we have talked about but have not

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yet nailed down -- around June, early June, we should have this kind of more nailed down, the relationship -- we may do some joint, like, technology roadmaps, what is the pathway to sunlight to fuels as a kind of a possible transformative thing.

But if done -- after all, we are a government agency -- such information would not be proprietary to those investors. That would be open to everybody to see the benefits of.

Mr. Long. That was part of my next question, is do you have any concerns that these private investors are gaining an advantage or an upper hand through special treatment from the Department of Energy's clean energy program.

Secretary Moniz. Oh, well, that is what I just addressed. No. So we have to make it sure that it is great but they don't have special access to information or to lab technologies, et cetera. We have to make this transparent. And we have done this, by the way --

Mr. Long. So at what point is this available to the public, I mean, these findings or whatever you want to call it?

Secretary Moniz. Whenever they are done. I mean, like, if it is a technology roadmap, when we have it --

Mr. Long. So they are going to be private investors working with the Department of Energy to come up --

Secretary Moniz. It could be, and with some others, talking about -- so the idea is --

Mr. Long. So you wouldn't feel that it would give them an

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advantage?

Secretary Moniz. Well, the information would then have to be available to everyone as a public DOE report. And, no, so we are very sensitive to that, that --

Mr. Long. So that is a no, I take it. You don't think that it would give them an advantage.

I am just thinking that if they are involved from day one and the way things develop --

Secretary Moniz. The only advantage would be -- but it would not be exclusive to them -- would be to have thought about this particular technology area. But others are thinking about it. In fact, the one I mentioned, we already have a hub doing it, with all the results published.

Mr. Long. Okay.

Secretary Moniz. Yeah.

Mr. Long. You mention in your testimony that the budget request takes steps to implement recommendations from the first installment of the 2015 Quadrennial Energy Review.

Which recommendations are you referring to in your report there? And what is the timeframe for implementing the recommendations from the QER?

Secretary Moniz. For that, I should probably find my notes, because it is quite a long list in the FAST Act.

There are issues of our being charged to do an energy security

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plan, for example, with State. There are issues about doing a study to bring to the Congress on the establishment of an electric power transformer reserve, for example. There is a really long list of issues, and we are working on all of them.

Mr. Long. Okay. Could you maybe summarize that or get me, like, bullet --

Secretary Moniz. Sure.

Mr. Long. -- points or something to give that to my staff? Because I do have --

Secretary Moniz. If I can find it in my papers, I can give it to you now, actually.

Mr. Long. Okay.

Secretary Moniz. Okay. Anyway, we will certainly get that to you.

Mr. Long. We have 8 seconds till liftoff, so we had better -- if you can get it to me later, I would appreciate it.

And, like I said, it is a pleasure to have you in here. Thank you for being here.

And I yield back, Mr. Chairman.

Mr. Whitfield. The gentleman yields back his 1 second.

At this time, I recognize the gentleman from Kentucky, Mr. Yarmuth, for 5 minutes.

Mr. Yarmuth. Thank you, Mr. Chairman.

Mr. Secretary, nice to see you here. Thank you for your responses

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and your presentation.

I want to congratulate the committee chair, my colleague from Kentucky, Mr. Whitfield, for holding this hearing and for allowing you to present the concepts and the priorities of the Department of Energy.

And I cannot resist taking the opportunity to say that, as a member of the Budget Committee, I was astonished that the chairman of the Budget Committee, for the first time in 40 years, did not allow the Director of the Office of Management and Budget to come to the Hill and present the administration's overall budget.

And I think the usefulness of a hearing like this, in which we really do get into the plans and priorities of the Department, is something that could benefit the American people and the Congress, as well, if we were able to discuss the President's overall budget. So I wish that Chairman Price of the Budget Committee would reconsider that and allow such a presentation. And I will tell him how much I appreciated this hearing.

One of the things that I think about a lot, Mr. Secretary, is that, at its optimum efficiency, Congress moves at 10 miles an hour and we have a world that is moving at 100 miles an hour, and how are we able to make long-term policy that actually makes sense when things are changing so rapidly?

And I think about, for instance, driverless cars and the work that government is going to have to do very quickly to figure out how to accommodate that. So I can't imagine a field that this is more

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appropriate to discuss within than the energy field. And I know so many things have been happening and are happening.

So I guess a broad question is, can you think of areas in which Congress really needs to start thinking about policy for things that are about to happen that we are totally unprepared for?

Secretary Moniz. It is always hard to predict what you are unprepared for, but I certainly agree with you, your clock speed statement is very apt, and the driverless cars are a terrific example. I think 2 years ago very few would have seen this coming at us so fast. And it raises huge numbers of policy issues, obviously, with liabilities and all kinds of issues.

So, you know, I mean, I would just say two areas where I think -- and they are actually in some sense linked -- where I see enormous change happening, the kind of change that we didn't anticipate with the oil and gas revolution, say, 15 years ago.

One is that, if you look at the entire electricity system -- and, by the way, the second installment of our Quadrennial Energy Review -- the first one was on infrastructure across the board. This one is on the electricity system end-to-end. And there are so many moving parts -- on the high-voltage grid, on the distribution system, the integration of IT, energy storage suddenly coming to maturity in terms of costs.

So there are the technology issues, but then how do we value the services; how do we value fuel diversity; how do we value storage in

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the system; how do we value when we have distributed generation and what it is doing not only in terms of supplying energy but in terms of, potentially, stability in the system, voltage stability, you know, you name it; how do we go, in this example, behind the meter into the consumer's place in terms of new services.

As we do that and as we get more and more successful, or continuing our success, in terms of decreasing energy intensity, energy efficiency, et cetera, business models of utilities have to change. It is not going to be the same system.

What does that mean for our regulatory system? I don't want to open Pandora's box. But, you know, we have a historical system built around States, and we have to work with it, but recognizing that it does not match the physical realities of the system as it emerges. So that is a big one to think through, that whole kind of system.

Another one is, I think -- and it is not unconnected -- is the urban environment and potential transformation there, I mean energy-linked. Your driverless cars, for example, can be a big piece of that, right? A whole different ownership model, a whole different -- the model is different.

And, furthermore, if you speculate -- and now I am going off into the wild blue yonder. But if you speculate about a city that has become practically all electric and quiet and clean, well, maybe you build your buildings in different ways.

So I think those are two big issues where there are so many threads

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to pull together.

Mr. Yarmuth. Okay. I appreciate that answer very much. Thank you.

I yield back, Mr. Chairman.

Mr. Whitfield. At this time, the chair recognizes the gentleman from Oklahoma, Mr. Mullin, for 5 minutes.

Mr. Mullin. Thank you, Mr. Chairman.

And thank you for being here again. I know we have spoke on several different occasions.

And, you know, you come today asking for an significant increase at a time when we are still running deficits across the country. Can you just give me your number-one priority, what you would use the money for?

Secretary Moniz. Well, the first point I would make is that, again, our discretionary request --

Mr. Mullin. No. The number-one thing, what are you looking for, the number-one --

Secretary Moniz. I want to make the point, it is 2 percent, and the President's budget is within the cap.

Now, in terms of this budget and the number-one issue in terms of new direction is the Mission Innovation direction writ large --

Mr. Mullin. Is that across the board, or is that just with renewables?

Secretary Moniz. It is across the board.

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Mr. Mullin. Because the policy in the past that your administration has put forth, and your agency, isn't across the board. It is not equally yoked. It seems to have a tendency to lean towards renewables.

And with that being said, I have another question for you. DOE is charged with setting effective and comprehensive national energy policy. Is that correct?

Secretary Moniz. Sort of.

Mr. Mullin. Sort of?

Secretary Moniz. Well, only because --

Mr. Mullin. I mean, I thought that was the reason why it was in existence to begin with.

Secretary Moniz. No, no, no, the Energy Department, of course, has the major --

Mr. Mullin. Well, it is not "sort of." It is either "yes" or "no."

Secretary Moniz. -- makes energy technology development. But my point simply is, as was evident in the Quadrennial Energy Review, energy is --

Mr. Mullin. No, I am talking -- I don't care about the energy review. I am talking about DOE is charged with setting effective and comprehensive national energy policy. Is that a yes or a no?

Secretary Moniz. Energy touches many equities --

Mr. Mullin. It is just a simple "yes" or "no."

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Secretary Moniz. I am trying to answer the question.

Mr. Mullin. I don't need an explanation. I just need a "yes" or "no."

Secretary Moniz. Because the answer is, then if you take something like the Quadrennial Energy Review --

Mr. Mullin. Just a "yes" or "no," sir.

Secretary Moniz. -- that is bringing together --

Mr. Mullin. I am not asking for a long answer. I just want a "yes" or "no."

Secretary Moniz. I am giving you the shortest answer that is meaningful.

Mr. Mullin. The shortest one would be "yes" or "no." It is either a three-letter word or a two-letter word.

Secretary Moniz. We play a central role in pulling --

Mr. Mullin. Now, sir, I just want a simple "yes" or "no."

Secretary Moniz. -- together the energy threads for a coherent energy policy.

Mr. Mullin. So is that a --

Secretary Moniz. Yes.

Mr. Mullin. -- "yes"? Why didn't you just say that to begin with?

Secretary Moniz. Because it needed a little bit of --

Mr. Mullin. No, it didn't need anything else. All I needed was a "yes" or "no."

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So is part of that about the affordable and reliability of our energy policy?

Secretary Moniz. Say it again. I am sorry.

Mr. Mullin. Is part of that policy about the affordable and the reliability to our taxpayers, to the American people?

Secretary Moniz. Absolutely.

Mr. Mullin. Then why are we allowing --

Secretary Moniz. And security and environment.

Mr. Mullin. Then why are we allowing the EPA to set agenda for DOE?

Secretary Moniz. Those are environmental rules about air quality.

Mr. Mullin. Clean Power Plan? Is that not going to affect affordable and reliability issues?

Secretary Moniz. This goes back to the earlier answer, why it is more complicated than "yes" or "no."

Mr. Mullin. No, it is not. What we are doing is you are allowing agencies to --

Secretary Moniz. Environmental policy has historically always affected energy policy, as has, often, security policy and --

Mr. Mullin. We all want to be good stewards, but what I have an issue with is when the EPA becomes able to set policy for the DOE and when DOE becomes a source of agenda-driven issues rather than really focusing on making sure that we have reliable and effective, efficient

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energy sources to the American people. And when we start looking at only one factor, such as green renewables, which is an agenda-driven policy, and we take a look away from what has driven this economy and our energy resilience, I have an issue with that.

And we want the Department of Energy to be successful because we want America to be successful, but we don't want it to be agenda-driven. And we are allowing the EPA step all over your agenda or your policies by setting policies through the Clean Power -- and I don't see any pushback from you or your agency saying, "Wait, this is part of ours too. You are affecting us." Instead, you are just going along to get along.

That is from my perspective. Now, if you can tell me something different, please let me know.

Secretary Moniz. Okay. So the EPA is putting out a clean air regulation. Our job in the energy sector, as it is in any sector that influences air quality, is to develop the ways to respond to what the regulations, the laws of the land are.

Mr. Mullin. What if it affects the reliability of it?

Secretary Moniz. Sorry?

Mr. Mullin. What if it affects the reliability?

I don't know who you keep looking to over there, but you and I are the ones talking here.

So what if it affects the reliability of it?

Secretary Moniz. The reliability is clearly an issue. Some of

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our analyses --

Mr. Mullin. Do you not see the Clean Power Plan being a reliability issue if it goes into full effect?

Secretary Moniz. Well, for example, we did an analysis around the natural gas system, and we found that there were not reliability risks.

Mr. Mullin. That is very hard to believe.

Secretary Moniz. We can show you the analysis.

Mr. Mullin. I appreciate it.

I yield back.

Secretary Moniz. It is published.

Mr. Whitfield. At this time, the chair recognizes the gentleman from Vermont, Mr. Welch, for 5 minutes.

Mr. Welch. Thank you very much.

You know, taking up on Mr. Mullin's questions, there is required to be a change in the model if we are going to change our energy mix, if we are going to move to distributed generation. And those are extraordinary challenges that our utilities face.

But that is an agenda that we have in Vermont. You know, we have utilities that are all in on trying to promote distributed generation, that are promoting solar, that are really strong on efficiency. And it is a complete departure from the old model that used to exist in the Vermont utilities of just promoting more usage of energy.

And my question -- one, I want to cite that. And, two, I notice

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in your budget there is a lot of emphasis on trying to facilitate activities such as distributed generation, renewable battery storage, and so on, and just give you a quick minute to comment on that.

Secretary Moniz. I would say yes.

Mr. Welch. All right.

You know, the second thing, Mr. McKinley was asking about coal country and inviting you to West Virginia. I want to thank you for coming to Vermont. It was a very meaningful visit. Go to West Virginia. I went there with Mr. McKinley. He took me into a coal mine. And I want to focus attention on the parts of your budget that are going to help coal country out. Because whatever one thinks about coal, those coal workers have kept the lights on in this country for generations.

And I want to just give you an opportunity to comment on the President's proposal with respect to money that can help the Appalachian fund. And a billion dollars is being proposed to come from the abandoned mine fund to help out in coal country.

Secretary Moniz. Right. So, again, without repeating it, I just again want to emphasize, though, that there are a huge number of pieces that affect coal in our budget, not just the fossil energy R&D budget.

Among those, again, I will mention something that I think will be very important to put in are the tax credits that I mentioned earlier, but, very importantly, the Power Plus Plan, which is precisely the

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plan -- it is administration-wide, it is not DOE, administration-wide, in terms of really helping communities in multiple ways, including what we can help with in terms of economic development but certainly retraining and other programs, of course weatherization, et cetera.

This is part of why we have two offices that are critical here. One is the ED office, the economic development and diversity office, and then this jobs focus, this Jobs Strategy Council I formed. They have been in coal country. Well, they have visited Mr. Griffith, for example, and I think it was a -- I heard from them, as well, that it was a very good visit. And we are trying very hard --

Mr. Welch. I would encourage you to keep doing that because that is the one area where --

Secretary Moniz. Yeah. Yeah.

Mr. Welch. And these coal workers are --

Secretary Moniz. Yeah.

Mr. Welch. -- wonderful people, and they --

Secretary Moniz. Yeah.

Mr. Welch. -- are getting hammered, and we have to help them.

Secretary Moniz. We completely agree. And, again, I would urge that the Congress look favorably, I hope, on our trying to convert that into a separate budget line, a little office. Frankly --

Mr. Welch. Well, I would be glad to work with you and colleagues on doing that.

Secretary Moniz. And that goes back to what Mr. Rush said

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earlier.

Mr. Welch. Yeah.

Secretary Moniz. Because I think, if we do that, we have a better chance of trying to kind of get that planted in the Department of Energy as a function that will go on in the next administration.

Mr. Welch. Well, thank you.

I have 1 more minute. We have a plant, a nuclear plant, that is being decommissioned, and we are just stuck with the nuclear waste that is in dry-cask storage along the banks of the Connecticut River. It is really a problem. It is a problem for us. We are going to live with this for how long, we don't know.

Yucca Mountain, none of us are particularly optimistic about its prospects. We have a bill in Congress, a bipartisan bill, where Texas wants to have an interim storage site. Vermont would be glad to provide some stuff to store. The administration's blue ribbon commission seems to be open to that.

I know this is a difficult, delicate issue for you, but what about the prospects of having some interim storage site while whatever is going to happen with Yucca works itself out so that we don't have this waste literally right along the banks of the Connecticut River?

Secretary Moniz. We have a request for information out right now to the public, following through on the consent-based approach to storage -- pilot interim storage, big interim storage, and geological repositories for both civilian spent fuel and high-level waste.

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We are moving forward, to the extent that we can, in getting the interim storage advanced. We cannot without congressional authorization actually do a site.

But the issue that has arisen with Texas about the possibility of a private site is one that we would support the Congress providing clarity on that as being an acceptable path forward because, ultimately, presumably, to work, that may at least require access to the Nuclear Waste Fund, and it would certainly require legislative action.

Mr. Welch. Thank you very much, Secretary Moniz.

And my time is up, and I yield back. Thank you.

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

At this time, I recognize the gentleman from North Carolina, Mr. Hudson, for 5 minutes.

Mr. Hudson. Thank you, Mr. Chairman.

And thank you, Mr. Secretary, for being here with us today.

The original Advanced Research Projects Agency within DOE has been in existence for a few years now. Part of the mission of the program is to, quote, "accelerate transformational energy technologies from concept to market," end quote.

Has anything come to market yet since the program's inception 6 years ago? For example, has there been any wide-scale deployment of commercialized product that has resulted from the ARPA-E program?

Secretary Moniz. Yes, sir. And, you know, this is a pretty

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short time for this kind of business, and already there are 36 companies and, I don't know, 9 or 10 commercial products being sold. And they span quite a diversity of technologies.

Mr. Hudson. Well, that is encouraging to hear.

What metrics does DOE use to evaluate the success of these projects?

Secretary Moniz. Well, I would like to talk about intermediate metrics and then the ultimate metrics.

The ultimate metrics are that these technologies have indeed -- that some number of them have indeed gone into the marketplace and have scaled some appreciable time. In the energy business, that is not a 5-year business.

But the intermediate metrics, I would say, are very positive. I mentioned already the 36 companies and 9 or 10 products, but, in addition, about a quarter of all of the projects that have been completed have attracted well over a billion dollars of private-sector funding. Another quarter of the projects, roughly, has attracted follow-on interest from the Department of Energy or other government agencies, like DOD, for example.

So when you take a program that is, by its nature, kind of pushing on the edge of the technology and roughly half of them after a 3-year project have got follow-on, including company creation, that is pretty good. If anything, it makes you worry, are we taking enough risk?

Mr. Hudson. Well, when an ARPA-E funded project isn't resulting

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in progress or benefits, are there any protocols in place for ending that project?

Secretary Moniz. Oh, yeah. In the ARPA-E, it is a very -- it is a different, by creation, a different structure. And you have active program managers who are very much close to the project -- which is also, by the way, also receiving advice on tech to market. But if they are not working, then they just end. In fact, it has been said that, you know, in this kind of business, what you like is quick failure and long success.

Mr. Hudson. Switching gears a little bit, you mentioned the first Quadrennial Energy Review. Can you tell me how much that first review cost?

Secretary Moniz. To be honest, I don't have a precise number, but I would say a few million dollars out of our Energy Policy and Systems Analysis Office. Some of the work was done analytically in house, and then some of it was, you know, specific studies contracted outside.

Mr. Hudson. Well, if you could get back to me with maybe more --

Secretary Moniz. Okay, we will try to -- I am not sure we have actually kept a budget number in that way, but we will make an attempt at it.

Mr. Hudson. Okay. I appreciate that.

But assuming the costs are generally what you are saying, would you say it has been valuable based on that cost?

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Secretary Moniz. Extremely. I think it has been a tremendous return. The action of this committee and this Congress in incorporating a tremendous number of the recommendations into legislation has been important. It has also being actively used in the current Senate legislation being developed right now. And, in addition, it has influenced significantly State energy offices. We have had many interactions.

So we think this has been a great success, I think, verifying the idea that doing a deep, analytically driven document can really provide an excellent basis for discussions with the Congress and others.

Mr. Hudson. Okay.

And you have said the second installment of QER will conduct a competence review of the Nation's electricity system. What was the agency's motivation for focusing solely on electricity for the second QER?

Secretary Moniz. Well, the motivation was that, as we are looking to putting together the pieces for ultimately bringing them all together, in the first QER, which looked at all the energy infrastructures, it kind of said, well, you know, the electricity infrastructure is kind of first among equals, because so many other infrastructures in energy and other infractures, information technology and the like, depend upon electricity.

So we think this is actually a core system. As I said earlier also in a response, it is also a system that is perhaps ripe for -- well,

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it is going through some change and there may be a lot more coming as technology and new services drive the electricity system.

Mr. Hudson. Thank you.

Mr. Chairman, I see I am out of time. And I will submit written questions to follow up on, just sort of what the timeframe for participation and when we expect that QER draft to come forward.

[The information follows:]

***** COMMITTEE INSERT *****

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Secretary Moniz. And I might add, the NC State hub on wide bandgap semiconductors is part of the technology for this new grid.

Mr. Hudson. Great.

Thank you, Mr. Chairman.

Mr. Whitfield. All right.

At this time, the chair recognizes the gentleman from New York, Mr. Tonko, for 5 minutes.

Mr. Tonko. Thank you, Mr. Chair.

And, Secretary Moniz, welcome. You have had quite a busy year since our last budget meeting. And to your credit, I want to thank and congratulate you on all you have done, ranging from the Iran nuclear outcome to Paris and the climate agreement and certainly embracing innovation. Your expertise and your leadership have been critical for our Nation, if not our planet's, future security and sustainability. So an awesome thanks.

Secretary Moniz. Thank you.

Mr. Tonko. Mr. Secretary, Mission Innovation is a critical aspect toward meeting the goals of COP21 agreement. There was consensus coming out of Paris that new technologies and energy innovation will be needed to enable the transition to a low-, if not zero-, carbon-emission future.

And, by the way, I have to tell you I did a visit to the ARPA-E Innovation Summit. Tremendous leadership there. Thank you for the foresight, for the vision, and for the structuring of such a summit.

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Can you explain the United States and its financial commitment to the Mission Innovation initiative? And how much more investment would you believe is necessary to meet that 5-year goal?

Secretary Moniz. Well, I mean, the goal, I mean, or the commitment specifically, to choose the words carefully, was to seek to double the energy R&D over 5 years, because, obviously, we have to work with the Congress to reach that. But the request this year, as you know, is 21 percent in the discretionary funds, and that would be, obviously, a linear trajectory to doubling.

And, again, I would just say that every -- it may be semi-anecdotal, but every piece of evidence I have says we could get a lot more innovation with that increased investment.

Mr. Tonko. I share, certainly, that belief. It is important.

DOE's proposed fiscal year 2017 investment makes up more than three-quarters of the government's Mission Innovation commitment, but it will really be a partnership amongst numerous agencies, the private sector, and other nations.

Can you explain just how that investment will be broken down across multiple DOE offices and Federal agencies?

Secretary Moniz. Well, I think the -- I don't have the exact table for the Federal agencies right now, but the second-biggest amount is in the Department of Defense, where they actually have quite a bit of energy work going on, substantially less than DOE, obviously, but quite substantial. They have interest in and we partner with them

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already in things like advanced drop-in biofuels. So they would like to reduce their oil dependence, but they can't replace the engine, so they have to go to drop-in biofuel. So that is still a big challenge.

They have lots of interest in things like microgrids for their stationary assets, for their facilities. And, of course, something that is not a major energy user on the scale of, you know, quads of energy but very important for our warfighters is the question of portable energy that the people on the front lines can use.

Mr. Tonko. Thank you.

And there are some 19 other countries that have also made R&D commitments. What are the benefits of working with international investors? And what is the cooperative, collaborative research concept that you are hoping for here?

Secretary Moniz. First of all, it is important to note that, among the countries, the 20 countries, there is no obligation, you know, to work together on projects. Every country makes its sovereign choice about managing its expanded portfolio. So the main thing here is that it gets a lot more innovation going.

Now, I expect that there will be enhanced collaboration between countries that share a specific interest in a project. For example, with India, we have, you know, discussed in general terms that distributed generation may provide a great opportunity for much more collaboration with them on technology development. We both have distributed-generation needs; they are somewhat different. But that

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could be a logical one.

Another one where we are already ramping up but, say, in our discussion with the Saudis, quite different, the issue of what are we going to do about HFC replacements, especially for warm climates, not only different operating fluids, potentially, but new thermodynamic cycles, you know, more adventurous, if you like, in the technology.

So I think those will appear, but we have no obligation for enhanced international collaboration. We manage our portfolio. The investors are international. They will be looking for the best opportunities that come out of these innovation pipelines in any of the 20 countries. So the extent to which we push, we are also going to capture that investment.

Mr. Tonko. Thank you.

Mr. Secretary, I have used up my time. Let me again thank you for your leadership. It is awesome. And the benefits of your leadership are showing themselves through all of this.

So, with that, I thank you and yield back, Mr. Chair.

Mr. Whitfield. The gentleman yields back.

And now I will recognize myself for 5 minutes of questions since I waited until everyone else asked their questions first.

Well, Mr. Secretary, thank you again for being here today. We really appreciate it.

Reference was made to the nuclear waste problem. And I am not sure exactly how many nuclear power plants we have operating in the

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U.S. today. I think it is roughly 100 or --

Secretary Moniz. Roughly 100.

Mr. Whitfield. -- 99.

Secretary Moniz. 99, yeah, right. Uh-huh.

Mr. Whitfield. And this does not reflect on you, but, as a Nation, I think we have made some major blunders in the area of dealing with nuclear waste. I know the Nuclear Waste Fund, nuclear power plants have been contributing to that for some time. We have spent roughly -- you can correct me if I am wrong, but we have spent roughly \$12 billion or so on Yucca Mountain.

When the day came for the government to take possession of this waste and start moving it to Yucca Mountain, Yucca Mountain was not ready to take it, not certified. And so the nuclear power plants filed the lawsuit against the Federal Government and obtained a judgment against the Federal Government. I don't remember the exact amount of that judgment. I was told it was roughly \$10 billion. But do you know the exact amount?

Secretary Moniz. I don't know the exact up to now, but the projections have said it might reach -- it could reach \$20 billion eventually.

Mr. Whitfield. Yeah, because it is ongoing, because they can't take -- so roughly \$20 billion.

And now we are looking at maybe an interim site. And it is my understanding -- and I think you confirmed this -- that that interim

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site would never work unless Congress approves it. Is that your understanding?

Secretary Moniz. Yes. According to the Nuclear Waste Policy Act, we cannot establish an interim site without --

Mr. Whitfield. Right. And so here we are kind of at a stalemate on that issue.

Secretary Moniz. Yep.

Mr. Whitfield. And then that brings up three other funds. On the Nuclear Waste Fund, the nuclear power plants are not paying into that fund as a result --

Secretary Moniz. Correct.

Mr. Whitfield. -- of the judgment.

Secretary Moniz. That was suspended.

Mr. Whitfield. Yeah.

And the government is paying them every year, I guess, a certain amount of money to satisfy this judgment. I don't know how much, but whatever it is. Okay.

So, on the other side, the D&D fund, the USEC fund, the uranium supply and enrichment fund activities. On the D&D fund, normally the money from the cleanup -- Paducah, for example, comes from the D&D fund. And it is my understanding that the D&D fund is funded from the utility plants as a result of some legislation maybe that passed around 1992 or so and that that was suspended in 2007 roughly. So, since then, they have not paid into this fund.

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And how much is the Department of Energy spending each year to assist these communities in cleanup, total? Do you know exactly?

Secretary Moniz. No, but I would guess it is -- for the three sites, it is probably on the order of \$500 million. But, obviously, we can add up the numbers.

Mr. Whitfield. Yeah. I mean, I think Paducah is roughly \$270 million, \$280 million.

Secretary Moniz. Yeah. I may be a bit low.

Mr. Whitfield. Okay.

Secretary Moniz. And Portsmouth, of course, there is also the barter contribution --

Mr. Whitfield. Right.

Secretary Moniz. -- of about \$150 million. If you don't count that, then we are probably around \$500 million, I would guess.

Mr. Whitfield. But, now, you all are proposing some mandatory funding and taking money out of the USEC fund which I guess has just been sitting there --

Secretary Moniz. Accumulating interest.

Mr. Whitfield. Oh, is that interest staying in the fund?

Secretary Moniz. I believe so. That is my understanding.

Mr. Whitfield. Okay. And in order to go to the mandatory funding, the way you all are suggesting, that would require legislation, as well. Is that correct?

Secretary Moniz. Yeah, we would need some authorization.

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Mr. Whitfield. Okay.

Secretary Moniz. I believe. I believe that is the case.

Mr. Whitfield. All right.

Secretary Moniz. I should check with the experts. But, also, there is also the question of offsets --

Mr. Whitfield. Okay.

Secretary Moniz. -- because of the budget cap.

Mr. Whitfield. Right. Right.

Now, okay, so -- I wish we could talk a little bit more about that, but I only have, like, 20-some seconds left.

Secretary Moniz. And I would just add, we did suggest a possible offset with the quarter-mil per kilowatt hour from the relevant utilities.

Mr. Whitfield. Okay. Okay.

Now, this is really a parochial issue. This gets down to Paducah. On September 2, you all issued a request for information for the Paducah cleanup project. And it is my understanding that the contract will expire -- the current contract expires in July 2017. And do you have any idea if you all expect to renew a contract by that time? Or can you give me a brief explanation of where you think you are?

Secretary Moniz. I would certainly expect that. But why don't I nail that down and get back to you promptly.

Mr. Whitfield. Okay.

Secretary Moniz. But, yeah, our expectation is we are moving

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towards having a contract in place.

Mr. Whitfield. Okay.

Secretary Moniz. But we certainly need continuity, obviously.

Mr. Whitfield. Yeah. Yeah.

And then, in closing, I am going to editorialize for just a minute, just a pet peeve that I have, which does not relate to you. I hear so many people talk about we need to expand solar and wind to make us less dependent on foreign oil, which I have never exactly understood because wind and solar is about electricity and oil is about transportation.

Secretary Moniz. I never said that.

Mr. Whitfield. You didn't say that, but so many people say that, and so that is my editorial.

So, having said that, I want to thank you very much for being with us. And we have been here almost 3 hours, so thank you for your patience. We look forward to working with you on the important agenda of the Department of Energy.

And we will keep the record open for 10 days. I think various members said they -- some of them had additional questions and so forth.

And do we have anything for the record? Okay.

Mr. Rush, do you have anything?

Mr. Rush. No, nothing.

Mr. Whitfield. All right.

Then, Mr. Secretary, thank you so much.

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And that concludes today's hearing.

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