

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2011

WEDNESDAY, MARCH 4, 2010

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 10 a.m., in room SD-192, Dirksen Senate Office Building, Hon. Byron L. Dorgan (chairman) presiding.

Present: Senators Dorgan, Murray, Landrieu, Reed, Tester, Bennett, Bond, and Alexander.

DEPARTMENT OF ENERGY

STATEMENT OF HON. STEVEN CHU, SECRETARY

OPENING STATEMENT OF SENATOR BYRON DORGAN

Senator DORGAN. We are going to call the hearing to order. This is a hearing of the Senate Appropriations Subcommittee on Energy and Water Development.

Mr. Secretary, welcome to you.

The hearing today is to take testimony from Secretary Chu on the Department of Energy's fiscal year 2011 budget request.

We will have other colleagues who will be joining us momentarily.

And I wanted to mention at the start of the hearing that I am necessarily going to have to leave. The President is signing a piece of legislation that I authored at the White House. So I will be leaving in about an hour, but we will have someone take the chair at that point. Between now and then, we will have a discussion about the budget request.

I would like to note that we will have Administrator D'Agostino before the subcommittee on March 10 to discuss the NNSA fiscal year 2011 budget request. That does not mean that we cannot ask about that today, but because he is going to be here, I just want people to be aware that we will have an opportunity to discuss that budget in some detail in 2 weeks' time.

Further, on March 11, we will have a hearing with the Corps of Engineers and the Bureau of Reclamation on the fiscal year 2011 budget request for water agencies, another very important hearing.

Today's hearing and next week's hearing on the NNSA budget represent I think the good news for the subcommittee. Next Thursday, when we hear from the Corps of Engineers and the Bureau of Reclamation, we will be discussing budget cuts that exceed \$500 million. That is not such good news if one believes water projects

are both important investments in our country's infrastructure and job-creation and necessary. We are going to have a challenge of reconciling the overall budget request to the subcommittee because we are not going to have a half-a-billion-dollar cut for water projects when this subcommittee completes its work. I would hope that would be the case.

The budget request of \$28.9 billion for the Energy Department is a generous 6 percent increase over the enacted fiscal year 2010 bill. Much of that increase is within the National Nuclear Security Administration's budget, which is up about 13 percent. Excluding NNSA, the remaining DOE programs are collectively up about 3 percent.

I am pleased that the administration agrees that energy research is the key to maintaining our competitiveness internationally, as well as increasing our energy security. We need to continue to develop the technology that will allow us to harvest usable energy from the wind and the sun, even as we pursue responsible oil and gas development and ways to reduce carbon emitted when we use coal.

The research that is required to get us to a cleaner energy future happens in this Department, and I am excited about the work that is coming out of the Department, Mr. Secretary.

I do have some concerns and questions about the budget request, obviously, and we will talk about that. The significant priority on funding within the EERE is where programs are up collectively about \$400 million. Only two programs are down from last year. One is hydrogen and the other is water power, and I have some concern, again, about the hydrogen programs which I feel we should continue. I know that you have continued those programs in this budget at a lower rate.

The Office of Science also sees a 6 percent, or \$295 million, increase in its program funding, and there are new initiatives in science, including a proposed battery hub and a new program on combustion engines.

Energy Frontier Research Centers and a fellowship program are proposed for expansion. Both of those programs have only been up for 2 years at this point. So they are now proposed to be expanded.

The ARPA-E program is proposed at \$300 million, and I think that is an exciting program. I know that there was a significant national gathering, Mr. Secretary, Monday and Tuesday of this week. I am told it was very successful, but I am a big supporter of this program and think it holds real promise in its approach to back high-risk, but high-reward technology in energy.

Nuclear energy sees a significant increase with over \$150 million in new initiatives.

I am concerned that we have a lot of new initiatives that we are proposing very significant increases to. I do not know that we know specifically how some of these new initiatives are working yet before we proceed with very large increases. We would like to see longer-term spending plans for some of these initiatives. NNSA, I might say, gives us the 5-year spending plan. It would be nice to see that in some of the rest of the areas.

One of the concerns I have in the budget is—and this will not be a surprise to you, Secretary Chu, is regarding fossil energy. Fos-

oil energy is proposed for an \$86 million decrease, while other accounts receive a substantial increase. Coal provides about 50 percent of our electricity generated today in our country, and I believe that the use of coal, natural gas, and oil will continue to be used for decades to come in this country. So we have to find the means to use our fossil fuels and develop the technologies, put a price on carbon, and do so in a way that helps us mitigate greenhouse gas emissions. All of that is critically important.

But I am concerned because the fossil energy account does not show me new, substantive, elements in the budget to address what I think is a critical need as well. I am a big fan of all the renewables and this search for new technology and new science, but I think it is important to keep our eye on the ball with respect to fossil energy, which we are going to continue to use.

I have said before, Secretary Chu, you are a creative and innovative person who has demonstrated great skill in a lot of areas and I think much of that creativity and innovation is something we can see in your budget request. I am really pleased that you are where you are and while we will have some disagreements on the broader issues, I think that this budget request moves us down the road in some very important areas as well in a constructive way.

Let me call on Senator Bennett for an opening statement.

OPENING STATEMENT OF SENATOR ROBERT F. BENNETT

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

Secretary Chu, we are delighted to have you here, along with your team.

I find myself in agreement with many of things the chairman has highlighted. The NNSA budget is something we will discuss at another hearing. So I will not get into that.

But I agree with the chairman that energy research is something that we clearly need to do in a wide variety of areas, and investments in the energy sector are some of the most important we can make.

Now, I am concerned with the priorities that I see in the budget with respect to energy research, and let us talk about some of those concerns.

Talk about unobligated balances. I am assuming the budget request was considered without taking into account what was funding from the stimulus bill, or the Recovery Act. Over a year ago, with a promise of creating thousands of jobs and increasing energy efficiency, reducing the nuclear waste footprint—and these goals are far from being met. The Department of Energy is sitting on a tremendous balance of unspent funds. About \$34 billion of the \$36.7 billion appropriated remains unspent, 93 percent, as well as over \$1 billion in funds from prior year balances in numerous programs. The money seems to be piling up down there from prior appropriations bills.

As one example, with over \$5 billion available in weatherization funds, I cannot understand why your budget would include a 43 percent increase in the amount provided in fiscal year 2010 for this program, especially when the Department's own estimates indicate that the stimulus funds will not be spent until well in 2012.

Now, another aspect that I find troubling is the same one the chairman has referred to, to slash the fossil energy R&D program by more than 20 percent. Here you have got all of this money unspent in this one area and then you are saying, well, we are going to cut fossil energy R&D by more than 20 percent, and this includes eliminating the natural gas technology's account and the unconventional fossil energy's technology line that we in this subcommittee included in last year's bill.

So I am glad the chairman raised this as an issue. Fossil energy and particularly natural gas is the only energy that we have that will bridge the gap between today and the clean energy future that we are hoping for in, roughly, 30 to 40 years. And that is a significant timeframe, and to be cutting back on the fuel that will allow us to deal with that timeframe is something I think we need to discuss.

Now, if I can be specific with respect to my State on this question of fossil fuel research, you are halting research on unconventional resources in eastern Utah, southern Wyoming, and western Colorado. Every energy expert says that in that pool of shale oil, there is more oil than there is in Saudi Arabia, but it needs some research to figure out how to get it out. But it will remain virtually untapped if this research is not performed.

Another area that concerned me is the sizable reduction to hydropower. Solar and wind receive unsustainable increases. You cannot spend that much money and you want to tax utilities to generate \$200 million. Well, that was a non-starter last year. I think it will be a non-starter again this year. It leaves a \$200 million hole in your budget.

While I am in the West, let us talk about uranium sales. I was very concerned that the Department unilaterally decided to drop some of its inventory of uranium on the market this year, bartering uranium in exchange for cleanup work at the Portsmouth, Ohio site. Now, obviously, this caused great consternation with uranium miners due to a potential for steep drops in the price of uranium, and the spots sales approach is a bad deal for the taxpayer in my view. The Department is proposing increased appropriations for decontamination and decommissioning work at Portsmouth in fiscal year 2011 in lieu of continuing the bartering arrangement.

Now, I understand the Department has not stated with certainty that it will discontinue the practice of dumping uranium on the market, and certainty is what the uranium industry or any other industry needs. Uncertainty always causes difficulties and challenges, and I hope we can have an opportunity to work together on this problem as we move forward.

Now, on a more positive note, I think you are on the right track with your 5 percent increase in nuclear energy and the tripling of the loan guarantee authority for nuclear plant construction. The demand for loan guarantees in nuclear technology outstrips the current loan authority. It is going to be critical in jump starting the nuclear industry, and I think that is a key part of the path to energy that does not have greenhouse gas emissions.

Now, while I am glad to see the increase and the tripling of the loan guarantee, the loan guarantee program has been mired in problems. And in the 5 years since it was authorized—and that

precedes your entry into the Department—only one guarantee has been issued. Five conditional commitments have been made, and it was the Department's intention to have 21 commitments by the end of 2009. According to GAO, the program has been run in an ad hoc manner without any transparency to the applicants and the situation where there are different rules applied in different instances.

And we would like to know if you have the tools in hand to make the program a success or whether you need additional legislative fixes. If you do need additional legislative fixes, let us know because I am supportive of providing the additional guarantee and would love to see demonstrable improvements to the program.

Contract administration and project management, with over 90 percent of your budget spent on contracts, improving contract administration, obviously, has to be a very high level issue. And DOE contract management has been on the GAO high risk list of programs ripe for fraud, waste, and abuse since 1990. So again, this predates you and is not something that we can lay at your feet, but it is something that you inherited. And strengthening contract management includes the development of high quality cost estimates early on. The surprise we received a year ago when we held these hearings, Mr. Chairman, about enormous pension liabilities seem as illustrative of the problem you have when contracts are not managed properly.

And I am glad to hear that the Department is beginning to get its arms around this problem, but we still do not know what the pension liability is going to be for this year or for next or how the Department plans to get this under control in the future. And the amount to cover the shortfall is potentially in the hundreds of millions of dollars. So this is something that we are going to follow closely.

Now, to close, I have a bittersweet example of something I am concerned about. The Moab tailings sites in my home State have met all of its milestones. It has got a million tons of tailings shipped and disposed of. It is coming in under budget and ahead of schedule. And the project is slated to be decreased to \$8 million, or 20 percent, in this budget. And I say, wait a minute. Is this a good deed that is going unpunished as they are moving these tailings in a very expeditious way and get rewarded for that by having a cut in the budget and a suggestion that they will slow down the excellent progress that they have established?

So, on that parochial note Mr. Chairman, thank you very much for the opportunity to comment.

Senator DORGAN. Senator Bennett, thank you very much.

Unless there is objection, I am going to welcome Secretary Chu's testimony, and then we will have robust rounds of questions. Senator Reed, does that work for you?

Senator REED. All right.

Senator DORGAN. All right, and Senator Tester.

Senator TESTER. Okay.

Senator DORGAN. Mr. Secretary, thank you very much and why do you not proceed? Your entire statement will be made a part of the permanent record and we would ask that you summarize. Thank you very much.

STATEMENT OF HON. STEVEN CHU

Secretary CHU. Thank you, Chairman Dorgan, Ranking Member Bennett. I hope to respond to your questions later, but let me first go through my remarks.

Senator DORGAN. You may respond as you wish in your opening statement or as an adjunct to your opening statement as well.

Secretary CHU. Well, if there is time.

Chairman Dorgan, Ranking Member Bennett, members of the subcommittee, I thank you for the opportunity to be before you today to talk about the President's budget request.

President Obama has stated that "the Nation that leads the world in creating new sources of clean energy will be the Nation that leads the 21st century economy." And I share this view.

The President's 2011 budget request for \$28.4 billion for the Department of Energy will help position the United States to be a global leader in the new energy economy. The budget request makes much-needed investments to harness the power of American ingenuity. This request will create clean energy jobs, expand the frontiers of science, reduce nuclear dangers, and help curb the carbon pollution that threatens our planet.

The President's budget request includes an investment of \$2.4 billion in energy efficiency and renewable sources of energy. It also proposes innovative energy efficiency and renewable energy projects through \$500 million in credit subsidy that will support \$3 billion to \$5 billion in lending. It expands the Advanced Manufacturing Tax Credit by \$5 billion, a program that was oversubscribed by three to one, to help build a robust domestic manufacturing capacity for clean energy technologies. Through this budget, we will increase research, demonstration, and deployment of wind, solar, and geothermal energies; make buildings and homes more efficient; develop energy-efficient vehicles; and pursue carbon capture and sequestration.

Nuclear energy must also be part of our clean energy mix. Our budget request includes an additional \$36 billion in loan guarantee authority for the nuclear power sector, as well as \$495 million for nuclear energy research and development. On February 16th, President Obama announced conditional commitments for more than \$8 billion in loan guarantees for what will be the first nuclear powerplant to break ground in nearly three decades.

We have many technologies in hand today to begin the transition to a low-carbon economy, but we will need breakthroughs and better technologies to meet our long-term goals. The budget request invests in basic and applied research and puts us on a path to doubling funding for science, a key presidential priority.

The budget request supports the Department's three new complementary approaches to marshalling the Nation's brightest minds to accelerate energy breakthroughs.

We will continue funding the three Energy Innovation Hubs introduced in 2010. In addition, we are proposing a new hub to dramatically improve batteries and energy storage.

The Energy Frontier Research Centers program will be expanded to capture new and emerging opportunities.

And the fiscal year 2011 budget request includes \$300 million to pursue potentially transformative technologies through the Advanced Research Projects Agency-Energy.

We are also requesting \$55 million to start RE-ENERGYSE initiatives to support K through 20-plus science and engineering education.

In addition to the health of our economy and our planet, the Department of Energy is focused on the safety and security of our people. Last April in Prague, President Obama outlined an ambitious agenda to address the greatest threat to global security, the danger of terrorists getting their hands on nuclear weapons or the material to build them. The Department is requesting a significant increase, more than \$550 million in new funding, for the NNSA Defense Nuclear Nonproliferation program to help meet the President's goals of securing all vulnerable nuclear materials around the world in 4 years.

The President has also made clear that as long as nuclear weapons continue to exist, it is essential we ensure the safety, security, and effectiveness of our nuclear stockpile. With the \$7 billion in funds we have requested, we can upgrade our infrastructure that has been allowed to decay in the past decade, support the work of our national labs, and recruit the skilled workforce we need.

The budget also protects public health and safety by cleaning up the environmental legacy of the Nation's nuclear weapons program. In 2010, the Department will discontinue its application to the U.S. Nuclear Regulatory Commission for a license to construct a high-level waste geological repository at Yucca Mountain.

To deal with our nuclear waste management needs, the administration has announced an independent, bipartisan commission, co-chaired by General Brent Scowcroft and Congressman Lee Hamilton, to conduct a comprehensive review of the back end of the fuel cycle and to provide recommendations for a safe, long-term solution.

Building a clean energy future will not be easy, but it is necessary for our economy and our security. As a scientist, I am optimistic. I believe we can meet the challenge and lead the world in the 21st century.

PREPARED STATEMENT

President Obama and I look forward to working with this subcommittee and this Congress to build a stronger, safer, more prosperous future. Thank you. I am pleased to take questions at this time.

[The statement follows:]

PREPARED STATEMENT OF HON. STEVEN CHU

Chairman Dorgan, Ranking Member Bennett, and members of the subcommittee, thank you for the opportunity to appear before you today to discuss the President's fiscal year 2011 budget request for the Department of Energy.

President Obama has stated, "The nation that leads the world in creating new sources of clean energy will be the nation that leads the 21st century global economy." I fervently share this view. The President's fiscal year 2011 budget request of \$28.4 billion will help position the United States to be the global leader in the new energy economy. The budget request makes much-needed investments to harness the power of American ingenuity. This request will create clean energy jobs, expand the frontiers of science, reduce nuclear dangers, and help curb the carbon

pollution that threatens our planet. As part of this administration's commitment to fiscal responsibility, the Department of Energy is also proposing several program reductions and terminations.

AMERICAN RECOVERY AND REINVESTMENT ACT

The fiscal year 2011 budget request builds on the investments in the American Recovery and Reinvestment Act. Through the \$36.7 billion the Department received from the Recovery Act, we are putting Americans to work, while helping to build a clean energy economy, spur energy innovation, and reduce our dependence on oil. We've begun to make our homes and offices more energy efficient, modernize our grid, and invest in key renewable energy projects. Getting this money out the door quickly, carefully, and transparently has been and will continue to be a top priority for me.

FISCAL YEAR 2011 BUDGET SUPPORTS STRATEGIC PRIORITIES

To continue the progress we have made, the fiscal year 2011 budget request supports the Department's strategic priorities of:

- Transitioning to a low-carbon economy by developing and deploying clean and efficient energy technologies, increasing generation capacity and improving our transmission capabilities;
- Investing in scientific discovery and innovation to find solutions to pressing energy challenges and maintain American economic competitiveness; and
- Enhancing national security by ensuring the safety, security and effectiveness of the nuclear stockpile without testing. The budget request also includes funds to work with our international partners to secure vulnerable nuclear material around the world within 4 years, and advance our nuclear legacy cleanup.

These strategic priorities will be enabled by a continued commitment to improving the management and fiscal performance of the Department.

ENERGY

To transition to a low-carbon future, we must change the way we generate and use energy. The President's budget request invests in clean energy priorities, including an investment of \$2.4 billion in energy efficiency and renewable sources of energy. It also promotes innovative energy efficiency and renewable energy projects through \$500 million in credit subsidy that will support \$3 to \$5 billion in lending. It expands the Advanced Manufacturing Tax Credit by \$5 billion to help build a robust domestic manufacturing capacity for clean energy technologies. Through this budget, we will increase research, demonstration, and deployment of wind, solar and geothermal energies; make buildings and homes more efficient; develop energy efficient vehicles; and pursue carbon capture and sequestration.

Nuclear energy must also be a part of our clean energy mix. During his State of the Union address, President Obama said, "To create more of these clean energy jobs, we need more production, more efficiency, more incentives. And that means building a new generation of safe, clean nuclear power plants in this country." The President and I are committed to restarting our domestic nuclear industry. Our budget request includes an additional \$36 billion in loan guarantee authority for the nuclear power sector to help construct the first new nuclear plants in decades, as well as \$495 million for research and development to support the competitiveness, safety and proliferation resistance of nuclear energy in the United States and abroad. On February 16, President Obama announced conditional commitments for more than \$8 billion in loan guarantees for what will be the first U.S. nuclear power plant to break ground in nearly three decades.

INNOVATION

We have many technologies in hand today to begin the transition to a low-carbon economy, but we will need breakthroughs and better technologies to meet our long-term goals. The budget request invests in basic and applied research and puts us on the path to doubling funding for science, a key presidential priority. We are also requesting \$55 million to start the RE-ENERGYSE initiative to help educate the next generation of scientists and engineers.

The budget request also supports the Department's three new, complementary approaches to marshalling the Nation's brightest minds to accelerate energy breakthroughs.

The first approach is the Energy Innovation Hubs. The Hubs are multidisciplinary, goal-oriented, and will be managed by top teams of scientists and engineers with enough resources and authority to move quickly in response to new develop-

ments. They are to be modeled after laboratories such as MIT's Radiation Laboratory, which developed radar during World War II, and Bell Laboratories when it invented and developed the transistor. Ideally, this work will be conducted under one roof. The Department will continue funding the three Energy Innovation Hubs introduced in fiscal year 2010. In addition, we are proposing a new Hub to dramatically improve batteries and energy storage.

The second approach is the Energy Frontier Research Centers. The EFRCs are mainly university-based, problem-oriented research. We have identified key scientific barriers to energy breakthroughs, and we believe we can clear these roadblocks faster by linking together small groups of researchers across departments, schools, and institutions. The Department proposes expanding the Energy Frontier Research Centers to capture emerging opportunities in new materials and basic research for energy needs.

The third funding approach is the Advanced Research Projects Agency-Energy (ARPA-E). ARPA-E is technology-oriented. We are seeking the boldest and best ideas for potentially transformative energy technologies and funding them to see if they work. The fiscal year 2011 budget request includes \$300 million for ARPA-E. ARPA-E is also dedicated to the market adoption of these new technologies. This week, ARPA-E sponsored a very successful conference here in Washington to bring together our Nation's energy innovators. I want to thank Chairman Dorgan for attending this event.

SECURITY

In addition to the health of our economy and our planet, the Department of Energy is focused on the safety and security of our people. Last April in Prague, President Obama outlined an ambitious agenda to address the greatest threat to global security—the danger of terrorists getting their hands on nuclear weapons or the material to build them. The Department is requesting a significant increase in the budget—more than \$550 million in new funding—for the NNSA Defense Nuclear Nonproliferation program to help meet the President's goal of securing all vulnerable nuclear materials around the world in 4 years.

The President has also made clear that, as long as nuclear weapons continue to exist, it is essential that we ensure the safety, security and effectiveness of our nuclear stockpile. With the \$7 billion in funds we have requested, we can upgrade our infrastructure that has been allowed to decay in the past decade, support the cutting-edge work of our National Labs, and recruit the skilled workforce we need today and in the future. Over the next 5 years, we intend to boost this funding by more than \$5 billion. Even in a time of tough budget decisions, we must make this investment for the sake of our security.

The budget request also protects public health and safety by cleaning up the environmental legacy of the Nation's nuclear weapons program. In 2010 the Department will discontinue its application to the U.S. Nuclear Regulatory Commission for a license to construct a high-level waste geologic repository at Yucca Mountain.

Both the President and I have made clear that Yucca Mountain is not an option. To deal with our nuclear waste management needs, the administration has brought together a range of experts to conduct a comprehensive review of the back end of the fuel cycle. The Blue Ribbon Commission announced recently, and co-chaired by General Brent Scowcroft and Congressman Lee Hamilton, will provide recommendations for developing a safe, long-term solution to managing the Nation's used nuclear fuel and its nuclear waste.

As part of our comprehensive strategy to restart the nuclear industry, we also propose breaking down artificial stovepipes and merging the Office of Civilian Radioactive Waste Management into the Office of Nuclear Energy.

MANAGEMENT

Finally, in order to transform the way Americans generate and use energy, we must transform the Department itself. As part of the Obama administration's reform agenda, the budget request includes \$2 million to establish a new Management Reform initiative to provide strategic direction, coordination and oversight of reform initiatives. This initiative will report directly to me and will receive close personal attention. We made important reforms when we began to implement the Recovery Act, and now we need to institutionalize those reforms and apply them across the Department.

Additionally, we are committed to being good stewards of the taxpayers' money. As we developed the budget, we looked to eliminate or reduce programs where we could. For example, we eliminated more than \$2.7 billion in tax subsidies for oil,

coal and gas industries. This step is estimated to generate more than \$38.8 billion in revenue for the Federal Government over the next 10 years.

Building a clean energy future won't be easy, but it is necessary for our economy and our security. As a scientist, I am an optimist, and I believe that we can meet this challenge and lead the world in the 21st century.

HIGHLIGHTS OF THE FISCAL YEAR 2011 DEPARTMENT OF ENERGY BUDGET

The Department's fiscal year 2011 budget request of \$28.4 billion, a 6.8 percent or \$1.8 billion increase from fiscal year 2010, supports the President's commitment to respond in a considered, yet expeditious manner to the challenges of rebuilding the economy, maintaining nuclear deterrence, securing nuclear materials, improving energy efficiency, incentivizing production of renewable energy, and curbing greenhouse gas emissions that contribute to climate change. Together with the American Recovery and Reinvestment Act of 2009 (Recovery Act) and fiscal year 2010 budget, the fiscal year 2011 budget request supports investment for a multi-year effort to address these interconnected challenges.

The fiscal year 2011 budget builds on the \$36.7 billion in Recovery Act funding. By the end of fiscal year 2010, the Department expects to obligate 100 percent and outlay roughly 35–40 percent of Recovery Act funds. In developing the fiscal year 2011 budget request, the Department has taken these investments into account. Recovery Act investments in energy conservation and renewable energy sources (\$16.8 billion), environmental management (\$6 billion), funds supporting loan guarantees for renewable energy and electric power transmission projects (\$4 billion), grid modernization (\$4.5 billion), carbon capture and sequestration (\$3.4 billion), basic science research (\$1.6 billion), and the establishment of the Advanced Research Projects Agency—Energy (\$0.4 billion) will continue to strengthen the economy by providing much-needed investment, by saving or creating tens of thousands of direct jobs, cutting carbon emissions, and reducing U.S. dependence on oil.

The President's fiscal year 2011 budget supports our three strategic priorities:

—*Innovation*.—Investing in science, discovery and innovation to provide solutions to pressing energy challenges

—*Energy*.—Providing clean, secure energy and promoting economic prosperity through energy efficiency and domestic forms of energy

—*Security*.—Safeguarding nuclear and radiological materials, advancing responsible legacy cleanup, and maintaining nuclear deterrence

These strategic priorities will be enabled by a continued commitment to management excellence:

—*Management*.—Transforming the culture of the Department with a results-oriented approach

Innovation—Investing in Science, Discovery and Innovation to Provide Solutions to Pressing Energy Challenges

As President Obama made clear in his remarks to the National Academy of Sciences in April 2009, the public sector must invest in research and innovation not only because the private sector is sometimes reluctant to take large risks, but because the rewards will be broadly shared across the economy. Leading requires assembling a critical mass of the best scientists and engineers to engage in mission-oriented, cross-disciplinary approaches to addressing current and future energy challenges. To develop clean energy solutions and maintain nuclear security, the Department must cultivate the science, technology, engineering, and mathematics workforce of the next generation. The fiscal year 2011 budget request of \$55 million for RE-ENERGYSE (Regaining our ENERGY Science and Engineering Edge) supports K–20+ science and engineering education.

With every initiative the Department undertakes, sound science must be at the core. In fiscal year 2011 the Department will increasingly emphasize cross-cutting initiatives to link science throughout the Department, specifically with energy and national security programs. These cross-cutting initiatives will enhance science capabilities to create knowledge and innovative technologies that can be brought to bear on national energy and security issues, leverage world-class science and engineering expertise to establish global leadership as clean energy innovators, and employ use-inspired research to reduce the cost and time to bring technologies to market at scale. The Department believes that it will deliver solutions more quickly and efficiently through our efforts to break down the traditional stovepipes and operate in a more integrated and coordinated manner. The fiscal year 2011 budget continues to address the President's priorities in an integrated and efficient manner, and to deliver results for the American taxpayer.

The Department continues its strong commitment to basic research and supports the President's Plan for Science and Innovation by requesting funding for the Office

of Science at \$5.1 billion, a 4.4 percent or \$218 million increase from fiscal year 2010. The fiscal year 2011 budget request will support the training of students and researchers in fields critical to national competitiveness and innovation, and will support investments in areas of research essential for a clean energy future. The President's Plan commits to doubling Federal investment in basic research at select agencies. The Department supports an overarching commitment to science by investing in basic and applied research, creating new incentives for private innovation and promoting breakthroughs in energy.

To help achieve the game-changing breakthroughs needed to continue leading the global economy, the fiscal year 2011 budget request includes \$300 million for the Advanced Research Projects Agency-Energy (ARPA-E). Introduced in fiscal year 2009, ARPA-E is responsible for enabling specific high-risk and high-payoff transformational research and development projects. Beyond simply funding transformational research that creates revolutionary technologies, ARPA-E is dedicated to the market adoption of those new technologies to meet the Nation's long-term energy challenges. This funding, along with the \$400 million made available through the Recovery Act, will provide sustained investment in this pioneering program.

The Department will continue funding the three Energy Innovation Hubs introduced in fiscal year 2010 to focus on developing fuels that can be produced directly from sunlight, improving energy efficient building systems design, and using modeling and simulation tools to create a virtual model of an operating advanced nuclear reactor. In addition, DOE is proposing a new Hub to focus on batteries and energy storage. Each of these Hubs will bring together a multidisciplinary team of researchers in an effort to speed research and shorten the path from scientific discovery to technological development and commercial deployment of highly promising energy-related technologies.

Complementing the Hubs, the Department proposes expanding the Energy Frontier Research Centers in fiscal year 2011 to capture new, emerging opportunities by furthering its scientific reach and potential technological impact by competitively soliciting in two categories: discovery and development of new materials critical to science frontiers and technology innovations, and basic research for energy needs.

Energy—Providing Clean, Secure Energy and Promoting Economic Prosperity through Energy Efficiency and Domestic Forms of Energy

In Copenhagen, President Obama emphasized that climate change is a grave and growing danger. The imperative now is to develop the capacity to confront the challenges climate change poses and seize the opportunity to be the global leader in the clean energy economy. Meeting the administration's goal to reduce carbon emissions by more than 80 percent by 2050 will be achieved by addressing supply and demand through increased energy efficiency, renewable generation, and grid modernization, as well as improvements in existing technologies and information analysis. An important tool that will continue to be used to address these issues will be loan guarantees. The Department's fiscal year 2011 budget request, building on the fiscal year 2010 budget and the Recovery Act, invests in the research, development, and deployment of technologies that will position the United States to lead international efforts to confront climate change now and in the future. The long-term economic recovery will be sustained by these continued investments in the new energy economy.

Loan Guarantees

The Loan Guarantee Program Office (LGPO) is a vital tool for promoting innovation in the energy sector across a broad portfolio of clean and efficient energy technologies. In fiscal year 2011, the Department is requesting funding and authority to support approximately \$40 billion in additional loan authority for innovative energy technology development. During fiscal year 2010, the LGPO streamlined the application review process. The new authority requested will help the Department to encourage and accelerate the availability of loans to leverage private sector investment in clean energy projects that will save and create jobs and stimulate the economy.

Energy Efficiency

In August 2009, President Obama said, "If we want to reduce our dependence on oil, put Americans back to work and reassert our manufacturing sector as one of the greatest in the world, we must produce the advanced, efficient vehicles of the future." In fiscal year 2011, the Department will promote energy efficiency in vehicles technologies, at \$325 million. No less important to achieving the President's stated ambitions is decreasing energy consumption through developing and advancing building technologies (\$231 million) and industrial technologies (\$100 million). Federal assistance for State-level programs, such as State Energy Program grants

(\$75 million, a 50 percent increase from fiscal year 2010) and Weatherization Assistance grants (\$300 million, a 43 percent increase from fiscal year 2010), will help States and individuals take advantage of efficiency measures for buildings and homes, lower energy costs and greenhouse gas emissions, and develop an ever-evolving, technically proficient workforce.

Clean, Renewable Energy Generation

The fiscal year 2011 budget request will modernize the Nation's energy infrastructure by investing in a variety of renewable sources such as solar (\$302 million), wind (\$123 million), water (\$41 million), hydrogen (\$137 million), biomass (\$220 million) and geothermal (\$55 million). These sources of energy reduce the production of greenhouse gas emissions and continue the pursuit of a clean energy economy built on the next generation of domestic production. The Department is also continuing to promote domestic clean energy through the four Power Marketing Administrations, which market and deliver electricity primarily generated by hydroelectric dams.

Grid Modernization

In support of the modernization of the electricity grid, the President's fiscal year 2011 budget requests \$144 million for research and development to improve reliability, efficiency, flexibility, and security of electricity transmission and distribution networks. The "Smart Grid" will integrate new and improved technologies into the energy mix, ensuring reliability, integration of renewable energy resources, and improving security.

While investing in energy efficiency, renewable energy generation, and grid modernization are fundamental steps necessary for creating a clean energy economy; investing in the improvement of existing sources of energy will provide a bridge between current and future technologies. These technologies are already a major segment of the energy mix and will play a critical role in providing a solid foundation that will make possible the creation of this new economy.

Safe and Secure Nuclear Energy

Nuclear energy currently supplies approximately 20 percent of the Nation's electricity and 70 percent of the Nation's clean, non-carbon electricity. The request for the Office of Nuclear Energy includes \$495 million for research, development, and demonstration in addition to investments in supportive infrastructure. Work on advanced reactor technologies, fuel cycle technologies, waste management, and cross-cutting technologies and transformative concepts will help ensure that nuclear energy remains a safe, secure, economical source of clean energy. The Department will also promote nuclear energy through the Loan Guarantee Program, which is requesting an additional \$36 billion in loan authority for nuclear power in fiscal year 2011 (for a total of \$54.5 billion).

Clean and Abundant Fossil Energy

The world will continue to rely on coal fired electrical generation to meet energy demand. It is imperative that the United States develop the technology to ensure that base-load electricity generation is as clean and reliable as possible. The Office of Fossil Energy will invest \$438 million in the research and development of advanced coal-fueled power systems and carbon capture and storage technologies. This will allow the continued use of the abundant domestic coal resources in the United States while reducing greenhouse gas emissions.

Accurate energy information and analysis play a critical role in promoting efficient energy markets and informing policy-making and strategic planning. This budget requests a total of \$129 million for the Energy Information Administration, the statutory statistical agency within the Department, to improve energy data and analysis programs.

Security—Safeguarding Nuclear and Radiological Materials, Advancing Responsible Legacy Cleanup and Maintaining Nuclear Deterrence

Reduces the Risk of Proliferation

In an April 2009 speech in Prague, the President called the threat of nuclear proliferation "the most immediate and extreme threat to global security" and announced his support for a new international effort to secure all vulnerable nuclear material around the world within 4 years. The fiscal year 2011 budget for the NNSA Defense Nuclear Nonproliferation program supports this effort, recognizing the urgency of the threat and making the full commitment to global cooperation that is essential to addressing this threat. The budget provides \$2.7 billion in fiscal year 2011, and \$13.7 billion through fiscal year 2015 to detect, secure, and dispose of dangerous nuclear and radiological material worldwide. This request is an increase

of 26 percent or \$550 million from fiscal year 2010. The budget supports cooperative nonproliferation initiatives with foreign governments and the effort and expertise to forge them into durable international partnerships, achieving the objective of a world without nuclear weapons. The budget continues the installation of radiation detection equipment at international border crossings and Megaports, significantly expands materials protection and control security upgrades at selected sites in foreign countries to address outsider and insider threats, and accelerates the pace of highly enriched uranium research reactor conversions with an urgent focus to develop the capability to produce the medical isotope molybdenum-99 in the United States using low enriched uranium. The fiscal year 2011 budget request provides \$4.4 billion over 5 years for Fissile Materials Disposition including the construction of U.S. facilities for the disposition of U.S. weapons-grade plutonium in fulfillment of our commitment with the Russian Federation under the Plutonium Management and Disposition Agreement of September 2000, and provides the first \$100 million of a \$400 million U.S. commitment to advance the construction of plutonium disposition facilities in the Russian Federation. The fiscal year 2011 budget request also supports a funding increase for Nonproliferation and Verification Research and Development for new technologies in support of treaty monitoring and verification.

Leverages Science to Maintain Nuclear Deterrence

The fiscal year 2011 budget request advances the Department's commitment to the national security interests of the United States through stewardship of a safe, secure and effective nuclear weapons stockpile without the use of underground nuclear testing. As the role of nuclear weapons in our Nation's defense evolves and the threats to national security continue to grow, the focus of this enterprise must also change and place its tremendous intellectual capacity and unique facilities in the service of addressing other challenges related to national defense. NNSA is taking steps to move in this direction, including functioning as a national science, technology, and engineering resource to other agencies with national security responsibilities. NNSA must ensure our evolving strategic posture places the stewardship of our nuclear stockpile, nonproliferation programs, counterterrorism, missile defenses, and the international arms control objectives into one comprehensive strategy that protects the American people and our allies. Through the NNSA, the Department requests \$7.0 billion for the Weapons Activities appropriation, a 9.8 percent or \$624 million increase from the fiscal year 2010 appropriation. This increase provides a strong basis for transitioning to a smaller nuclear stockpile, strengthens the science, technology and engineering base, modernizes key nuclear facilities, and streamlines the enterprise's physical and operational footprint.

These investments will enable execution of a comprehensive nuclear defense strategy based on current and projected global threats that relies less on nuclear weapons, yet enhances national security by strengthening the NNSA's nuclear security programs. This improved NNSA capability base will mitigate the concerns regarding ratification of the follow-on Strategic Arms Reduction Treaty and the Comprehensive Test Ban Treaty. The fiscal year 2011 request for Weapons Activities has four major components. The request for Stockpile Support increases, reflecting the President's commitment to maintain the safety, security and effectiveness of the nuclear deterrent without underground nuclear testing, consistent with the principles of the Stockpile Management Program outlined in section 3113(a)(2) of the National Defense Authorization Act of fiscal year 2010 (50 U.S.C. 2524). The request for Science, Technology and Engineering increases by over 10 percent, and provides the funding necessary to protect and advance the scientific capabilities at the U.S. nuclear security laboratories supporting the stockpile and broader national security and energy issues. The budget request for infrastructure supports the operation and maintenance of the Government-owned, contractor-operated facilities in the nuclear security enterprise, as well as special capabilities for secure transportation and construction. The security and counterterrorism component of the budget provides for physical and cyber security in the NNSA enterprise, as well as emergency response assets and NNSA's focused research and development contribution to the Nation's counterterrorism efforts.

Advances Responsible Environmental Cleanup

The fiscal year 2011 budget includes \$6 billion for the Office of Environmental Management to protect public health and safety by cleaning up hazardous, radioactive legacy waste from the Manhattan Project and the cold war. This funding will allow the program to continue to accelerate cleaning up and closing sites, focusing on activities with the greatest risk reduction.

As the Department continues to make progress in completing clean-up, the fiscal year 2011 budget request of \$189 million for the Office of Legacy Management sup-

ports the Department's long-term stewardship responsibilities and payment of pensions and benefits for former contractor workers after site closure.

The administration has determined that the Yucca Mountain repository is not a workable option and has decided to terminate the Office of Civilian Radioactive Waste Management. The core functions and staff to support efforts under the Nuclear Waste Policy Act to meet the obligation of the Government will transfer to the Office of Nuclear Energy by the end of fiscal year 2010.

Management—Transforming the Culture of the Department With a Results-Oriented Approach

In order to transform the way Americans use and produce energy, we must transform the Department of Energy. The Department is committed to strengthening its management culture and increasing its focus on results. The implementation of the Recovery Act provided the Department with an opportunity to continue to refine best practices in management, accountability, operations, and transparency. These best practices will be applied in executing the fiscal year 2011 budget.

To achieve our strategic priorities, the Department requests a net of \$169 million for departmental administration. These funds, along with resources in individual program offices, will help transform key functional areas such as human, financial, project, and information technology management. The request includes \$2 million for Management Reform within the Office of the Secretary, which will provide the Department with strategic direction, coordination, and oversight of reform initiatives.

DEPARTMENT OF ENERGY FISCAL YEAR 2011 PROGRAM OFFICE HIGHLIGHTS

Office of Science—Supporting Cutting-Edge Foundational Scientific Research

The Department of Energy's Office of Science (SC) delivers discoveries and scientific tools that transform our understanding of energy and matter and advance the national, economic, and energy security of the United States. SC is a primary sponsor of basic research in the United States, leading the Nation to support the physical sciences in a broad array of research subjects in order to improve energy security and address issues ancillary to energy, such as climate change, genomics, and life sciences. In fiscal year 2011, the Department requests \$5.1 billion, an increase of 4.4 percent over the enacted fiscal year 2010 appropriation, to invest in science research. The fiscal year 2011 request supports the President's Plan for Science and Innovation, which encompasses the entire SC budget, as part of a strategy to double overall basic research funding at select agencies. As part of this plan, the budget request supports the training of students and researchers in fields critical to our national competitiveness and innovation economy, and supports investments in areas of research critical to our clean energy future and to making the United States a leader on climate change.

SC is addressing critical societal challenges and key missions of the Department of Energy through significant improvements in existing technologies and development of new energy technologies. SC will accomplish this by: (1) sustained investments in exploratory and high-risk research in traditional and emerging disciplines, including the development of new tools and facilities; (2) focused investments in high-priority research areas; and (3) investments that train new generations of scientists and engineers to be leaders in the 21st century. The fiscal year 2011 budget request supports all three of these investment strategies.

Two of the four Energy Innovation Hubs being requested in fiscal year 2011 are through the Office of Science; these Hubs will bring together teams of experts from multiple disciplines to focus on two grand challenges in energy: (1) Fuels from Sunlight, a Hub established in fiscal year 2010 and (2) Batteries and Energy Storage, a new Hub in the fiscal year 2011 request.

The Energy Frontier Research Centers (EFRC) program will be expanded in the fiscal year 2011 request to capture new, emerging opportunities by furthering its scientific reach and potential technological impact. New EFRCs will be competitively solicited in two categories: discovery and development of new materials that are critical to both science frontiers and technology innovations, and basic research for energy needs in a limited number of areas that are underrepresented in the 46 original EFRC awards.

The fiscal year 2011 request for the U.S. ITER Project (\$80 million, a decrease of \$55 million from fiscal year 2010) is a reflection of the pace of ITER construction as of the end of 2009. The administration is engaged in a range of efforts to implement management reforms at the ITER organization and accelerate ITER construction while minimizing the overall cost of the construction phase for the United States and the other ITER members.

The Office of Science supports investigators from more than 300 academic institutions and from all of the DOE laboratories. The fiscal year 2011 budget request will support approximately 27,000 Ph.D.s, graduate students, undergraduates, engineers, and technicians. Nearly 26,000 researchers from universities, national laboratories, industry, and international partners are expected to use SC scientific user facilities in fiscal year 2011.

Advanced Research Projects Agency-Energy—Transformational Research and Development

The fiscal year 2011 budget request includes \$300 million for the Advanced Research Projects Agency-Energy (ARPA-E), a program launched in fiscal year 2009 that sponsors specific high-risk and high-payoff transformational research and development projects that overcome the long-term technological barriers in the development of energy technologies to meet the Nation's energy challenges, but that industry will not support at such an early stage. An essential component of ARPA-E's culture is an overarching focus on accelerating science to market. Beyond simply funding transformational research creating revolutionary technologies, ARPA-E is dedicated to the market adoption of those new technologies that will fuel the economy, create new jobs, reduce energy imports, improve energy efficiency, reduce energy-related emissions, and ensure that the U.S. maintains a technological lead in developing and deploying advanced energy technologies.

Office of Energy Efficiency and Renewable Energy—Developing and Deploying Clean, Reliable Energy

The Office of Energy Efficiency and Renewable Energy (EERE) strengthens the energy security, environmental quality, and economic vitality of the United States through the research, development, demonstration and deployment (RDD&D) of clean energy technologies and generation and advances in energy efficiency. EERE's activities are critical to creating a low carbon economy and sustaining strong economic growth and job creation while dramatically reducing greenhouse gas emissions and energy imports. EERE programs link advances in basic research and the creation of commercially successful products and services to ensure delivery to the marketplace for general use and implementation.

The fiscal year 2011 budget request of \$2.4 billion, an increase of 5 percent over fiscal year 2010, is aimed at accelerating revolutionary change in the Nation's energy economy. The request includes programs associated with meeting the President's goals of investing in the next generation of clean energy technologies, vehicles and fuels, and energy efficiency measures that reduce energy use in Federal agencies and the industrial and building sectors.

Clean, Renewable Energy Generation

The fiscal year 2011 budget request continues to work to transform the Nation's energy infrastructure by investing over \$650 million in a variety of renewable sources of electrical generation such as solar (\$302 million, a 22 percent increase over fiscal year 2010), and wind (\$123 million, a 53 percent increase over fiscal year 2010), as well as deploy clean technologies to reduce our dependence on oil. The request includes expansions on Concentrating Solar Power, biopower and off-shore wind, which will provide new, additional avenues for clean energy development and deployment. These technologies will reduce the production of greenhouse gas emissions and revitalize an economy built on the next generation of domestic production.

Energy Efficiency

The Department implements a number of efforts to increase energy efficiency and conservation in homes, transportation, and industry. The fiscal year 2011 budget requests \$758 million to accelerate deployment of clean, cost-effective, and rapidly deployable energy conservation measures in order to reduce energy consumption in residential and commercial buildings, and the industrial and Federal sectors. The Department will invest \$231 million in the Building Technologies program, a 16 percent increase over fiscal year 2010 for built environment R&D. Federal assistance for State-level programs such as State Energy Program grants (\$75 million) and Weatherization Assistance Program (\$300 million), will continue to help citizens implement energy conservation measures, lower energy costs and greenhouse gas emissions, and build a technical workforce. The fiscal year 2011 request also includes \$545 million to accelerate research, development and deployment of advanced fuels and vehicles to reduce the use of petroleum and greenhouse gas emissions. The fiscal year 2011 budget complements the Recovery Act funding for these programs (\$3.1 billion for State Energy Programs, \$5 billion for Weatherization Assistance, \$2 billion for Advanced Battery Manufacturing and \$400 million for Transportation Electrification).

Office of Electricity Delivery and Energy Reliability—Moving Toward a More Intelligent Grid to Power the Digital Economy

The fiscal year 2011 budget request for the Office of Electricity Delivery and Energy Reliability (OE) budget is \$186 million, an increase of 8 percent over fiscal year 2010. These funds will build on the “Smart Grid” investments and other activities.

The ability of the United States to meet the growing demand for reliable electricity is challenged by an aging power grid under mounting stress. Despite the increasing demand for reliable power brought on by the modern digital economy, the power grid in the United States has suffered from a long period of underinvestment. Much of the power delivery system was built on technology developed over 50 years ago and thus responds to disturbances with speed limited by the technology of that period. This limitation increases the vulnerability of the power system to outages that can spread quickly and impact whole regions. Breakthroughs in digital network controls, transmission, distribution, and energy storage will make the power grid more efficient, alleviating the stress on the system, as well as enable greater use of clean and distributed energy sources. The return on these investments will come from a reduction in economic losses caused by power outages and the delay or avoidance of costly investment in new generation and transmission infrastructure.

The budget request provides \$144 million for research and development, which supports development of technologies that will improve the reliability, efficiency, flexibility, functionality, and security of the Nation’s electricity delivery system. It accelerates investment in energy storage capabilities and funds two new research initiatives: Advanced Modeling Grid Research, to develop grid-modeling capabilities using the large volumes of data generated by advanced sensors deployed on the grid; and Power Electronics, to develop new power control devices in collaboration with universities. The proposal also continues to support the development of “Smart Grid” technologies and cyber security systems for the power grid.

The budget request continues support for Permitting, Siting, and Analysis (\$6.4 million) to assist States, regional entities, and other Federal agencies in developing policies and programs aimed at modernizing the power grid; and for Infrastructure Security and Energy Restoration (\$6.2 million) to enhance the reliability and resiliency of U.S. critical infrastructure and facilitate its recovery from energy supply disruptions.

Office of Environmental Management—Reducing Risks and Making Progress

The mission of the Office of Environmental Management (EM) is to complete the safe cleanup of the environmental legacy brought about from over six decades of nuclear weapons development, production, and Government-sponsored nuclear energy research. This cleanup effort is the largest in the world, originally involving 2 million acres at 107 sites in 35 states, dealing with some of the most dangerous materials known to man.

EM continues to pursue its cleanup objectives within the overall framework of achieving the greatest comparative risk reduction benefit and overlaying regulatory compliance commitments and best business practices to maximize cleanup progress. To support this approach, EM has prioritized its cleanup activities:

- Activities to maintain a safe and secure posture in the EM complex
- Radioactive tank waste stabilization, treatment, and disposal
- Used nuclear fuel storage, receipt, and disposition
- Special nuclear material consolidation, processing, and disposition
- High priority groundwater remediation
- Transuranic and mixed/low-level waste disposition
- Soil and groundwater remediation
- Excess facilities deactivation and decommissioning

The fiscal year 2011 budget request for \$6.0 billion will fund activities to maintain a safe and secure posture in the EM complex and make progress against program goals and compliance commitments, including reduction of highest risks to the environment and public health, use of science and technology to reduce life cycle costs, and reduction of EM’s geographic footprint by 40 percent by 2011. EM continues to move forward with the development of the capability for dispositioning tank waste, nuclear materials, and used nuclear fuel. The budget request includes the construction and operation of three unique and complex tank waste processing plants to treat approximately 88 million gallons of radioactive tank waste for ultimate disposal. It will also fund the solid waste disposal infrastructure needed to support disposal of transuranic and low-level wastes generated by high-risk activities and the footprint reduction activities. In addition to the fiscal year 2011 budget request, EM will continue to expend the \$6 billion in Recovery Act funding provided by Congress to complete lower-risk footprint reduction and near-term completion cleanup activities.

EM carries out its cleanup activities with the interests of stakeholders in mind. Most importantly, EM will continue to fulfill its responsibilities by conducting cleanup within a “Safety First” culture that integrates environment, safety, and health requirements and controls into all work activities to ensure protection to the workers, public, and the environment, and adheres to sound project and contract management principles. EM is also strengthening its project and planning analyses to better assess existing priorities and identify opportunities to accelerate cleanup work. Working collaboratively with the sites, EM continues to seek aggressive but achievable strategies for accelerating cleanup of discrete sites or segments of work. In addition, functional and cross-site activities such as elimination of specific groundwater contaminants, waste or material processing campaigns, or achievement of interim or final end-states are being evaluated.

After the EM program completes cleanup and closure of sites that no longer have an ongoing DOE mission, post closure stewardship activities are transferred to the Office of Legacy Management (LM). LM also receives sites remediated by the U.S. Army Corps of Engineers (Formerly Utilized Sites Remedial Action Program) and private licensees (Uranium Mill Tailings Radiation Control Act, title II sites). Post closure stewardship includes long-term surveillance and maintenance activities such as groundwater monitoring, disposal cell maintenance, records management, and management of natural resources at sites where active remediation has been completed. At some sites the program includes management and administration of pension and post-retirement benefits for contractor retirees.

The administration has determined that developing a repository at Yucca Mountain, Nevada, is not a workable option and has decided to terminate the Office of Civilian Radioactive Waste Management (RW). The Nation needs a different solution for nuclear waste disposal. As a result, in 2010, the Department will discontinue its application to the U.S. Nuclear Regulatory Commission for a license to construct a high-level waste geologic repository at Yucca Mountain and establish a Blue Ribbon Commission to inform the administration as it develops a new strategy for nuclear waste management and disposal. All funding for development of the Yucca Mountain facility and RW will be eliminated by the end of fiscal year 2010. The administration remains committed to fulfilling its obligations under the Nuclear Waste Policy Act. The Office of Nuclear Energy will develop an integrated approach to improve the waste management options for the Nation and support the Blue Ribbon Commission. Ongoing responsibilities under the Nuclear Waste Policy Act, including administration of the Nuclear Waste Fund and the Standard Contract, will continue under the Office of Nuclear Energy, which will lead future waste management activities.

Innovative Technology Loan Guarantee Program and Advanced Technology Vehicle Manufacturing Program—Supporting Investment in Innovation and Manufacturing

To encourage the early commercial production and use of new or significantly improved technologies in energy projects, the Department is requesting an additional \$36 billion in authority to guarantee loans for nuclear power facilities and \$500 million in appropriated credit subsidy for the cost of loan guarantees for renewable energy systems and efficient end-use energy technology projects under section 1703 of the Energy Policy Act of 2005. The additional loan authority for nuclear power projects will promote near-term deployment of new plants and support an increasing role for private sector financing. The additional credit subsidy will allow for investment in the innovative renewable and efficiency technologies that are critical to meeting the administration’s goals for affordable, clean energy, technical leadership, and global competitiveness.

The fiscal year 2011 budget also requests \$58 million to evaluate applications received under the eight solicitations released to date and to ensure efficient and effective management of the Loan Guarantee Program. This request will be offset by collections authorized under title XVII of the Energy Policy Act of 2005 (Pub. L. 109–8).

The Advanced Technology Vehicle Manufacturing program requests \$10 million to support ongoing loan and loan monitoring activities associated with the program mission of making loans to automobile and automobile part manufacturers for the cost of re-equipping, expanding, or establishing manufacturing facilities in the United States to produce advanced technology vehicles or qualified components, and for associated engineering integration costs.

Office of Nuclear Energy—Investing in Energy Security and Technical Leadership

The Department is requesting \$912 million for the Office of Nuclear Energy (NE) in fiscal year 2011—an increase of 5 percent over the fiscal year 2010 enacted level.

NE's funding supports the advancement of nuclear power as a resource capable of meeting the Nation's energy, environmental, and national security needs by resolving technical, cost, safety, proliferation resistance, and security barriers through research, development, and demonstration as appropriate.

Currently, nuclear energy supplies approximately 20 percent of the Nation's electricity and over 70 percent of clean, non-carbon producing electricity. Over 100 nuclear power plants are offering reliable and affordable baseload electricity in the United States, and they are doing so without air pollution and greenhouse gas emissions. NE is working to develop innovative and transformative technologies to improve the competitiveness, safety and proliferation resistance of nuclear energy to support its continued use.

The fiscal year 2011 budget supports a reorganized and refocused set of research, development, and demonstration (RD&D) activities. This program is built around exploring, through RD&D: technology and other solutions that can improve the reliability, sustain the safety, and extend the life of current reactors; improvements in the affordability of new reactors to enable nuclear energy to help meet the administration's energy security and climate change goals; understanding of options for nuclear energy to contribute to reduced carbon emissions outside the electricity sector; development of sustainable nuclear fuel cycles; and minimization of risks of nuclear proliferation and terrorism.

NE is requesting \$195 million for Reactor Concepts Research, Development and Deployment. This program seeks to develop new and advanced reactor designs and technologies. Work will continue on design, licensing and R&D for the Next Generation Nuclear Plant to demonstrate gas-cooled reactor technology in the United States. The program also supports research on Generation IV and other advanced designs and efforts to extend the life of existing light water reactors. In fiscal year 2011, NE will initiate a new effort focused on small modular reactors, a technology the Department believes has promise to help meet energy security goals.

The fiscal year 2011 request includes \$201 million for Fuel Cycle Research and Development to perform long-term, results-oriented science-based R&D to improve fuel cycle and waste management technologies to enable a safe, secure, and economic fuel cycle. The budget also requests \$99 million to support a new R&D program, Nuclear Energy Enabling Technologies, focused on the development of cross-cutting and transformative technologies relevant to multiple reactor and fuel cycle concepts. The Crosscutting Technology Development activity provides crosscutting R&D support for nuclear energy concepts in areas such as reactor materials and creative approaches to further reduce proliferation risks. The Transformative Nuclear Concepts R&D activity will support, via an open, competitive solicitation process, investigator-initiated projects that relate to any aspect of nuclear energy generation including, but not limited to, reactor and power conversion technologies, enrichment, fuels and fuel management, waste disposal, and nonproliferation, to ensure that good ideas have sufficient outlet for exploration.

The Energy Innovation Hub for Modeling and Simulation will apply existing modeling and simulation capabilities to create a "virtual" reactor user environment to simulate an operating reactor. NE will also continue its commitments to investing in university research, international cooperation, and the Nation's nuclear infrastructure—important foundations to support continued technical advancement.

Office of Fossil Energy—Abundant and Affordable Energy for the 21st Century

The fiscal year 2011 budget request of \$760 million for the Office of Fossil Energy (FE) will help ensure that the United States can continue to rely on clean, affordable energy from traditional domestic fuel resources. The United States has 25 percent of the world's coal reserves, and fossil fuels currently supply 86 percent of the Nation's energy.

The Department is committed to advancing Carbon Capture and Storage (CCS) technologies in order to promote a cleaner and more efficient use of fossil fuels. In addition to significant Recovery Act funds, Advanced CCS with \$438 million requested in fiscal year 2011 is the foundation of the Department's clean coal research program which seeks to establish the capability of producing electricity from coal with near-zero atmospheric emissions.

In addition, \$150 million of FE's \$760 million request will be used to promote national energy security through the continued operations of both the Strategic Petroleum Reserve and Northeast Home Heating Oil Reserve programs. These programs protect the Nation and the public against economic damages from potential disruptions in foreign and domestic petroleum supplies.

Energy Information Administration—Providing Independent Statistics and Analysis

The fiscal year 2011 request for the Energy Information Administration (EIA) is \$128.8 million, which is an \$18.2 million increase over the fiscal year 2010 current appropriation. EIA conducts a comprehensive data collection program through more than 60 surveys that cover the full spectrum of energy sources, end uses, and energy flows; generates short- and long-term domestic and international energy projections; and performs informative energy analyses. EIA disseminates its data products, analyses, reports, and other information services to customers and stakeholders primarily through its Web site.

The increased funding improves EIA's capability to close energy information gaps, strengthen analysis, and address significant data quality issues. It provides for an expanded survey of energy consumption in commercial buildings that will provide more baseline information critical to understanding energy use. That survey also is a basis for benchmarking and performance measurement for energy efficiency programs. The budget request also provides for: expanded analysis of energy market behavior and data to address the increasingly important interrelationship of energy and financial markets; continued implementation of improvements in data coverage, quality and integration; upgrades to the National Energy Model; and initiation of efforts to track and analyze the adoption of "Smart Grid" technologies and dynamic electricity pricing plans.

The National Nuclear Security Administration—Ensuring America's Nuclear Security and Reducing the Global Threat of Nuclear Proliferation

The National Nuclear Security Administration (NNSA) continues significant efforts to meet administration priorities, leveraging science to promote U.S. national security objectives. The fiscal year 2011 President's budget request is \$11.2 billion, an increase of 13 percent from the enacted fiscal year 2010 appropriation. The fiscal year 2011–2015 President's Request for the NNSA is a significant funding increase over fiscal year 2010 levels, reflecting the President's priorities on global nuclear nonproliferation and for strengthening the nuclear security posture of the United States to meet defense and homeland security-related objectives:

- Broaden and strengthen the NNSA's science, technology and engineering mission to meet national security needs
- Work with global partners to secure all vulnerable nuclear materials around the world within 4 years
- Work toward a world with no nuclear weapons. Until that goal is achieved, ensure the U.S. nuclear deterrent remains safe, secure and effective
- Transform the Nation's cold-war era weapons complex into a 21st century national security enterprise
- Provide safe and effective nuclear propulsion for U.S. navy warships

The fiscal year 2011 budget request of \$7.01 billion for the Weapons Activities appropriation provides funding for a wide range of programs. Some activities provide direct support for maintaining the nuclear weapon stockpile, including stockpile surveillance, annual assessments, life extension programs, and warhead dismantlement. Science, Technology and Engineering programs are focused on long-term vitality in science and engineering, and on performing R&D to sustain current and future stockpile stewardship capabilities without the need for underground nuclear testing. These programs also provide a base capability to support scientific research needed by other elements of the Department, to the Federal Government national security community, and the academic and industrial communities. Infrastructure programs support facilities and operations at the Government-owned, contractor-operated sites, including activities to maintain and steward the health of these sites for the long term. Security and counterterrorism activities leverage the unique nuclear security expertise and resources maintained by NNSA to other Departmental offices and to the Nation.

The Weapons Activities request is an increase of 9.8 percent over the fiscal year 2010 enacted level. This level is sustained and increased in the later out-years. The multi-year increase is necessary to reflect the President's commitment to maintain the safety, security and effectiveness of the nuclear deterrent without underground nuclear testing, consistent with the principles of the Stockpile Management Program outlined in section 3113(a)(2) of the National Defense Authorization Act of fiscal year 2010 (50 U.S.C. 2524). Increases are provided which directly support of the nuclear weapon stockpile, for scientific, technical and engineering activities related to maintenance assessment and certification capabilities, and for recapitalization of key nuclear facilities. The President's request provides funding necessary to protect the human capital base at the national laboratories—including the ability to design and certify nuclear weapons—through a stockpile stewardship program that fully exercises these capabilities. Security and nuclear counterterrorism activities de-

crease about 3 percent from the fiscal year 2010 appropriated levels, leveraging the continuing efficiencies in the Defense Nuclear Security budget.

The fiscal year 2011 request for Defense Nuclear Nonproliferation is \$2.7 billion, an increase of 25.8 percent over the fiscal year 2010 appropriation. The increase is driven by the imperative for U.S. leadership in nonproliferation initiatives both here and abroad. In addition to the programs funded solely by the NNSA, our programs support the Department of Energy mission to protect our national security by preventing the spread of nuclear weapons and nuclear materials to terrorist organizations and rogue states. These efforts are implemented in part through the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, formed at the G8 Kananaskis Summit in June 2002, and the Global Initiative to Combat Nuclear Terrorism, launched in Rabat, Morocco, in October 2006.

The fiscal year 2011 President's request for International Nuclear Materials Protection and Cooperation reflects selective new security upgrades to buildings and areas that were added to the cooperation after the Bratislava Summit, additional Second Line of Defense sites, and sustainability support for MPC&A upgrades. The Global Threat Reduction Initiative increases by 68 percent in support of the international effort to secure vulnerable nuclear materials around the world within 4 years. The Fissile Materials Disposition program increases by 47 percent reflecting continuing domestic construction of the MOX Fuel Fabrication Facility and the Waste Solidification Building, as well as design documentation for a related pit disassembly and conversion capability. A portion of the funding increase results from the transfer of funding associated with the latter activity from the Weapons Activities appropriation starting in 2011.

The President's request of \$1.1 billion for Naval Reactors is an increase of 13.3 percent over the fiscal year 2010 appropriated level. The program supports the U.S. Navy's nuclear fleet, comprised of all of the Navy's submarines and aircraft carriers, including 52 attack submarines, 14 ballistic missile submarines, 4 guided missile submarines, and 11 aircraft carriers. These ships are relied on every day, all over the world, to protect our national interests. Starting in fiscal year 2010, there are major new missions for the NNSA Naval Reactors program. A significant funding increase is requested for the OHIO Class submarine replacement and for the related activity which will demonstrate new submarine reactor plant technologies as part of the refueling of the land-based prototype reactor. R&D is underway now, and funding during this Future Years Nuclear Security Program is critical to support the long manufacturing spans for procurement of reactor plant components in 2017, and ship procurement in 2019. Resources are also included in fiscal year 2011 to support commencement of design work for the recapitalization of used nuclear fuel infrastructure.

The Office of the Administrator appropriation provides for Federal program direction and support for NNSA's Headquarters and field installations. The fiscal year 2011 request is \$448.3 million, a 6.5 percent increase over the fiscal year 2010 appropriation. This provides for well-managed, inclusive, responsive, and accountable organization through the strategic management of human capital, enhanced cost-effective utilization of information technology, and integration of budget and performance through transparent financial management practices.

Management—Transforming the Culture of the Department with a Results-Oriented Approach

To transform the way Americans use and produce energy, we need to transform the Department of Energy. Because the mission of the Department is vital and urgent, it must be pursued using a results-oriented approach that is safe, fiscally responsible, and legally and ethically sound. The Department has developed strong management and oversight capabilities during implementation of the Recovery Act, and these lessons will be applied to the fiscal year 2011 budget. The budget request of \$337 million for corporate management includes \$75 million for the Office of Management, \$102 million for the Office of the Chief Information Officer, \$43 million for the Inspector General's office, \$62.7 million for the Office of the Chief Financial Officer, \$37 million for the Office of General Counsel, and \$2 million for Management Reform within the Office of the Secretary. The Management Reform effort will provide the Department with strategic direction, coordination, and oversight of management initiatives. The primary mission of this new office is to identify operational efficiencies to free up resources for priority mission activities. The Department is also requesting \$12 million for a new Acquisition Workforce Improvement initiative which will be utilized to increase the size and improve the training of our acquisition professionals.

The Department's human capital management efforts are focused on an integrated approach that ensures human capital programs and policies are linked to the

Department's missions, strategies, and strategic goals, while providing for continuous improvement in efficiency and effectiveness. To accomplish this goal, the Department will develop different strategies to attract, motivate and retain a highly skilled and diverse workforce to meet the future needs of the Nation in such vital areas as scientific discovery and innovation.

To improve stewardship of taxpayer dollars, the Department will continue to issue audited financial statements in an accelerated timeframe and provide assurance that the Department's financial management meets the highest standards of integrity. The Department's fiscal year 2009 financial statements were reviewed by independent auditors and received an unqualified opinion. This was made possible by implementing an aggressive plan to mitigate and remediate a number of financial management challenges that were identified by the Department and its independent auditors. In addition, the Department continues to strengthen the execution of program funding dollars by having regular execution reviews that will ensure funding is processed, approved and spent quickly and responsibly. The Department in fiscal year 2011 will continue its effort to build and improve its integrated business management system.

The Department is continuing to make progress in improving project management and is implementing an action plan with scheduled milestones and aggressive performance metrics. The focus of the action plan is to successfully address the root causes of the major challenges to planning and managing Department projects. The action plan identifies eight measures that, when completed, will result in significant, measurable, and sustainable improvements in the Department's contract and project management performance and culture.

To improve financial performance in project management, the Department has increased the use of Earned Value Management (EVM) techniques within program offices. These techniques objectively track physical accomplishment of work and provide early warning of performance problems. A certification process was instituted for contractors' EVM systems to improve the definition of project scope, communicate objective progress to stakeholders and keep project teams focused on achieving progress. Currently, 70 percent of the Department's capital asset projects have certified EVM systems.

The Department continues to strengthen information technology management by consistent execution of robust IT Capital Planning and Investment Control oversight and reporting processes designed to ensure successful investment performance, including the use of EVM Systems as appropriate, and the remediation of poorly performing investments. Through the establishment and use of an Enterprise Architecture that aligns to the Federal Enterprise Architecture, the Department has ensured that all IT investments follow a comprehensive Modernization Roadmap.

The Department continues to take significant actions to improve its cyber security posture by implementing its Cyber Security Revitalization Plan to address long-standing, systemic weaknesses in the Department's information and information systems. Specifically, the Department seeks to ensure that 100 percent of operational information technology systems are certified and accredited as secure and that the Department's Inspector General has rated the certification and accreditation process as "satisfactory." Additional steps will be taken to ensure that electronic classified and personally identifiable information are secure.

CONCLUSION

I appreciate the opportunity to appear before you to present the fiscal year 2011 budget request for the Department of Energy. I will be happy to take any questions that members of the subcommittee may have.

Senator DORGAN. Mr. Secretary, thank you very much.

I have a number of questions, and I assume I will not get through all of them. But let me try to see if we can determine what is happening here.

FUTUREGEN

This subcommittee has been wrestling with the question of FutureGen. Is it on? Is it off? Does it need to be funded? Does it not? If so, how will the money be used? So where are you on the decisionmaking process about FutureGen?

Secretary CHU. We are working with the alliance. We put an offer to the alliance and we are working with them in hopes that

they can come up with the necessary assets needed. This is in progress. We have extended the deadline because we are going to give them more time, but I think the deadline is coming up in the next couple weeks and then we will have to make a determination at that time.

Senator DORGAN. Do you feel that we are losing time, though? FutureGen was sort of the new thing. As I indicated in my opening statement, we have a significant need to do the research to try to evaluate how we build electric generating plants that are going to capture carbon and do certain things with it. We have, obviously, lost time because the previous administration at one point decided to discontinue it, shut it down, and your administration has now for a year or so been trying to study it.

Secretary CHU. Not so much trying to study it, trying to see if the alliance can put together a proposal that would be acceptable.

But let me also say that I share your sense of urgency in getting carbon capture and sequestration technologies going. It is our stated goal that perhaps within 8–10 years, this would be ready for deployment and something that is economically viable.

We have, through the Recovery Act—and this reflects the comments both you and Ranking Member Bennett made—invested over \$4 billion in several pilot plants or pilot plant demonstrations, experiments for carbon capture and sequestration. The good news is that \$4 billion has been matched by \$6 billion or \$7 billion of private sector money. So we know that the private sector has also gotten interested and committed to this.

There are a number of projects now that are becoming competitive with FutureGen in the sense of the amount of carbon sequestered and things like that. We still want FutureGen to go forward, but it really depends on whether this package—

Senator DORGAN. But in a broader sense, do you feel like the reduction in funds in the fossil energy account reflects less attention to and less interest in that area of energy?

Secretary CHU. No, we do not. There is essentially \$4 billion plus \$6 billion—\$10 billion total investment in various forms of carbon capture and sequestration. In the following budget you will see an increase as we work through those demonstrations.

ELECTRIC VEHICLES

Senator DORGAN. Let me ask about electric vehicles. Senator Alexander and I and others are putting together an electric vehicles piece of legislation. We have been working on it and are, I think, fairly close to introducing it.

The President set a goal of having 1 million electric vehicles on the road by 2015. What are the things that you are doing and what should we see in this budget that reflects that? What percent of the advanced vehicle technology budget is going into electric drive vehicles, for example?

Secretary CHU. We are investing a considerable amount in electric vehicles. As you know, the single most important thing is a better battery, a battery with higher energy density, a battery with higher energy per unit volume, and a battery that lasts the life of the car, let us say, 15 years if it moderately discharges, and a battery that costs a lot less.

I would see a big up-tick, a significant up-tick in the market when we have that battery. I am optimistic that we will have the battery like that, but whether it is 1 year, 2 years, 3 years from today I do not know. We are heavily investing in battery research. The goal of the hub proposed for fiscal year 2011 is to get a battery that is dramatically better than the ones being prototyped today.

But in addition to that, we are also investing in advanced battery manufacturing. This is something where the United States has fallen off, even though we actually invented a lot of the technology that went into the lithium ion battery, it was perfected by Sony. If you buy a hybrid car today, 98 percent of the high technology batteries will have been manufactured in Asia. With the Advanced Battery Manufacturing Technology grants we have been giving, we hope to recapture a lot of that market.

Senator DORGAN. But that is true of almost everything we invent. It migrates very quickly. In the last 20 years, what we have seen is a mass migration of that which we invent to be produced elsewhere.

BIOFUEL BLENDS

Can you describe what you expect to see happen with the testing of higher biofuel blends, particularly E15, on vehicles. When do you think the administration can give us an answer on that, and what about legacy vehicles?

Secretary CHU. I personally looked into this several months ago to try to see what we could do to accelerate the testing. There are a number of models we wanted to test and you have to put on a significant number of miles to test the vehicles. So the testing is going 24/7. I think it is going to be sometime late spring, maybe early summer where we can make a determination whether E15 would be viable in the vehicles.

We are also testing deployed vehicles. And so that is the real issue, whether this 15 percent blend would do something that would affect the long-term and make the cars last as long as they initially would have.

So perhaps by late spring, we will be done. That is what I recall from the last time I looked.

Senator DORGAN. All right.

HYDROGEN AND FUEL CELL TECHNOLOGIES

Finally, for hydrogen and fuel cell technologies, as you know, you are proposing a cut. Last year you proposed the elimination of all of those accounts. I think we are going to shut down 190, roughly, contracts. You are proposing a cut.

You know, the hydrogen fuel cell vehicle is run on electricity. As we move toward an electric-drive system, it seems to me the continued work in hydrogen fuel cells is very important work.

Can you provide for the subcommittee a summary of existing programs that would be discontinued or significantly scaled back in order to make these cute possible?

Secretary CHU. Yes, I will do that.

There was a difference of opinion last year. We have increased the hydrogen technology request over fiscal year 2010, but it is still

a decrease from what was appropriated. We are minimizing the discontinuity in the existing programs.

I might say privately among some of the technical people in the oil companies, they recognize that this is something that might be 20 years plus away from a mass adoption. And so I am entering discussions privately with them to say, okay, can you start to band together because it is something so far in the future it makes sense to have consortiums work on it.

Senator DORGAN. Yes. Except as a scientist, you know that that which seems far into the future becomes nearer and nearer the more work is done, and often we discover that the future was much closer than we thought and I would expect that to be the case here as well.

I have many questions, but again, my colleagues are here and I want them to have time for questions. So I will submit questions in writing to you, and as I indicated, I have to go to the White House for a signing ceremony, so when I leave, Senator Tester will take the chair.

But, Senator Bennett, did you wish to inquire?

Senator BENNETT. Yes. Thank you very much, Mr. Chairman.

WEATHERIZATION GRANTS

Going down the list, I outlined in my opening statement let us talk about weatherization grants and why is the pace so slow in getting these funds out, and why are there still unresolved tax issues for the smart grid grantees, more than a year later after we enacted that?

The big question, why is the Department requesting any funds for weatherization grants when you have \$4.5 billion from the Recovery Act, in addition to the fiscal year 2009 and fiscal year 2010 appropriations that have piled up that have not been spent? You have got more than \$5 billion in total, and yet you are asking for more with all of these delays. Can you help us understand all that?

Secretary CHU. Well, it is not that we wanted to put pain on ourselves.

Seriously, let me tell you about the weatherization grants. As you noted, it was \$5 billion. It is a formula block grant. It goes to States.

There were beginning hiccups. The biggest hiccup was the Davis-Bacon wage issue. That had to be resolved with cooperation from the Labor Department. The Davis-Bacon issues took a longer time than either Departments had expected, but those are resolved.

So what has happened up until the end of 2009, I will agree with you that initial progress was slow. Starting in September 2009, we started urging the States and tried to help them accelerate their costing of the funds. We believe that apart from a few States, they are getting on track to up the spending. This is demonstrated by what we now have in January.

We went from quarterly reporting to monthly reporting. There was resistance both by the States and by others, Paperwork Act issues. But what we found is, as we started to move into monthly reporting, those States that were the furthest behind actually started to move.

So a number of things like that were holding us up.

There is an IG report that perhaps you have read which I think gives a very balanced view of why initial progress was delayed. It does indicate that the Department of Energy was doing everything within its power over the last 6 months to help the States get this money out.

Now, in answer to your question, why are we asking for more weatherization money—there are other programs we have now begun. The weatherization money is for low-income housing. It will weatherize within the low-income housing sector, perhaps 500,000 to 600,000 homes. The sector in the United States—there are 130 million homes of which probably 80 million to 90 million homes could benefit from weatherization.

What we are now trying to do is start programs that will be largely highly leveraged, ideally self-financed because energy efficiency really does mean energy savings. And we want to start programs and we are beginning to pilot some of these with our current weatherization money to get this going in the United States.

So ultimately, we feel that energy efficiency should be a social norm, but fundamentally it saves money and that money goes in the pockets of homeowners and businesses and it goes back into the economy.

Very quickly, the tax issue with the Smart Grid is being resolved. That is something we have to negotiate with Treasury and other agencies. We hope, perhaps within a few weeks, that will be completely resolved and we can go forward.

Senator BENNETT. Okay.

Well, do you still think then that the appropriations you are asking for is necessary to reach that goal? And with all the money you have still got, you—

Secretary CHU. Yes. Despite the slow start, the goal we have is that by 2011, mid-2011, we will have costed the money. It has essentially all been allocated.

But again, it takes time to start these programs. Once these programs have ramped up, you have got people. You have got caulkers. You have got insulators. You have got energy auditors out there. You want to keep the momentum going. We have ramped up. And we need to sustain that.

Senator BENNETT. Is there a ceiling? You talk about primarily low-income housing. Is there an income ceiling where we say, well, if you earn this much, the Feds will not weatherize your home? That is your responsibility.

Secretary CHU. In the current weatherization statute, there is. It is 200 percent above the poverty level. And most middle-income homes cannot be touched by that. And so that is, again, why we think eligibility for weatherization funding essentially could be expanded to mid- to low-income housing.

Senator BENNETT. I have some constituents that will raise questions about the constitutionality of that.

Secretary CHU. Of the Recovery Act?

Senator BENNETT. No, of saying, okay, the Federal Government will use Federal power and Federal dollars to do this for one portion of the citizenship and not the other. But that is a constitutional question for another time.

Secretary CHU. Right. By the way, that is in the Recovery Act. The weatherization program we are proposing does not have that ceiling.

Senator BENNETT. Okay.

LOAN GUARANTEES

Let us talk about the loan guarantees. DOE had planned to make a minimum of 21 condition commitments for projects supported under the Recovery Act by the end of 2009. Instead, you have made a total of four, and you made some additional commitments since then but still far short of the target.

Can you tell us what the problems are there in terms of meeting the plan—

Secretary CHU. Sure.

Senator BENNETT [continuing]. And what steps are being taken?

Secretary CHU. If you include the Advanced Technology Vehicle Manufacturing loans, I believe we are up to 11 since the first conditional loan was announced to Solyndra. As you pointed out, the loan program was authorized in 2005. I believe it was appropriated in the beginning of 2006. And when my team took over in 2009, not a single loan had gone out. So we have made 11. There are more in the pipeline to be announced soon. We are spending a lot of time thinking about it—so we went from 0 to 11 or so.

We are examining how to streamline the processes. There are issues in terms of legislative fixes. For example, the 1705 loan program, could also allow loans to energy efficiency technologies and energy efficiency companies. Right now it is limited to renewable energies—because there are a number of loan applicants that we think would be well qualified.

The issues with the loan programs are fundamentally, given the way it is constructed, we are obligated to protect the taxpayer, which means that there are negotiations to find out what these companies have in their assets, and assess the ability of the companies to repay the loans. For example, if one compares the first nuclear loan we gave, which these are solid companies with a lot of assets, minimal credit subsidies are required. So those loans we believe are very solid. The probability of payback, costing nothing to the taxpayer, is quite high. In fact, we have made the case to OMB that it will cost nothing to the taxpayer.

Senator BENNETT. Let me give you a particular example. AREVA in Idaho submitted an application years ago for a front-end nuclear fuel project, was given every indication, I understand, back in October that due diligence had been completed and word would be coming any day. And now we are in March and they are still waiting.

Do you have any idea why that particular one has been held up so much? That is in the West in the area where I am concerned.

Secretary CHU. We are closing in on that. To be quite candid, sometimes the delays surprise me a little bit, but until I get into what the delays are about, the nuclear loans—I personally thought the first nuclear loan could have been announced—I thought it would have been announced by November. So these are very big deals, hundreds of millions of dollars to billions of dollars, and there are complications. But we are closing in on the AREVA one as quickly as we can.

Senator BENNETT. Thank you, Mr. Chairman.

Senator DORGAN. Thank you, Senator Bennett. We will come back to you if you have additional questions.

Senator Reed, I want to go to you and then Senator Tester has indicated he will close. We will come back to Senator Bennett. But Senator Tester is going to close the hearing as well. So we will have ample time at the end of the hearing.

Senator Reed.

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

And thank you, Mr. Secretary.

OFFSHORE WIND POWER

As you know—and we have had a chance to talk about the aspects of this—my State, Rhode Island, is deeply committed to wind power, offshore wind power, not only for environmental reasons, but also for economic reasons. We have 13 percent unemployment and this could be a way to help us move forward in the future. The State, through the great help of the chairman, has received money to conduct an ocean special area management plan to assist in siting offshore wind projects. They are well positioned to do that. They have a selected contractor, Deepwater Wind, and we hope we can do this. We are working hard with not only DOE but also the Minerals Management Service and the Department of Transportation. We have got a grant for a shore-side facility that could be a fabrication point.

But I was heartened to see that your budget includes \$49 million for offshore wind technology. Can you just generally elaborate on what you would like to do with that? And frankly, if you would like to help us, that would be even better.

Secretary CHU. The reason we have asked for this budget is because we believe there are a lot of resources in offshore wind. Now, the down side of offshore wind, as you well know, is that the maintenance of it is much more costly. The up side is that the newer turbines are getting more and more reliable. But fundamentally, you really want those turbines to have a mean time of failure that pushes 20 years because once the turbine goes down because of the choppy seas, it becomes very expensive to fix, and you cannot fix it immediately. You have to wait for proper conditions.

But having said all that, the United States has incredible resources in offshore wind, both off the Atlantic coast and in some of the Great Lakes areas. We do anticipate that the reliability of these large turbines is going to get better and better and better. So we think it is now time to start getting this piloting going to nurture it along.

Senator REED. Can you comment upon your coordination with the Minerals Management Service, with NOAA, and with the other agencies, the stakeholders? Are you working actively with them in a—

Secretary CHU. Well, certainly the primary coordination is with Interior and Secretary Salazar because the Interior actually controls that land. But we are very keen on trying to get this developed in a timely manner but that makes good economic sense as well. But as I said, we think it is going in the right direction. The other thing I should add is there are two other things that are good

about offshore wind. First, they are closer to population centers, and second, you actually have a higher what I call duty cycle. The wind is steadier in the oceans. So the capital investment, the nameplate, electricity generation of a turbine offshore—you can actually reap more electrical power over a period of time.

Senator REED. Thank you.

I know that your Assistant Secretary, Ms. Zoi, is very much interested in this, and I would encourage her to contact Rhode Island, perhaps even visit, to see what we are doing. That might help sort of this whole process of coordination.

INTERNATIONAL WIND POWER TECHNOLOGY

My final point—and this has been an issue that has come up in the context of the recovery plan. Because other nations have been much more aggressive in promoting wind power, the consequence is that they have a lot of this technology. We are sort of in an unfortunate position of trying to harness wind but having to rely upon foreign-produced and fabricated turbines, towers, et cetera.

One of the questions is not only getting the wind towers up but how can we help jump start the industry here in the United States. In the longer term, we want the good, clean energy but we want the jobs as well. Is that consciously being considered by you and your colleagues?

Secretary CHU. Very much so. Thank you for giving me this opportunity to explain some of this.

Because of long-term fiscal policies in Europe in the 1980s and 1990s, the technology for wind migrated from our shores to Europe, Germany, and Denmark in particular. Right now, as we show that the United States is getting serious about deploying wind that migration is reversing. So what is happening is many of these companies—for example, Vestas. I toured a Vestas plant. They are investing hundreds of millions of dollars and plan up to \$2 billion of investment in Colorado to serve the entire North American region.

Now, it is Vestas-United States. Right now, the value of the turbines being produced in Vestas is over 50 percent. It is something like 60 percent of all the material is being produced in the United States with their goal of getting it over 80–90 percent.

There is a very sound, economical reason why they want to do this. You want to set up a manufacturing plant where the market is stable so the company is not liable to currency swings. It is a more predictable business model. You want to set up local supply chains because it actually makes good sense. It is less costly.

They said the only aspect where they do not think they can have a U.S. supplier, but it might take a year or two, is the paint. They have to get the paint from Germany. This is a very special, long-lived, very durable paint. But they said we are trying to qualify some U.S. paints.

So the idea of these companies—it just like GM makes a manufacturing plant in China. They have the same motivation. Currency swings, local suppliers, all these other things. So if the United States puts in fiscal policies that allow a market to flourish, the manufacturing will naturally migrate to the United States and the parts will migrate to the United States. So I think there is a lot of people out there who say, well, wait a minute. This is a foreign

company. But you know—all the labor and the installation will be in the United States. If 80 percent, 70 percent of the parts are in the United States, which is not that dissimilar from you buy a car from Chrysler and ask how many parts are made in the United States. It could be 70 percent, maybe 80 percent.

So what happens is that is sort of the goal we are going to, and that is actually what these wind manufacturers want to do as well. So again, a market pool means they will invest in the United States which means jobs in the United States.

Senator REED. There is another aspect, I think, with the offshore, is that because of the large size of these towers and blades, et cetera, to transport them from the interior of the country is very expensive and impossible because of the constrictions of roads. So there is an opportunity again in Rhode Island to have the fabrication right there, not just for Rhode Island, but for the entire east coast.

I agree with you in the sense that initially there might be some significance of overseas products, but eventually I think that we can find capable American vendors.

So again, I think we should pursue this on all fronts. Thank you, Mr. Secretary.

Secretary CHU. Thank you.

Senator TESTER [presiding]. Thank you, Senator Reed.

Thank you for being here, Secretary Chu. I have a few questions.

HYDROPOWER

First of all, as you well know, Montana covers the gamut for energy production from renewable to conventional sources. One of the areas that we produce a lot, as in all of the West, is in hydropower. In fact, in 2007, I believe about 40 percent of our electricity was from water. We have a lot of opportunity with water, a lot of opportunity that has not been tapped yet in smaller projects that will produce smaller amounts of energy, but if you get enough of them, it will produce a lot of energy in hydro whether it is irrigation ditches or low-head hydro, whatever it may be.

The DOE's power budget in hydro has been cut by about 20 percent. And correct me if I am wrong. And I was wondering why that is the case, if there is a lack of opportunity in hydro from the Department's standpoint or whatever the reason might be.

Secretary CHU. Well, on this subject, I would certainly be willing to work with you on hydropower. I do believe hydropower is proven technology. It is clean. A DOE internal study said that we probably have 70 gigawatts additional hydropower by just replacing turbines with more efficient turbines, putting turbines on flood control dams, and under the river. So that means no large new reservoirs. That is a lot of power. That is a lot of clean power. So I will certainly work with you and your staff on—

Senator TESTER. Thank you. And the bottom line is you do not see that potential cut reducing our options when it comes to hydro?

Secretary CHU. As I said, we can work with you on developing a compromise.

Senator TESTER. Okay, sounds good.

ENERGY INDEPENDENCE

Some of the previous questioners talked about energy. The chairman talked about hydrogen fuel cells and other things, and you talked about technology being off a long ways in many areas.

I am curious to get your perspective as to whether you see this country ever becoming energy-independent. Is that within our wherewithal?

Secretary CHU. Well, completely energy-independent—it will take some decades, but certainly decreasing our dependency on foreign oil is something that I believe we can do, as everyone in this room well knows, oil especially, since we are now importing about 55 percent of the oil. So a strategy of better fuel economy, biofuels, electrification of vehicles, all those things will decrease our dependency.

Senator TESTER. What is the major roadblock in—let us just take transportation fuels, as you had mentioned, where we import 50 percent. I have actually heard higher numbers than that.

Secretary CHU. Fifty-five.

Senator TESTER. What is the major roadblock with achieving our independence with transportation fuels in a faster way, and does this budget address that roadblock or those several roadblocks?

Secretary CHU. Well, I think it does. I think of those things that I told you about—now, I think the oil and gas industry, in developing domestic sources of supply, and they are large, successful, well-funded companies. And so we believe that especially the oil industry has the wherewithal to do this.

We feel the Department of Energy's role—and this goes to Ranking Member Bennett's question as well—is to look at research in developing unconventional sources like natural gas sources before the industry wants to pick it up. Shale gas is a prime example of that. We started investing in shale gas research in 1978, stopped it in 1991. In 1990, Schlumberger picked up research on shale gas. And so that transition over to commercial companies is what we want to see. If it is a very beginning, very researchy thing, we say, okay, let us do that, but as soon as the oil and gas industry begins to pick it up, then we say, let us invest in other things.

Senator TESTER. Okay. I have got a bunch more questions, but I am going to be here for a while so I can come back.

Senator Murray.

Senator MURRAY. Thank you very much, Mr. Chairman. You look great in that seat.

YUCCA MOUNTAIN

I want to thank Secretary Chu for coming today, and I want to start out by asking you a few questions about some decisions that the administration has made on Yucca Mountain that I have been very dismayed by, including the decision that was made just yesterday to withdraw your Department's Nuclear Regulatory Commission license application for Yucca Mountain.

Now, I have read your written statement, and I have to say I think there is really something missing. Three times in there you say that Yucca Mountain is "not a workable option for nuclear waste disposal." But what seems to be missing is the why, and that

is really an important question and it is one the communities around the country, including in my home State in the tri-cities area, people who have really borne the burden of producing and cleaning up this nuclear waste, deserve to have answered.

So I wanted to ask you today who was consulted in making the decision that Yucca Mountain is no longer a viable option.

Secretary CHU. Well, one has to go back and look at the entire history of the choice of Yucca Mountain, the Nuclear Waste Act, all of those things. What one finds is that other things, other knowledge, other conditions, as they evolved, made it look increasingly not like an ideal choice.

Senator MURRAY. Was there scientific evidence that was used in determining this?

Secretary CHU. Well, it is an unfolding of issues that continued, and I would be happy to talk to you in detail about some of the issues. But the President has made it very clear that it is not an option.

Senator MURRAY. Was there any scientific evidence that was used?

Secretary CHU. Well, let me give you one example. The conditions in Yucca Mountain initially—and then they were changed—the Supreme Court ruling says that it is not 10,000 years. It could be up to a million years. Then all of a sudden, that puts a new dimension on Yucca Mountain. Climate is hard to predict over a million years.

Senator MURRAY. For any site.

Secretary CHU. Right, for any site.

Senator MURRAY. So why was Yucca Mountain different?

Secretary CHU. Because there are other geological sites where we can do radioactive dating and we know they are inherently stable. Let me give you one example. There is a salt dome site—these things have been around for tens of millions of years. The difference with salt dome sites is you stick radioactive waste in there. The salt diffuses around it. Even though the continents are drifting all around the globe, those things have been stable for tens of millions of years, up to hundreds of millions of years. That is a very different type of site than Yucca Mountain which has fissures and that rock can be saturated with water if the climate changes.

Senator MURRAY. Well, did your Department ask for input from communities like Hanford where waste destined for Yucca Mountain is currently temporarily being stored?

Secretary CHU. No, we did not, but we take our responsibility for the waste problem at Hanford, Washington, and all the States very, very seriously. We believe that we can handle that.

But again, let me just continue and go back to the Yucca Mountain. So all of a sudden, something changes and you say, well the fix is a multi-multi-billion-dollar titanium shield that is installed under the ground for Yucca Mountain. So then as these things go on, you are beginning to think are you beginning to pour good money after bad.

So the whole intent of the blue ribbon panel is to step back and look at it. Why were the salt domes ignored in the past? Well, initially if you put them in the ground, the salt oozes around it and closes, you cannot get it back. So this long-term geological reposi-

tory where you cannot get it back is actually in a certain sense an ideal place for long-term, forever waste disposal, geologically stable over tens of millions of years, cannot get it back. So that is the intent of the blue ribbon panel.

Let us step back—

Senator MURRAY. But I would assume that a blue ribbon panel would not just say we are going to take this one off the table. We are going to look at other ones that we have not spent a lot of money on, and they could have problems too.

You know, over the last 30 years, Congress, independent studies, previous administrations have all pointed to and voted for and funded Yucca Mountain as the Nation's best option for a nuclear repository. In concert with those decisions, billions of dollars and countless work hours have been spent at Hanford and nuclear waste sites across the country in an effort to treat and package nuclear waste that will be sent there. Without a repository, these sites and communities that support them have now really been left in limbo.

The question I want to ask you is what are you going to say to these communities today about why you have decided to go back on nearly 30 years of planning? And what can you do to assure them that the sites that they are now working to clean up will not become the final repository for this waste because we have taken some options off the table?

Secretary CHU. The Department of Energy has a legal obligation to move that material. We take that obligation very seriously. So I think that is the assurance. There is more assurance as you well know. There are ways of dealing with it if we fail to live up to our responsibility.

But going back to this issue of Yucca Mountain, we believe we have a path forward. We have a very distinguished bipartisan panel that is charged with review. They are going to be meeting at the end of this month, and the two chairs are very eager to get on with it and to give advice to me, the President, and Congress which could include advice on changes in the legislation to allow for a comprehensive, sensible approach to the back end of the fuel cycle.

Again, Yucca Mountain is not the ideal site, given what we know today and given what we believe can be developed in the next 50 years.

Senator MURRAY. Well, this is really disturbing to me because now we have pushed this down 2 more years and we have taken one of the sites off. You have told them do not even look at this in comparison to all these other ones you are going to look at. This leaves everybody just in complete limbo after 30 years of working on this, and I would like to ask you to provide this subcommittee and my office with an impact analysis which includes the cost and schedule impacts to Hanford cleanup and the other nuclear sites in my State.

Secretary CHU. All right.

Senator MURRAY. I just think it is irresponsible for the Department of Energy to discontinue the Yucca program altogether, its funding, licensing, and design. I believe that this has to be a decision based on science and moral responsibility. We have to clean

up this waste. It has to go somewhere and we cannot just unilaterally take one site out of the equation when we are looking at where this is going to go or we are going to find ourselves 2 years down the road in this same place and all the waste sitting in Hanford that is temporary storage is going to have no further answer. So I am really disturbed about this and want to get that information from you.

Mr. Chairman, if I could just have one more question here.

LEGACY MANAGEMENT

On the whole issue of EM, last year I wrote a press report that EM was going to be cut by \$1 billion. Now, fortunately, that did not happen. But the funding still for this fiscal year is inadequate to meet all the needs at Hanford. Particularly I am worried about the \$50 million shortfall for groundwater cleanup. This is really frustrating. I know there were increases in other parts of the energy budget. You know, all the new stuff out there is wonderful. We all want to fund it. But the legacy projects within DOE are absolutely critical, and these budgets are not put together just by wishing or magic. DOE works with the regulators. They work with the communities. They agree on the milestones and parts of those are the funding requirements that Congress then has to follow up with and the administration has to pay for. And we have got to have a Government that backs up its promises and commitments with real money.

So I just wanted to ask you, while you were here, how a base budget that is inadequate to meet the work plans illustrates a commitment to these communities that we are going to clean up these sites.

Secretary CHU. Well, Ines Triay, my Assistant Secretary for Environmental Management, tells me that the budget request of roughly \$6 billion is adequate to meet our legal obligations. As you know, I have consistently fought to sustain these programs.

Senator MURRAY. Well, we still have shortages in some areas. Truly, you were out. You visited Hanford. It is an enormous site. It is a legacy project from another war, and we cannot ignore it and we have to meet the milestones and we need to fund it. I appreciate that the billion-dollar cut did not go through, but we still have some shortfalls.

And I am worried about next year too because everybody keeps thinking, well, nobody will pay attention to these EM projects out there. If we do not pay attention to those, if we do not meet the milestones and the legal obligations, the disaster that will hit this country is much, much larger than the cost that we have today. So we have got to keep those commitments.

Secretary CHU. Mr. Chairman, can I have 30 seconds.

We are maintaining the budgets, but it is much more complex than that. We are working very hard to make sure that the contractors can do better than they have done in the past. Senator Bennett had noted that many of the things in the Department of Energy have been over budget, over time. It is actually true of EM. It is not true of the Office of Science. And so when I walked in the door, since the Office of Science actually does big projects on budget, on time, the best practices in that office now are being actively

transferred over to Environmental Management and a little bit to NNSA. So we are working very hard to make sure that every precious dollar that we are spending in EM goes as far as it can. That is the other way we hope to accelerate these processes.

Senator TESTER. Senator Landrieu.

Senator LANDRIEU. Thank you very much.

And Mr. Secretary, thank you for your leadership at this quite exciting and uplifting time in this particular area for our country and the world.

I have three questions. I am going to try my best to get them all in.

NATURAL GAS

As you are aware, Louisiana has been at the center of a domestic energy revolution as it pertains to the shale gas revolution. This technology, new technology, has unlocked shale gas resource space. The United States suddenly finds itself with four times the volume of gas than we thought we had just a few years ago.

I want to ask you what you think about the implications of these natural gas finds both onshore, which are pretty extraordinary, as well as our continued exploration and discovery offshore.

And as you may be aware, the Congressional Research Service recently released a report that said simply by utilizing natural gas-fired plants that are constructed today, as opposed to other plants, to fill the energy needs today, we could reduce our greenhouse gas emissions by 19 percent. I found that quite startling and encouraging.

So could you comment on how this new discovery, new technology is informing your thinking as you move forward?

Secretary CHU. Well, the ability to recover gas from shale rock is something that opens up the possibilities. I do believe that natural gas is a necessary transition fuel to a low-carbon economy. Right now, if you burn natural gas compared to uncaptured and sequestered coal, it is about a factor of 2 less carbon dioxide per unit of electricity generated. So that is good.

But let me also add that in order to reach the climate goals we need in the world, by mid-century we are going to be having to capture the carbon from both natural gas plants and coal plants.

The discoveries and the demonstration of recoverability is something which will hopefully keep the natural gas prices down, and for that reason—the biggest uncertainty, as you well know, to a power company is the volatility of the natural gas prices.

So now, I heard slightly different numbers, between a 3 percent increase to doubling of the natural gas reserves because of the shale gas. But no matter, let us take doubling as a compromise. That is a lot. It means that we probably have natural gas supplies that could last a century. So these are good things. We still want to use that more cleanly.

I should also add that natural gas is also a transition fuel for a different reason that is probably not appreciated. If you have renewable energy, sun and wind, within a matter of minutes to hours, that generation can literally disappear. You can Google Bonneville Power Administration, and they give the last 7 days of wind

production, and it is a running clock updated every minute. And it wobbles up and down.

Now, when the wind stops blowing or tapers off, you have minutes to perhaps an hour to respond. And in so doing, you asked what sources of energy can respond; hydro and natural gas. One does not ramp up nuclear powerplants rapidly, nor does one want to ramp up coal plants. So for that reason, the rapid response of natural gas is something that is also part of the transition.

Finally, let me add one of the technologies we are looking at, which is compressed air storage. You take wind or other renewable energy or even nuclear energy at nighttime, you use that. You compress air. You bring the air back and help it spin a turbine, but you want to use natural gas to boost it. Now, the wonderful thing is you can probably—70 percent of the electricity needed to compress the air, pump it into a cave and have it come out can be used to generate electricity. You only lose 30 percent and some people say, with newer designs, perhaps even less. So there again, natural gas has a role in actually helping generate renewable energy use. So these are all reasons why—

Senator LANDRIEU. Well, I really appreciate that because, as you know, Senator Saxby Chambliss and I have formed the Natural Gas Caucus and it is not because we are anti-oil or anti-coal, which we also represent the interests of oil and coal and want to make sure that they have a place in the future, as they have had significantly in the past and the present.

But we think the properties and the potential for natural gas are very significant, and I am very grateful for you basically outlining two or three, not the least of which could potentially be using natural gas, compressed natural gas in vehicles, which brings me to my next question. And I appreciate that.

ADVANCED TECHNOLOGY VEHICLES MANUFACTURING LOAN PROGRAM

Your Department is leading the effort to disburse \$25 billion in investments, which score to our budget at about \$7 billion, but it is significant for new vehicles, the program you recently announced. As you know, many States have an interest, and Louisiana has been working in conjunction with our Department of Economic Development on an exciting potential new model for a vehicle that is in the queue for support.

Can you just give an update about that program? I understand you have \$25 billion to allocate. You might have done this in your opening, and I am sorry if I am going over ground already covered. But kind of an update of where you are and what is your general view of the kind of applications you are seeing. Are you excited about what you are seeing? Are you encouraged? And then any particular comments on the Louisiana proposal I would appreciate hearing.

Secretary CHU. Well, just as a point of information, are you asking a question about our overall advanced automobile—

Senator LANDRIEU. Yes, automobile program, the ATVM program.

Secretary CHU. Yes. I am seeing some very good signs.

We, in some sectors, had fallen behind other countries in the most advanced fuel-efficient vehicles, but I think the American car

manufacturers are determined to catch up and surpass them. There are developments across the whole gamut, from improvements in conventional internal combustion and unconventional internal combustion in the sense of direct fuel injection. Much more economical engines.

Electrification, the weak point is the batteries. Both the major car manufacturers and little start-ups, I think, have made progress. I would be personally hopeful that within a few years the energy density in batteries could double, but we actually need, I believe, perhaps a quadrupling of the energy density before it is simply adopted mass market. So you have the range and the battery does not take up the space that the current batteries do take up.

We are in the process of developing—again, since this is research and development, one cannot give a timeline—batteries that also last much longer. The Prius battery, the current metal hydride batteries in a Prius are kept within 10 percent of half charged. They are 55 percent to 45 percent. If you take that battery and drain it deeply and then recharge it, the lifetime goes down very quickly and you probably had that experience in your own laptop computer. If you drain the battery hundreds of times, you will find that that laptop battery no longer has the capacity it once did, let us say, a year or 2 ago. So the lifetime of the battery is an issue. You want the battery to last the lifetime of the car.

Senator LANDRIEU. Thank you. I know my time is up, but Mr. Secretary, the battery technology is so interesting for all of us, but there are opportunities for plug-in, opportunities for new infrastructure for plug-in, with the current battery technology that we have now. Is that not correct?

Secretary CHU. No. I think the Chevy Volt battery takes up a huge part of the car, and so GM started this where they went in with the intent of developing the technology more aggressively. So as the Chevy Volt and the Nissan LEAF and all these other—well, the Nissan LEAF is not a plug-in hybrid, but the Chevy Volt is. So of the plug-in hybrids, we still have room for improvement. Again, I think the good news is that it is happening. The development of batteries has accelerated.

Senator LANDRIEU. Well, thank you very much and thank you for your focus on our program which is a little different than the electric vehicles but we think extremely exciting and the possibility. So thank you for your attention and your staff's attention.

Senator TESTER. Senator Alexander.

Senator ALEXANDER. Thanks, Mr. Chairman.

Dr. Chu, I want to thank you for your exceptional service in your job and complement the President and you on his recent comments on nuclear power. I completely agree with Senator Murray about Yucca Mountain, but the President's comments about a new generation of nuclear power, the quality of his nominees and appointees for the Nuclear Regulatory Commission and for the Commission on Recycling Used Fuel, the approval of the loan guarantees. All are an important step forward in that, and I know you played a major role in it and I congratulate you for it.

LOAN GUARANTEES

Do you think it would be a good idea over the next few years for Congress and the administration to move toward a technology-neutral, low-carbon set of short-term subsidies, policies, loan guarantees and standards rather than picking and choosing individual types of clean energy?

Secretary CHU. Yes and no. If you have a very new technology that you think over a period of 10 or 20 years could become competitive, then it does make sense to nurture that technology. Under no circumstances, I believe should you nurture a technology where you say over this time period—let us say 10 or 15 years—where it would need subsidy forever. But virtually every technology, as it begins and emerges—and it is also true of nuclear—wind, solar—these things needed a little nurturing, but then after a while you say, okay, eventually you have to stand on your own and you have to know that you are going to have to stand—

Senator ALEXANDER. So after a while we get to it.

We did a little computation of—we asked the Energy Information Administration—wind power gets 25 times as much Government subsidy per megawatt hour as all other forms of electricity combined. You know, we put in a production tax credit in 1992 and it just keeps going, and we had four Democratic Senators yesterday point out how \$2 billion in stimulus funding was creating jobs in China to build wind turbines, which they did not like.

So that is why Senator Webb and I on our loan guarantee—I am very delighted with your approval of loan guarantees for nuclear. But in our legislation, we make it for all low-carbon forms of energy. So there is some subsidy, some policy, and some standard. The renewable fuel standard, for example, excludes nuclear power and some other forms of clean energy and in a way distorts the market, making it more difficult for investor-owned utilities to build nuclear plants based upon market-based decisions.

NUCLEAR WASTE

But if I may keep going so I do not take too much time here. I mentioned the quality of your appointees to the Commission on Used Nuclear Fuel. While you decide what to do, you can still continue aggressive research in the recycling of used nuclear fuel. Can you not? And do you plan to do that?

Secretary CHU. Yes. We have a budget of over \$400 million, close to \$500 million that we have proposed to Congress. Included in that budget are new reactor designs that could potentially burn down, harvest much more of the energy content, small modular reactors, beginning with conventional light water but going forward where these small modular reactors would be totally prefabricated and built in a factory and shipped successfully in the United States where the location of a powerplant could not handle a 1.5 gigawatt power line, many, many things like that.

Included in that is research in reprocessing fuel, a well as research in advanced reactors with higher energy neutrons that can burn down the long-lived waste. The whole idea there is to greatly reduce the amount of nuclear waste to greatly harvest much more

of the energy of the uranium, all those things. So we plan a very comprehensive program going forward in all those areas.

Senator ALEXANDER. Senator Bond has an interview he wants to get to. So I will not ask you to answer any of these, but I will state these questions quickly.

I would like to ask you to respond to a question about what you think the risk of loss is for the loan guarantees for nuclear powerplants. I think it is small. Others have said it is large.

Second, I hope that you will keep high on your agenda the uranium processing facility at Oak Ridge which this subcommittee approved design for, and the sooner we get it done, the quicker we can reduce the annual overhead costs at Oak Ridge.

Third and finally, I hope you will keep in mind the efficiency of third-party financing for facilities at places like the Oak Ridge Laboratory in Y-12. We can build buildings cheaper and faster if we allow other people to build them and rent from them. Sometimes that gets hung up in the Department of Energy or the Office of Management and Budget. We have had good success with that at Oak Ridge, and I hope when that comes before you, that you will pay close attention to that.

Thank you very much.

Senator TESTER. Senator Bond.

Senator BOND. Thank you very much, Mr. Chairman, and the ranking member, my particular appreciation to my colleague from Tennessee. This is one of those days when if we were cloned, we would still be about two places short. I thank you very much for letting me discuss these issues.

COST OF GREEN JOBS

I agree with Senator Alexander that we need to begin taking a look at the economics of wind power. I had a private sector contractor in my office yesterday saying wind power is very expensive. It is not worth the cost, but we love it because every time they build a wind power facility, we get to build a natural gas facility beside it for peaking power. So we make money off of it, but it is not a good investment for the taxpayer dollar. As I look at the \$20 a megawatt subsidy plus some figures that we have developed, I think that we need to be very careful about where it is efficient and effective to use wind and solar power.

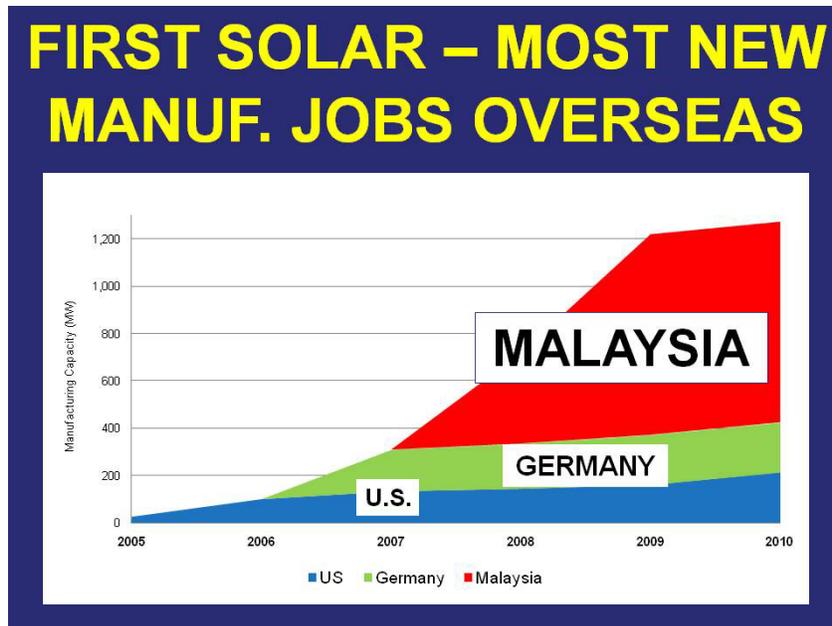
Our Missouri National Guard team and others in Afghanistan are using solar power to power re-pump facilities to fill reservoirs. It makes sense. Whenever the sun shines, they can pump water, but trying to put it on the grid does not work.

But when you come to the stimulus dollars, I think we are talking about green jobs, but when families are struggling to make ends meet and workers to find and keep jobs, I think it is important that the American people know that the so-called stimulus funds to stimulate jobs in America, being put on the credit cards of our children and grandchildren, are actually stimulating jobs here. And too often they are not doing it.

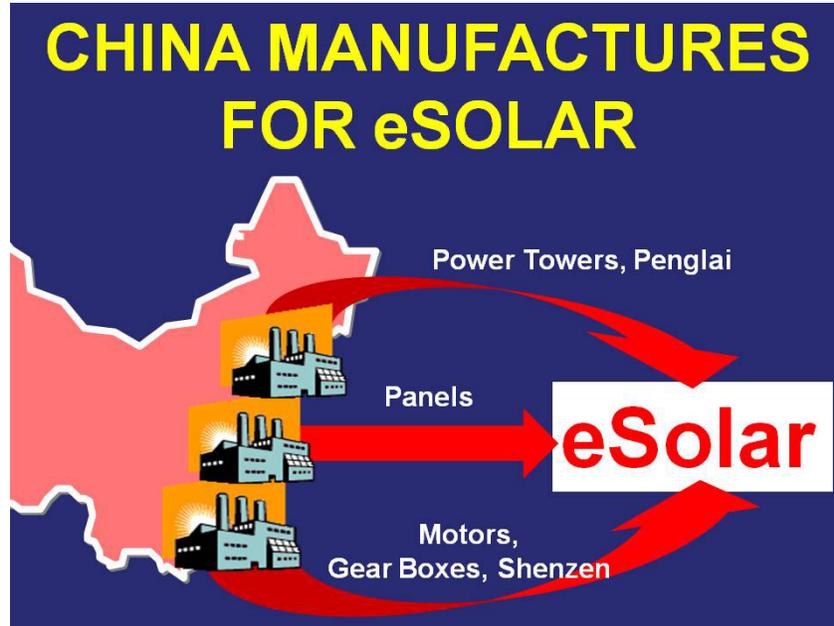
I serve as the ranking member on the Green Jobs and New Economy Subcommittee of the Senate Environment and Public Works Committee. We examined this issue last month and I examined the issue last year and found out that most of the so-called good, high

quality, new manufacturing jobs are going to Asia where labor costs are a fraction of the U.S. salaries, energy costs are low, environmental regulations are nonexistent. So there are some U.S. construction jobs to put up wind or solar plants and a handful of remaining operations jobs. The good paying manufacturing jobs are going to Asia, not the United States.

FirstSolar, a company that manufactures solar panels and equipment, testified before our EPW Committee advocating for more Government green job spending. No wonder. What they did not admit was they are sending all of their new solar manufacturing jobs to Malaysia. And as the chart here shows, that is where they are going to go. That is where we are going to stimulate it.



eSolar testified that they are developing solar powerplants in the California desert. It is another company. What they did not admit is that most of their manufacturing is in China. Gear boxes come from Shenzhen, towers from Penglai. Even the panels come from China. This is eSolar.



DOE just awarded a \$1.4 billion loan guarantee to BrightSource Energy to construct a solar plant in the California desert. The press release talks about U.S. construction jobs, but says nothing about who will manufacture the project's solar panels and equipment. I am concerned that we will discover that China is the one who is getting the U.S. stimulus dollars for this project.

Now, I think we ought to be dealing more with China. We ought to be competing in the world market. We need more trade. But when we are saying that we are stimulating U.S. jobs with these stimulus dollars, it isn't so. We need to be trading on an economically beneficial basis with partners like China, but stimulus dollars going to China and Malaysia and elsewhere around the world are not meeting the test of stimulating the U.S. economy.

That is why I wrote to you on November 10 expressing my concerns over the news report that DOE was using the funds for 3,000 turbine manufacturing jobs in China to build a Texas wind farm. In case you do not have it, here is a copy of the November 10 letter that I still have not had a response to.

[The information follows:]

LETTER FROM SENATOR CHRISTOPHER S. BOND

NOVEMBER 10, 2009.

The Honorable Dr. STEVEN CHU,
Secretary of Energy,
 Washington, DC 20585.

DEAR SECRETARY CHU: There is bipartisan concern that the Obama administration is using U.S. taxpayer dollars to fund green jobs in China and other foreign countries. As U.S. unemployment tops 10 percent during this time of economic distress for America's families and workers, we must ensure that our Government is not using American taxpayer dollars to create more green jobs in China than in the United States.

My colleague Senator Charles Schumer recently wrote to you expressing concern over the Department of Energy's (DOE) use of stimulus dollars on wind projects that will benefit primarily Chinese workers because the wind turbines are constructed in China. He noted recent news reports that a Texas wind project under consideration by DOE would create up to 3,000 green jobs in China. I applaud Senator Schumer's leadership in this area and want to assure you that his concerns are shared by me, both as a Senator from a Midwestern manufacturing State and as ranking member of the Senate Subcommittee on Green Jobs and the New Economy.

Senator Schumer cited a report by the Investigative Reporting Workshop at American University that found that the Obama administration has awarded 84 percent of its \$1 billion in clean energy grants to foreign wind power companies. That is an important issue, but of deeper concern to me is what number of jobs in foreign countries are funded by DOE clean energy grants. A good-paying job located in the United States is still a good job, even if it is supplied by one of our foreign friends. However, subsidizing thousands of foreign green jobs is a bad use of U.S. taxpayer dollars.

Therefore, please undertake a review of all renewable energy projects pending or approved by this administration to determine both the number of U.S. workers and workers in foreign countries they will utilize and supply that information to the Senate Green Jobs and the New Economy Subcommittee. To the extent that your review for Senator Schumer provides information on the use of stimulus funds in this regard, there is no need to duplicate those efforts. However, as a member of the Senate Energy and Water Appropriations Subcommittee, I am concerned about the use of annual appropriated funds in this regard and ask that you ensure that your review reflects all funds appropriated by Congress. Thank you in advance for your attention to this matter.

Sincerely,

CHRISTOPHER S. BOND.

Senator BOND. A recent outside investigation found that 79 percent of nearly \$2 billion in DOE wind energy stimulus grants have gone to foreign-owned firms. Of the 28 wind farms so far receiving DOE stimulus grants, over 1,200 of the 1,800 wind turbines installed were built by foreign manufacturers.

Personally I am much less concerned about what companies are getting the funding, but if they are calling it "stimulus for hiring U.S. workers," I want to make sure they are hiring stimulus U.S. workers. If they are foreign companies investing in the United States, great if they are hiring U.S. workers, but do not call them stimulus jobs if the jobs are overseas.

That is why I asked you to undertake a review of the dollar spending under the stimulus and to tell me the number of foreign workers who would be employed. I am still waiting for a reply. My staff checked with your Department again in December and January and March, and I know others have expressed frustration. But I have a copy of this letter that I will be happy to supply to your staff, and I would like to be able to tell my constituents that when you put money, borrowed from our children and grandchildren, into stimulus, they are stimulating jobs in the United States.

Now, I am not here just to complain. I want to thank you, as Senator Alexander did, for your commitment to loan guarantees to bring the best clean energy, nuclear energy on line. You were referencing reprocessing. We have got a tremendous amount of first-time spent nuclear fuel which can continue to be used, reducing its weight. If it is in Tennessee, fine, but wherever you can do it. Clinch River breeder reactor I believe should have gone forward.

And for clean coal, we thank you for those efforts. Whatever you think about coal, I think that we have got over a couple of hundred years of BTU's. If we can get that started, that will be a long way

toward meeting the needs that we have for energy. I appreciate that.

And I would like to have an opportunity to hear your comments. Rather than asking you a particular question, I would like to have your assurance that you will supply us information on the foreign jobs and what we are doing to see that if you are calling them stimulus jobs, they produce jobs in the United States. So I might ask you that and ask you for your comments on the many issues I raised.

Secretary CHU. So very quickly, thank you for your support on the nuclear energy sector.

The wind turbines that are being—first, this famous example of the China wind farm in Texas—I keep on asking my people, have we gotten an application for a grant on this, and they keep on saying no. So all I can say is although that has gotten a lot of press coverage, we have not gotten an application for a wind farm made with China parts in Texas.

With respect to the stimulus jobs, yes, the stimulus and Recovery Act is all about giving jobs in America. I absolutely agree with that.

The wind turbines that are constructed now in America—part of the parts are from abroad, part of the parts in the United States. The value of the parts in the United States is 50–60 percent and climbing. And we are working toward getting that fraction up higher and higher.

I mentioned before that I toured a Vestas plant where they are investing—I think it is a total now of maybe \$600 million in a factory in the United States for manufacturing wind turbines in all of North America. They are up to 70 or 80 percent American-made parts. And of course, when you install the turbine, it is American workers. Seventy to 80 percent is a good number because if you look at an American-made automobile, a Chrysler, for example, that is about the ratio of parts made in the United States.

Now, you might ask why Vestas would want to have local suppliers. It is for the same reason why they want to have a manufacturing facility in a country that appears committed to wind. It is a lower cost to them. They are less susceptible to currency fluctuations between countries. They want to develop local supplier chains again because of cost/benefit.

And because we were not a good wind market until recently, until the last 5 years, the turbines were developed and manufactured abroad. So this is part of the strategy of bringing them back to the United States, getting major U.S. manufacturer headquarters companies like GE—has come back into the game.

And we will be glad to give you the details of what the fraction of money spent on, let us say, a wind farm is in the United States and where it is going. So we would be happy—

Senator BOND. And we will share with you, as I said, the testimony from EPW on the plans for the people who have gotten the money to invest it solely overseas. And I hope that you will take a look at that. When they are saying, hey, we are going to build plants in Malaysia with stimulus dollars, that is a negative as far as I am concerned.

Secretary CHU. We will certainly look into that.

Senator BOND. Good. Thank you very much, Mr. Secretary.
 Senator TESTER. Senator Bennett.
 Senator BENNETT. Thank you, Mr. Chairman.

PROJECT APPLICATION PROCESS

Mr. Secretary, we talked about the time necessary for application review, nuclear power, and so on. I just want to make the comment that it is my understanding that the review process differs by type of application. In other words, applicants with nuclear power generation projects receive a ranking from DOE before submitting a full application, but applicants with coal-based and other types of projects do not. Applicants with some kinds of technologies are allowed to brief DOE and explain their projects after submitting their applications; others are not, potentially denying them opportunity to clear up misunderstandings. I would appreciate it if you would look into this and see why applicants are treated differently in this regard.

CONTRACTOR PENSIONS

Now, the last thing I would like to get back to and the point I would like to make—I talked about the major crisis regarding contractor pension funds. I understand you have changed the way you are budgeting for pensions and in an effort to see that it is less of a crisis, and I would appreciate any explanation you might have as to what you are doing with respect to that and what we can expect in fiscal year 2011.

I would recommend that you ask the GAO to undertake a comprehensive review of the pension problem and solutions going forward. I intend to do that, and so whether you do it or not, the request will go in. So I am giving you a heads-up that I will be sending a letter to GAO fairly soon and would appreciate it if you could join me in that. If within the Department they think it is not a good thing to do, I will proceed anyway. But I wanted to let you know that that is the sort of thing I had in mind.

So if you could talk about that whole issue, I think it would be helpful.

Secretary CHU. I would be delighted to.

As you correctly point out, there are huge liabilities in the DOE pension program because unlike pensions of other contractors, the Federal Government and the Department of Energy is responsible should those programs be mismanaged—

Senator BENNETT. You have the highest number of outside contractors of any Department in the Government except DOD.

Secretary CHU. Correct.

The CFO's office has done what I consider a spectacular job over the last 6 months in trying to get their hands around the problem. We are engaging now the contractors very actively to deal with the pension overhangs, especially when the stock market went down last year.

We are taking a number of steps in order to make sure that the contractor's—there is a tight rope line here. The way the contracts are written—and we do not want to manage the funds of the contractors. However, what we can do is use the mechanisms we have, for example, award fees, whether there can be continuous contrac-

tors if they mismanage their funds because this is a liability. In 2009, we had budget shortfalls. Because of that, it required some top line transfers. So we are taking a much more active role in trying to spot early on what is the vulnerability of the pensions.

We also want to share—there are certain contractors who have managed their pension funds quite well. In fact, without appearing provincial—I know I am going to appear provincial, but I will do it anyway. The University of California—they have managed their pension funds very well. So, for example, in the Lawrence Berkeley National Laboratory, the employees—it was so well managed that for 16 years they did not have to contribute anything to the pension fund because of the quality of the investments. This is a good thing.

Senator BENNETT. Yes.

Secretary CHU. But I have to say other contractors did less well. So we are beginning to get our arms around spotting early and ask if the asset allocation classes make sense. For example, if 80 percent of your workforce is either retired or about to retire in 5 years, what is the asset allocation? Does it make sense to have 50 percent of them in equities? You want to start to transition to guaranteed income as an example because of the age of your base.

So these are things that we are saying we want to develop mechanisms that essentially share best practices among the labs. You know, some contractors do well; others do not do it well. And to convince the laboratories and the contractors for those laboratories how important it is that everybody manage their pensions well because if one or two make a mistake, we are now talking about hundreds of millions of dollars of top line transfers to bail it out.

So this has gotten our full attention and we are investigating it. We welcome the GAO investigation as well because we see this as an opportunity. They could have seen things we missed, but we are doing it ourselves and we are doing it very aggressively.

Senator BENNETT. Thank you. I appreciate the aggressiveness with which you have addressed that.

Thank you, Mr. Chairman.

Senator TESTER. Thank you, Senator Bennett.

FOREIGN PRODUCTION OF ENERGY GENERATION EQUIPMENT

I have a few more questions. I want to start out by saying—it is no surprise to you—I was one of those four Democratic Senators that had that press conference yesterday on generation of equipment that was built outside this country.

I will also say that I know you have come into this situation in a tough position. First of all, I think you came into the Department of Energy with energy policy that was antiquated and lacked diversity. I think for the last 30 years we have watched our manufacturing base leave this country because we have had poor policies in this country and we have had poor trade policies in this country. So I think it is patently unfair to come in and say that this is your fault because we are buying generators across the pond in one of those ponds.

And I think you explained it very, very well when you said a lot of these parts are made here. We like that. And we want generation equipment made here. I read not too long ago that if one of

the hydro plants went out or one of the coal-fired electrical generators went out, that we do not make those in this country anymore. That is somewhat distressing to me, and I know it is to you too.

So as we move forward and we move our energy economy into the 21st century, I just want to express my appreciation for you standing up and doing the right thing, and I appreciate that. The press conference yesterday from my perspective was not a negative on you. It was a negative on where we have come in the last 30 years, and I do not think it has been positive.

ENERGY TRANSMISSION MODERNIZATION

Getting back to your budget, I would just like to say DOE has got a \$60 million study to look at transmission. You and I both know the transmission again is antiquated. We need to do something about that. The results for that study are going to come up in about 2011 or 2013.

In the interim, we both know that there are problems out there with transmission. How are we addressing that issue in the interim for this study?

Secretary CHU. Well, there are many issues. Over a several-decade period, modernization of our transmission system that enhances its electrical reliability and also allows a diverse set of energies to be moving around the country—especially as the variable sources of energy come higher on line, will require a system that can automatically respond to, all of a sudden, several billion watts of energy going off line because the wind stopped blowing in a certain region, Montana, Wyoming, you name it. So the amount of money needed for that is truly in the hundreds of billions of dollars.

Central to all these things are questions of line siting, right-of-way issues, of costing of the electrical lines. Typically the cost of the electrical lines is borne by the supplier, but as we enter in this new era—it used to be that the supplier—you build a coal plant, a gas plant, something like that. It is local. This is not an issue. But now all of a sudden, we are going to enter in an era where you are going to be moving energy over hundreds of thousands of miles.

Senator TESTER. And so I think the question is—I have got transmission projects in the State. I know New Mexico, Arizona, and Nevada. How do you prioritize them without this study being in?

Secretary CHU. Well, again, it is a divided responsibility. There is the Department of Energy. There is FERC. There are also Federal lands. It turns out that many of the companies who want to string transmission lines tend to try to stay away from Federal lands because there is local resistance there, as well as local private land resistance.

So what we have been trying to do—you know, I will be the first to admit I am not happy with the amount of progress, but Ag, Interior, the chairman of FERC, I, others, CEQ have been meeting over the last year to try to see how can we get this done in a better way. I am not completely happy with the progress, but this is an important point. It is not lost that this is a problem that needs to be solved.

BIOMASS AND BIOREFINERIES RESEARCH AND DEVELOPMENT

Senator TESTER. Montana is no different than most of the Mountain West. A lot of our forests are red and dead. A lot of that material cannot be made into plywood or 2 by 4's or anything. It is non-merchantable but it can be used for biomass and so it can create power.

The DOE is flat-lining the budget for biomass and bio-refineries research and development as one of the two programs in the whole energy efficiency budget to not receive an increase. Is this a signal that biomass innovation is not a priority?

Secretary CHU. No, it is a priority. It is a signal that we have tough choices. Again, I would be willing to work with you on this.

But here, the biomass—actually, quite frankly, because of a lot of dead standing pine trees that are there in the West of the United States, there is an opportunity not only for those sources of biomass but also the biowaste, the wheat straw, the rice straw, the cornstalks, all those things we think have an opportunity to be harvested for energy, either electricity generation or fuels. So we do remain committed to doing that. Again, it was a hard decision that we have to sometimes make.

CARBON CAPTURE

Senator TESTER. I want to talk a little bit about research and development, and then I will let you go. There are two particular areas that I think research—and there are many more than this that are particularly applicable. Being from a coal State like Montana, how we capture carbon, whether we are making limestone out of it or putting it underground for storage, long-term storage is one way. I was wondering how you would assess our progress on that and if there are adequate dollars in the budget to take care of that. And are we holding the people who are doing the research accountable for results?

Secretary CHU. There are dollars allocated for that purpose, and there are also private companies looking into that, taking carbon and turning it into whether it is cement or various kinds of things. It really is an R&D level thing. It is not ready for deployment. We are in piloting stages. We are looking at all of these things. What I would call the general rubric of beneficial and economic uses of carbon is something that we and other countries are examining.

Senator TESTER. Okay. I mean, coal is going to be around for a while. Is progress being made at an adequate rate that you are happy with?

Secretary CHU. Well, we have invested—

Senator TESTER. A lot of money.

Secretary CHU [continuing]. A lot of money. We have a number of pilot plans come forward. I am heartened that a number of utility companies and power generating companies are partnering with the Department of Energy in a major way to start to test the capture at scale, at the hundreds of megawatt level, which is really what matters. That is the really necessary step before you say, okay, we begin to deploy. So we have a number of projects that we are investing in and they are being done now.

We are also investing all the way up the pipeline toward even better ways of capturing the carbon, either before you burn or after you burn. So we think with some of these new ways we have a potential for—you know, it is all about driving down the costs, keeping the energy bills as low as possible, and getting it as clean as possible. So we think these are good.

Now, for those of you who do not know me that well but for those of you who know me when I do research and everything else and for those in the Department of Energy, I always think we can go faster and always want to go faster. But we are moving.

Senator TESTER. Well, my point is that as we deal with energy and climate change and all the things around that and a diversified energy portfolio, this is an important issue. I feel the immediacy. I think you feel the immediacy. I just want to make sure we are getting results. That is all.

NUCLEAR POWER

Next question, same area, different energy source and that is nuclear power. You have answered many questions on it as far as nuclear reactor design. It is the same issue. As we talk about greenhouse gas from coal, we talk about nuclear waste from nuclear powerplants. Are there adequate dollars for research there so we can get our arms around that? I do not think we are talking about that near enough as we go forth with nuclear power, and that is how we are going to deal with the waste and if there is a solution to that waste.

Secretary CHU. I think there are solutions to the waste and still ever better solutions I think can be found. So this is why we are putting together a long-term road map over 10, 20, 30, 50 years in order to deal with this. Nothing in nuclear moves quickly. You do not get something up and proved and running in a couple years. I mean, just the approval process—you have to proceed carefully.

But we did ask for an increase. I think, as a scientist and a techie, there is a lot more we can do and there is a lot more where the technology can be improved.

Senator TESTER. I want to thank you for your testimony and your direct answers to the questions.

ADDITIONAL COMMITTEE QUESTIONS

The record will remain open for 1 week for members to submit questions and comments.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR BYRON L. DORGAN

Question. How much funding is being dedicated to R&D on natural gas end use technologies in EERE? In particular, what is the DOE doing to help develop residential and commercial technologies that will be acceptable in a carbon constrained future

Answer. The Vehicle Technologies Program has an open solicitation for medium- and heavy-duty engine development and vehicle platform integration that includes \$5 million of fiscal year 2010 funds, leveraged with similar funds from partners California South Coast Air Quality Management District and the California Energy Commission (CEC). Work funded under the current solicitation will be complemen-

tary to work already underway funded by CEC. A 50 percent cost-share will be required of awardees.

Furthermore, there remains a small amount of funding under the Fuel Processor and Distributed Energy subprograms in Hydrogen and Fuel Cell Technologies. The planned funding in fiscal year 2010 is \$370,000. The fuel processor could be utilized in combined heat and power (CHP) systems that are more efficient than legacy combustion technologies.

Question. I note a better budget request more last year for Hydrogen and Fuel Cell R&D; however, the request is significantly below the 2010 appropriation.

Why is DOE not funding the Market Transformation program that helps bring market ready fuel cell technologies to customers?

Why does the DOE continue to reduce funding for vehicular fuels cells and the supporting infrastructure when we all acknowledge a need to investigate multiple alternatives to traditional transportation technology?

Answer. DOE requests \$9 million for Market Transformation activities in fiscal year 2011. This funding will focus on key Safety, Codes and Standards activities, which are essential for market transformation. In addition, the Program will assess the impact of \$42 million awarded from the Recovery Act for stimulating market pull, increasing manufacturing volume and reducing the cost for fuel cell systems.

The Department's reduction of the Hydrogen and Fuel Cell Technologies (HFCT) budget by \$37 million allows a balanced portfolio of transportation solutions and continued focus on battery and advanced vehicle approaches for more near term impact. DOE will also maintain a strong effort in key areas of hydrogen and fuel cell research and development. DOE requests \$50 million for the Solid State Energy Conversion Alliance (SECA) Program and expects to maintain funding levels at approximately \$38 million through the Office of Basic Energy Sciences for long-term and crosscutting R&D in hydrogen and fuel cells. The SECA Program was initiated to bring together government, industry, and the scientific community to promote the development of environmentally friendly solid oxide fuel cells (SOFC) for a variety of energy needs. SECA is an alliance of industry groups who individually plan to commercialize SOFC systems for pre-defined markets; research and development institutions involved in solid-state development activities; and Government organizations that provide funding and management for the program.

Question. I note the funding request for Residential Buildings Integration is less in 2011 than was appropriated in 2010; however, the DOE has suggested actually adding to the program by including retrofit research and development. How do you plan to accomplish the goal of Zero energy homes with this reduction in funding?

Answer. Prior to fiscal year 2010, the DOE Building Technologies Program focused research efforts on new buildings with the idea that energy efficiency technologies and research aimed at new buildings would also be applicable in existing buildings. While there is some overlap between the two markets, particularly in space conditioning, hot water, appliances, and lighting, there are also a number of R&D needs that are specific to energy retrofits for residential buildings that the program will seek to address starting in fiscal year 2010.

Energy retrofits are considered to be among the most cost effective ways for the Nation to reduce its energy use and carbon emissions. While zero energy homes remain a goal for the Department, another goal is to support the retrofit industry—at a national scope and scale of up to two million retrofits per year. This service goal will drive the research into immediate near term focus and deliverables, which can immediately go into service by contractors and other service professionals. The zero energy home goal remains a priority over the long term for this program.

Question. Are there limitations inherent in today's lithium ion batteries which require a step change in the weight and power/energy density of these batteries to secure longer life as well as provide on demand power/acceleration.

Answer. There are no limitations inherent in today's lithium-ion batteries that preclude them from having the ability to provide the power/acceleration for hybrid vehicle (HEV) and plug-in hybrid vehicle (PHEV) applications while meeting the vehicle size and weight targets for the battery. Battery life is typically driven by the capacity fade that is influenced by several factors including: (1) chemical interactions inside the battery cell that are specific to the electrochemistry; (2) battery operation; and (3) cumulative temperature profile over the life of the battery. Vehicle manufacturers currently install excess battery capacity in order to ensure meeting their battery life target. As greater confidence in battery life under real-world driving conditions develops, the amount of excess capacity installed is expected to decrease, which will subsequently reduce the overall battery cost.

For battery-powered electric vehicle applications, improvements in battery size and weight are sought in order to provide for a longer driving range. However, lithium-ion batteries are still far from any theoretical limitations on energy density.

Next-generation lithium-ion batteries will employ metal alloy anodes (instead of graphite), and high-capacity cathodes, resulting in significant increases in energy density. Research and development efforts on these technologies are well underway and are progressing well.

Question. Would you agree that one of the issues that has to be addressed in developing next generation lithium ion battery technology is to reduce or eliminate the irreversible capacity of that same cell?

Answer. DOE agrees that, for some systems, irreversible capacity loss (ICL) is an important issue that must be overcome to enable next-generation Li-ion cells. The ICL associated with alloy anodes is one of several barriers to commercializing that technology. Other issues include large volume changes upon cycling (which leads to particle fracture), disconnection from the rest of the electrode material (resulting in severe energy fade), and unstable alloy surface films which consume lithium during cycling (which leads to energy fade). However, today's commercial cells suffer 5 to 10 percent ICL, so the issue is one of relative size and scale.

Question. Would the Department be interested in looking at technologies, such as stabilized lithium metal powder, to overcome the issue I described above?

Answer. Yes. In fact, the Department of Energy (DOE) is currently funding a 3-year, \$6.2 million total funding (including a 50 percent industry cost share of \$3.1 million), research and development contract with FMC Lithium to investigate and improve the performance of stabilized lithium metal powders. These powders show promise both for addressing the irreversible capacity loss, and for enabling the use of Li-free cathode materials that exhibit very high capacities, such as sulfur or vanadium oxides. This contract was awarded through a competitive process.

In addition, DOE is funding work on novel electrolytes for use in alloy anode electrodes that exhibit both lower irreversible capacity loss (which enables much higher initial energies) and more stable anode surface films (that enable more stable cycling).

The Department also is preparing a new Funding Opportunity Announcement (FOA), expected to be released in the next several months, focusing on research into higher energy and lower cost batteries, mainly those considered to be "next generation" technology. The responses to this FOA will be competitively evaluated by subject area experts. DOE expects to support the proposals receiving the highest technical merit and overall value scores, with out year funding subject to annual appropriations.

Question. Concerns have been raised about the Loan Guarantee programs treatment of transmission projects under 1705. The concern is that transmission projects, which can be challenging and complex, may be put at the bottom of the application pile rather than the top, simply because of time pressures. A loan guarantee is a "major Federal action" that requires DOE to conduct a NEPA review. With less than 18 months before DOE's authority to issue loan guarantees under section 1705 expires, I would like to know that DOE is prepared to move to conduct and complete the necessary environmental work with all deliberate speed, so that transmission projects move forward along with renewables. What specific steps has DOE taken to ensure that its NEPA review of transmission projects is performed in a timely manner?

Answer. To ensure that project applications are reviewed in a timely manner and NEPA is initiated as soon as possible, the Loan Programs Office has added 5 additional Environmental Protection Specialists in the past 9 months. All of the new Specialists are senior NEPA practitioners with many years of relevant experience. This allows DOE to maximize the management and efficiency of the NEPA review process.

The DOE Loan Programs Office assesses the level of NEPA review required for all projects when entering into the due diligence process. Prior to entering due diligence, a preliminary determination of the level of review required is performed using the environmental information provided in part I of an application. Discussions with the applicants are initiated early in the review process to ensure that environmental considerations are fully understood. This allows applicants to modify, if appropriate, project proposals to ensure that the most expeditious NEPA review process can be performed (e.g., performing an Environmental Assessment (EA) rather than requiring and Environmental Impact Statement (EIS)).

If a NEPA review for the project or project site was performed by another Federal agency, DOE will adopt that review or incorporate all relevant analysis from it into the DOE NEPA document in order to expedite the DOE NEPA review process.

Large transmission projects typically require an EIS. The Council on Environmental Quality (CEQ) NEPA implementing regulations must be followed in preparing an EIS. Those regulations require DOE to undertake a variety of procedural steps during the NEPA review process. These include the publication of notices of

availability and intent to prepare EISs; conduct of public meetings; allowance for public comment periods; incorporation of public comments; and consultation with States, tribes, and other Federal agencies. The Loan Programs Office complies with all of the procedural requirements of NEPA, and has established a notice preparation process that significantly reduces the length previously found in DOE notices while still being fully compliant with the CEQ regulations. The new process reduces the time it takes to prepare these notices, and allows the review process to begin as expeditiously as possible.

Question. How is the Department working with transmission applicants to ensure the efficiency of the NEPA review process is maximized?

Answer. DOE Loan Programs Office Environmental Compliance Division staff talks with transmission project applicants early in the application process to ensure that applicants understand the level of NEPA review that is required, how the process will proceed, and what supporting environmental documentation is necessary to include in the application. DOE also assists applicants with an understanding of the NEPA process and areas of potential environmental concern through live and taped web broadcasts and responses to frequently asked questions posted on the Loan Programs Office Web site. DOE continues to update program solicitations and the program's Web site to include specific guidance that helps to educate potential applicants and expedite the NEPA review process.

Question. What assurances can you give that meritorious transmission projects won't be precluded from selection based on the internal timing of DOE's NEPA review?

Answer. The DOE Loan Programs Office does not base its decision regarding project selection on the level of NEPA review required for a project. However, DOE generally advises applicants that a project requiring an EIS that is not currently being, or has not previously been, undertaken by another Federal agency will likely take 18 to 24 months to complete. In cases where no NEPA work has been initiated, it would be difficult for DOE to complete an EIS and have a Record of Decision signed in time to begin construction and issue a loan guarantee prior to September 30, 2011, the deadline established in section 1705 of the Energy Policy Act of 2005, as amended by the American Recovery and Investment Act of 2009 for both start of construction and issuance of loan guarantees. We also note that, actions (e.g., commencing project construction) taken by the applicant prior to completing the NEPA review process can put at risk the NEPA review and thus the issuance of the loan guarantee. Knowing this, applicants can decide whether it is appropriate to pursue a Federal loan guarantee. Nevertheless, it is the Loan Programs' goal to work with all selected applicants to complete the required NEPA review process in as efficient and timely a manner as possible.

Question. What amount of funding is needed in fiscal year 2011 to fully comply with all clean up agreements? Please provide the amounts on a site-by-site basis.

Answer. The Office of Environmental Management's request of \$6.047 billion positions the program to meet its regulatory commitments, supports reducing the risk associated with our highest environmental risk activities (i.e., tank waste) and achieves footprint reduction across the complex. Page 9 of the budget request provides the amounts on a site-by-site basis, but the table below displays the funding requirements for the major sites.

[In thousands of dollars]

| Site | Fiscal Year 2011 |
|------------------------|------------------|
| Carlsbad | 220,245 |
| Idaho | 412,000 |
| Los Alamos | 196,953 |
| Oak Ridge | 432,700 |
| Richland | 972,588 |
| River Protection | 1,158,178 |
| Savannah River | 1,217,799 |

Question. What amount of funding is needed in fiscal year 2012 to fiscal year 2015 to fully comply with all cleanup agreements? Please provide the amounts on a site-by-site basis.

Answer. Compliance with cleanup agreements is a major factor the Office of Environmental Management takes into account as it formulates its budget requests. Because of the dynamic nature of cleanup agreements, including the fact that milestones are renegotiated based the results of ongoing characterization and the changing understanding of the extent of contamination, we are not able to determine at

this time the amount of funding needed in fiscal year 2012 to fiscal year 2015 to be in full compliance with all cleanup agreements.

Question. What actions are being taken regarding contracts that are not meeting all cleanup milestones? Please provide specific examples.

Answer. Most contracts executed by the Office of Environmental Management (EM) are performance based, in which the contractor is awarded fee based on the attainment of specific cleanup activities. These activities often support a specific compliance milestone. Thus, if a cleanup action associated with a milestone is not attained, the contractor may not receive as much fee as if it had completed the work in accordance with the milestone. In fiscal year 2009, EM met approximately 95 percent of its 176 scheduled major enforceable milestones so, for the most part, fees were not reduced for missed milestones. Nonetheless, the milestone for cold commissioning of the Waste Treatment and Immobilization Plant was missed and the contractor forfeited significant fee. In addition, where allowable by the contract and depending on the nature of the violation, the contractor may be responsible for the payment of any fines for violations. For example, the New Mexico Environment Department fined the Los Alamos National Laboratory for issues associated with chromium in groundwater. The site contractor paid the fine.

Question. Will you make clean up milestones and funding needs to meet them publicly available?

Answer. The Office of Environmental Management (EM) has its "Environmental Compliance Performance Scorecard" posted on its Web site (<http://www.em.doe.gov/Pages/CompliancePerformance.aspx>). This scorecard is updated on a quarterly basis and provides the status of milestones that were due during the quarter as well as progress on those upcoming in the next four quarters. EM bases its funding needs on the scope, cost, and schedule of cleanup projects. These projects are complex and may have several objectives and milestones associated with them such that identifying funding needs for specific milestones is not feasible.

Question. Over recent years, any Federal funding research and development activities of the Energy & Environmental Research Center (EERC) at the University of North Dakota have always provided a minimum 20 percent cost share as defined under the Energy Policy Act of 2005. In fiscal year 2010, Congress directed that continued funding be provided to the EERC for additional research and development activities as well as funding for a new building to house research and development activities critical to meeting the future energy needs of the United States. However, the building, which will only support research and development projects, has been labeled as a demonstration activity and subject to a 50 percent minimum cost share. Is this typical, and is it appropriate, to place such a large minimum cost share on a building for which the activities occurring within will be research and development, which only requires a minimum 20 percent cost share?

Answer. The cost share determination has been revised to require only 20 percent minimum cost share for the effort to construct the building. The DOE Contracting Officer notified Ms. Sheryl Landis and Principal Investigator at UND of this change in writing on April 1, 2010.

Question. The Energy Independence Security Act of 2007 set a 36 billion gallon mandate for biofuels by 2022. The DOE loan guarantee program can be instrumental in seeing that this goal is reached. However, DOE has yet to issue a single loan for the advanced biofuel industry. The loan program has told the industry they need to bring off-take agreements to get these loans, yet the fuels market does not operate in this manner. What can DOE do to facilitate issuing loan guarantees for advanced biofuel projects in the coming year?

Answer. While third-party supply and/or off-take agreements are not mandatory to satisfy the statutory requirement that the project have a reasonable prospect of repayment of the principle and interest of the guaranteed loan, they are factors which are taken into consideration. For projects that are not supported by third-party supply and/or off-take agreements, the projects need to establish that a viable market exists for the product produced by the projects. The Loan Guarantee Program is working closely with the Renewable Fuels Association to facilitate dialogue with the biofuels companies. As a result of this collaboration, on April 7, 2010, The Loan Guarantee Program held a roundtable discussion with members of the biomass community to discuss issues that the industry faces in obtaining loan guarantees.

Question. The fiscal year 2011 budget for EERE indicates that DOE intends to launch a new biopower initiative. Why is DOE undertaking this new effort now, and what does this mean for biofuels producers who might be looking for a new round of funding for advanced biorefinery facilities?

Answer. The Large Scale Biopower Initiative will accelerate the development of advanced technologies to enable utilizing sustainably harvested biomass for electric power generation. Biomass used for biopower may offer a renewable base load en-

ergy option that could be available year round. These advanced biopower technologies may have positive environmental impacts for the existing utility industry and also benefit local communities providing the biomass feedstock. There are also opportunities to retrofit equipment that is currently idle, such as boilers found in pulp and paper plants, in older and smaller coal-fired power plants, or co-fired in conjunction with coal and use it in the biopower production process. Additionally, biopower is an option for meeting State-level Renewable Portfolio Standards (RPS). The Biopower Initiative aims to accelerate the deployment of biopower technologies to enable biopower deployment as soon as 2013 in support of potential future RPSs.

Furthermore, a component of the proposed advanced technologies for the introduction of biopower is the development of densified biomass-derived intermediaries—such as torrefied biomass and bio-oil—which are technologies that can be leveraged in the production of biofuels.

The fiscal year 2010 appropriation and fiscal year 2011 request do not include funding for another integrated biorefinery solicitation. The integrated biorefinery funds requested incrementally fund projects previously selected in fiscal year 2007 and fiscal year 2008. Furthermore, the number of integrated biorefinery facilities was significantly expanded by Recovery Act funding.

Question. The NNSA budget request includes a 5 year spending plan for each element of the budget request. A 5 year spending plan shows the fluctuation of spending year to year, when certain programs and projects reach peaks or are finished, and provides a sense that the requested fiscal year 2011 budget is grounded in some longer term plan. Outside of NNSA, the rest of DOE does not provide 5 year spending plans. Mr. Secretary, can you provide 5 year spending plans for all DOE programs and projects as NNSA does now?

Answer. I believe that considering 5 year budget implications provides useful guidance for internal formulation and planning and the Department is making significant strides in that direction.

A more in-depth internal consideration of multi-year budget implications will offer the Department many advantages including enhancing transparency and improving long-term planning. We are currently establishing a Department-wide budget formulation and execution system that will be better able to build and track 5 year budget plans.

Question. You did not request new funding for the Clean Coal Power Initiative this year. Also, the Obama administration announced a multi-agency CCS Task Force with the Office of Fossil Energy and EPA as the co-leads on February 3, 2010. The goal of that effort is to work to overcome the barriers for widespread deployment of CCS within 10 years and to bring 5–10 commercial scale projects on line by 2016. Can you tell me what you hope to achieve with CCPI Round III (from the Recovery Act) projects?

Answer. The third round of Clean Coal Power Initiative (CCPI) demonstration projects is well underway and is focused on developing projects that utilize carbon capture and storage technologies and/or beneficial reuse of carbon dioxide. Five projects have been selected, two focusing on pre-combustion carbon capture in greenfield integrated gasification combined cycle (IGCC) plants and three post-combustion capture projects using slipstreams at existing pulverized coal (PC) power plants. Thus far, the Department has signed cooperative agreements on three of these projects (two IGCC and one PC). Each of these projects will be demonstrating a different carbon capture technology to provide the market a diversity of CO₂ capture approaches. These projects will be storing CO₂ in either saline aquifers or using it for enhanced oil recovery and will conduct extensive monitoring, verification, and accounting to ensure permanence of storage. Four of the five projects selected will be capturing and storing CO₂ in excess of 1 million tons per year.

Question. When do you plan to announce, how much would you hope to fund, and what would be the focus of a CCPI Round IV?

Answer. Commercial-scale demonstration of carbon capture and storage (CCS) technologies is a key step to generate data and expand our knowledge of how these systems work when integrated with an operating power plant. The Department is focused on successfully implementing the five selected CCPI Round III demonstration projects, as well as other CCS demonstrations currently managed by the Department (a CCPI Round II project, FutureGen, and the multiple Industrial CCS demonstration projects). These demonstrations are critical for proving integrated operation and safe and effective long-term storage at scale. The R&D focus is on developing advanced technologies to improve cost competitiveness of CCS technologies. These demonstration projects will provide important information to help guide future budgetary decisions.

Question. How will each of these CCPI projects feed into the CCS task force goals?

Answer. One of the chief goals of the Carbon Capture and Storage (CCS) Task Force is to develop a proposed plan to overcome the barriers to the widespread, cost-effective deployment of CCS within 10 years, with a goal of bringing 5 to 10 commercial demonstration projects online by 2016. All five Clean Coal Power Initiative projects selected in the third round and one selected in the second round are presently scheduled to begin plant operation and CO₂ sequestration during or before 2016.

Question. For the last 3 years, the Energy and Water Subcommittee has provided funds to begin exploring expansion of a 5th SPR site in Richton, MS. This site plus expansions at two other existing sites were intended to expand the SPR to the 1 billion barrel level. This was the policy pushed by Vice-President Cheney. It is my understanding that a June 2007 DOE study found that it would cost in the range of \$21 billion to build and fill that expansion effort.

What is the Obama administration's policy on the SPR and the costs and need for site expansion? Are there better ways to achieve energy security? Why are you proposing to us \$71 million of prior year balances for operations and management for fiscal year 2011?

Answer. The administration is currently reviewing Strategic Petroleum Reserve 1 billion barrel expansion policy. While this is occurring, the fiscal year 2011 budget proposes the cancellation of \$71 million in balances from prior years appropriated for expansion activities at the proposed Richton, Mississippi site and use of these balances to partially fund the SPR's requirements in fiscal year 2011. The SPR requires \$209,861,000 for the management and operations in fiscal year 2011.

Question. The administration has not requested R&D funds for the oil and gas programs. Both the Bush and Obama administrations have done that in their budget requests. At the same time, in the fiscal year 2010 conference report, Congress required the DOE to come up with a research development and demonstration strategy and provide a report that outlines these activities. The E&W conference report provided \$20 million for that effort and requested a report. Despite not requesting funds, will you commit to completing that strategic plan with a multi-year technological horizon and also engage the private sector and academic interests?

Answer. As directed in the appropriation bill, a research and development strategy for unconventional oil, gas, and coal resources is being developed. The draft strategy will include the resource opportunities and technology applications and we will seek input from academia and the private sector. The provided funds will be used for unconventional oil, gas, and coal resources projects identified in the strategy. A funding opportunity announcement seeking proposals for new projects will be issued soon.

Question. The ITER project faces significant delays. The construction completion date has slipped from 2016 to 2022 and the total project cost estimate has increased from \$14 billion to \$20 billion. The ITER International Office managing this project still does not have a final design or a schedule and cost baseline. These delays have increased U.S. costs and further delays could put at risk the U.S.'s total project cost estimate of \$2.2 billion for construction. What has the United States done to mitigate risk?

Answer. The Department's senior leadership has been vigorously engaged in the ITER project over the past 8–9 months. We are currently working with the other ITER members to achieve a final, credible project baseline and a change in ITER Organization management that will ensure robust management during the construction phase. We are making progress with the other members to address these issues. We hope to have some of them resolved by the June 2010 ITER Council Meeting (IC-6). We anticipate using the fiscal year 2011 funding request to make substantial progress on the design, R&D, and long-lead procurement activities for the U.S. hardware contribution, as well as to keep the United States on track to meet its critical path commitments to the project.

Question. Will the United States consider withdrawing from ITER if delays continue and costs escalate beyond the \$2.2 billion U.S. commitment?

Answer. DOE's policy is to aggressively manage projects to maintain cost and schedule. DOE constantly assesses projects to improve performance as prescribed by DOE Order 413.3A. ITER is no exception. We have made progress in addressing ITER performance concerns. We hope to determine the project baseline schedule and improve the management issues shortly to allow for much more orderly and efficient management of the ITER project. The Department is committed to maintaining the established CD-1 cost range for the U.S. contribution to the project and, in fact, has resisted entreaties by the ITER Organization to accept more scope.

Question. When will a decision be made by the United States on whether to stay in the ITER program?

Answer. We hope to establish the overall ITER project baseline and improve the management issues by the June 2010 ITER Council Meeting (IC-6). DOE constantly assesses projects to improve performance as prescribed by DOE Order 413.3A.

Question. I think we all agree we need to move to an electric drive transportation system to decrease our dependence on foreign oil and decrease our greenhouse gas emissions. I know that your Department is working toward decreasing battery costs, which are a huge part of the increased incremental cost of electric vehicles. Further, President Obama has set a goal of having 1 million electric vehicles on the road by 2015.

What are the major things that the Department is doing to achieve that goal? What percentage of the Advanced Vehicles Technology budget is going into electric drive vehicles (which can include both battery and fuel cell vehicles)?

Answer. Using Recovery Act funds, the Department is making substantial investments in establishing domestic manufacturing capability and infrastructure development needed to advance the widespread market penetration of electric drive vehicles. These investments totaled over \$2.4 billion, including up to \$2 billion for battery and electric drive manufacturing facilities, \$400 million for transportation electrification projects, and \$20 million in battery research and testing facilities.

Under the Advanced Technology Vehicle Manufacturing Loan Program, the Department made loan commitments of over \$8 billion to domestic manufacturers of advanced technology vehicles, including loans to Ford, Nissan, Tesla, and Fisker Automotive. A substantial fraction of the funds disbursed will support domestic manufacturing facilities focused on producing batteries, plug-in hybrid, and electric vehicles.

Under the Recovery Act's section 48C Advanced Energy Manufacturing Tax Credits, the Department made awards for tax credits for several clean energy manufacturing projects related to electric drive vehicles.

In addition, the Department is conducting ongoing applied R&D to support the development of critical technologies needed for widespread introduction of electric drive vehicles. These efforts include battery development, power electronics and electric motors, and electric drive vehicle systems.

As part of the U.S. Government effort to update the Federal fleet with fuel efficient hybrids and plug-in hybrid electric vehicles, DOE will replace 753 vehicles with hybrids in 2010. This will bring the total number of DOE hybrid vehicles to 888, even as the agency trims the overall size of its vehicle fleet.

In fiscal year 2010, the DOE Vehicle Technologies Program is investing \$145 million directly supporting electric drive technologies, or approximately 47 percent of its total fiscal year 2010 appropriation. Other R&D, such as vehicle lightweighting, indirectly supports vehicle electrification.

Question. What is the Department planning to do to overcome the non-technical barriers to the deployment of electric vehicles? Are you dedicating some of your resources to a public information campaign?

Answer. Significant resources are being dedicated to addressing non-technical barriers. The Department is closely collaborating with the EPA to develop and validate fuel economy test protocols for electric drive vehicles. The Department works with the Society of Automotive Engineers (SAE) and various industry standards organizations to establish codes and standards to promote faster widespread market penetration. The Department is working with the National Highway Traffic Safety Administration and the National Fire Protection Association to develop safety standards. The Department has made significant awards to develop educational programs for teachers, student, and the general public.

Resources are being dedicated to a public information campaign, including the work of the Department's Clean Cities program, which is conducting public deployment programs and communicating the benefits of transportation electrification to the general public. The Clean Cities public education and outreach activities provide technical assistance and consumer information related to electric vehicles and other alternative fuels, as well as the infrastructure and service industries needed to support them. In fiscal year 2010, approximately \$10.3 million is devoted to these efforts.

As part of the Recovery Act projects, the Department made competitively selected awards, totaling \$39 million, to 10 consortia of universities, community colleges, science centers, and public relations organizations to develop advanced electric drive vehicle educational programs for student, teachers, technicians, emergency responders, and the general public.

In addition, the Department has launched an outreach effort on its Energy Efficiency and Renewable Energy Web site entitled Energy Empowers, which includes informative articles and videos showing where the Department's efforts are making an impact on people's lives.

Question. How do you expect to leverage what is learned from the demonstration Communities funded by the Recovery Act funds for future widespread deployment of electric vehicles?

Answer. The information obtained and lessons learned as a result of the Demonstration Communities will help to guide future development and deployment efforts. It will also help to instill a greater understanding among the general public of the costs and benefits of electric vehicles. Based on this greater public knowledge and confidence, the Department will be able to leverage greater future investment by local communities in establishing electric vehicle infrastructure.

Question. The electrification (even partial) of medium and heavy duty vehicles could play a significant role in decreasing oil use and greenhouse gas emissions, due to their low fuel economy. Can you describe to me what work the Department is doing in this area and how that is represented in your budget?

Answer. Current electric drive technologies that are being developed for automotive applications (e.g., batteries, electric motors and power electronics) are in general also applicable to both medium- and heavy-duty vehicles. More specifically, R&D on advanced technologies for electrification of medium- and heavy-duty vehicles is ongoing under the 21st Century Truck Program, and under the SuperTruck Program recently initiated with Recovery Act funds. SuperTruck also has additional funding support from annual appropriations.

Truck-stop electrification is being implemented using Recovery Act funds. Cascade Sierra Solutions was competitively-selected for an award of up to \$22.2 million to deploy truck stop electrification infrastructure at 50 sites along major U.S. interstate highways and to provide 5,450 rebates for truck modification to implement idle reduction technologies.

Medium- and heavy-duty electric drive vehicle awards, competitively-selected using Recovery Act funds, include an award of up to \$45 million to a consortium of California's South Coast Air Quality Management District (SCAQMD) and 50 different utilities and fleets to develop a fully integrated, production plug-in hybrid system for Class 2-5 vehicles (8,500-19,500 lbs gross vehicle weight) and demonstrate a fleet of 378 trucks and shuttle buses; Navistar was awarded up to \$39 million to develop and deploy 400 advanced battery electric delivery trucks (12,100 lbs gross vehicle weight) with a 100-mile range; and Smith Electric Vehicles was awarded up to \$32 million to develop and deploy up to 100 electric vehicles, such as "Newton" medium-duty trucks.

Question. What are you currently doing to investigate the possible uses of automotive grade lithium ion batteries in stationary applications, both with new and somewhat depleted batteries?

Answer. Several electric drive vehicle battery manufacturers are assembling battery packs for stationary grid applications using automotive grade lithium ion battery cells developed with DOE funding support. For example, A123Systems has built large battery systems from high power HEV batteries to support grid frequency regulation. DOE anticipates that some of battery production facilities being established with support from the Recovery Act will produce batteries for both vehicle and utility grid applications.

In addition, the DOE Office of Electricity Delivery and Energy Reliability, with the help of Sandia National Laboratory, is studying the value propositions of various energy storage systems, including "new" automotive grade lithium-ion batteries, for stationary grid applications such as load leveling, peak demand management, all of which could help defer the need to build peaking power plants.

For "somewhat depleted" batteries used in automotive applications, the Vehicle Technologies Program (VTP) initiated a program to investigate the merits of re-purposing or re-using the batteries retired from plug in hybrid electric vehicles (PHEV) or electric vehicles (EV) for other applications. This program has several elements including analysis, testing, and demonstration. In the analysis portion, VTP is investigating the value of the "somewhat depleted" batteries for grid, off-grid and other mobile applications. The potential uses in grid applications include home energy storage appliance, community energy storage, substation back up, and electricity storage for wind or solar plants.

Question. How do you anticipate the battery and storage hub integrating with existing programs in OE and EERE as well as ARPA-E?

Answer. The Department formed an Energy Storage Working Group to enhance communication and coordination of energy storage research across the Department. This activity is led by the Under Secretaries as well as the principals of the Offices of Science (SC), Energy Efficiency and Renewable Energy (EERE), Electricity Delivery and Energy Reliability (OE), and ARPA-E. The Energy Storage Working Group has initiated an extensive assessment of the DOE-wide energy storage investment by technology readiness level. A staff level group meets more frequently to coordi-

nate day-to-day activities. The involved program offices share detailed project listings and participate in review of each other's new and ongoing projects. They also share information on upcoming Funding Opportunity Announcements and support joint workshops to identify gaps and barriers.

In addition, there is a parallel Hubs Working Group that coordinates the formulation of the Hubs to ensure similar processes and coordination among the Hubs. The Department's Energy Innovation Hubs Oversight Board (Under Secretaries for Energy and Science, their senior scientific/technical advisors, and I) will provide additional assurance that these activities are effectively managed and coordinated. Hub researchers will also be full participants in joint program meetings with researchers and managers from SC, OE, EERE, and ARPA-E to ensure seamless information exchange and to promote coordination and collaboration as appropriate.

Question. In your budget this year, you have cut hydrogen and fuel cell funding by \$37 million from last year's appropriated level. Although this is an improvement over the budget you constructed last year, I'm still concerned that this decrease could be seen as an indication of what you plan to do with this program. The major programs that seem to have been decreased are both Hydrogen and Fuel Cell R&D lines (\$17 million) and the Market Transformation (\$15 million).

Can you give a brief summary of the existing programs that will be discontinued or significantly scaled back in order to make these cuts possible?

Answer. Project deferrals will occur in the Market Transformation subprogram, which includes Early Markets, Safety, Codes and Standards, and Education, and in the Systems Analysis subprogram.

Question. One question I have is why would you so dramatically decrease the funding for the work that is designed to encourage public adoption of the technology, which the American people have funded over the years?

Answer. The Hydrogen and Fuel Cell Technologies funding request provides for a focused effort on key Safety, Codes and Standards activities, which are essential for market adoption of hydrogen and fuel cell technologies. At the same time, data collection and analysis of fuel cell systems will continue on fuel cells that are placed into the market using fiscal year 2009, fiscal year 2010 and Recovery Act funding that together totals nearly \$62 million. Analysis of these data will be conducted to help identify future needs.

Question. Last year, the cuts you proposed in this area would have abruptly terminated funding to 189 ongoing multi-year grants. Will any existing grants be affected this year.

Answer. There will be 22 projects deferred in fiscal year 2011 in Market Transformation (18) and in Systems Analysis (4). Deferred means that an existing project will not be funded in fiscal year 2011, but the funding of that project could be restarted in fiscal year 2012 depending upon appropriations. An existing project is one that began in fiscal year 2010 or earlier. We retain the option to continue funding the project in out years. Deferred does not include new projects that would begin in fiscal year 2011. However, the Program anticipates about 20 new projects will begin in Fuel Cell Systems R&D.

Question. What are your plans for further solicitations in this area to continue building upon the work that the Department has done for many years?

Answer. The Department plans for solicitations in the Fuel Cell Systems R&D and Manufacturing R&D subprograms. For the fuel cell solicitation, a Request for Information has closed, a pre-solicitation workshop has been conducted and preparation of the Funding Opportunity Announcement is underway. DOE anticipates that this solicitation will yield about 20 new projects.

QUESTIONS SUBMITTED BY SENATOR ROBERT C. BYRD

Question. In reviewing the fiscal year 2011 Fossil Energy Research and Development (R&D) budget, I am very troubled. Despite a healthy overall 6.8 percent increase for the Department from the fiscal year 2010 enacted level, the Fossil Energy R&D program is not among the beneficiaries of forward-thinking. It greatly concerns me that the Coal R&D budget is flat funded; the Oil and Natural Gas R&D programs are zeroed out; no new funds have been requested for a Clean Coal Power Initiative (CCPI) Round 4 solicitation; the Fossil Energy Program Direction account is underfunded by \$10 million and underfunded by \$19 million if funding is not provided to administer the Recovery Act activities; the Methane Hydrates work that has been traditionally conducted by NETL is being transferred to the Office of Science; and the Ultra-Deepwater and Unconventional Gas and Other Petroleum Research Fund has been offered up for rescission.

Is the fiscal year 2011 Fossil Energy R&D budget an accurate reflection of your vision for NETL and the Fossil Energy R&D program? Please elaborate.

Answer. The Office of Fossil Energy's (FE) primary objective is to ensure the continued use of traditional fuel sources to provide clean, affordable, reliable energy. The Clean Coal Research Program, implemented by the National Energy Technology Laboratory (NETL), supports the U.S. Department of Energy's (DOE) overall mission to achieve national energy security in an economic and environmentally sound manner. The Fossil Energy Research and Development fiscal year 2011 budget request of \$586.5 million represents more than 75 percent of FE's total fiscal year 2011 budget request and will help maintain DOE's leadership role in addressing the challenge of climate change, deliver to the Nation superior electricity generating technologies, and allow NETL to carry out energy and environmental research, development, and demonstration programs.

The Coal Program has four key priorities: (1) to develop carbon dioxide (CO₂) capture technologies for fossil fueled power plants and industrial sources; (2) to establish safe, reliable CO₂ storage methods including geologic storage and beneficial reuse; (3) to improve the efficiency of both existing and new coal-fired power generation plants; and (4) to implement computer modeling and simulation to accelerate the Research and Development (R&D) path from discovery to commercialization and reduce costs.

There are a number of technical and economic challenges that must be overcome before cost-effective CCS solutions can be implemented to address climate change. Funding from the American Recovery and Reinvestment Act (Recovery Act) is helping to address these challenges. The Recovery Act provided an additional \$3.4 billion for FE R&D to accelerate the commercial deployment of CCS technology, including \$800 million for the Clean Coal Power Initiative. The Recovery Act funding coupled with our annual appropriations will allow FE and NETL to support important advances in capture technologies, efficiency of advanced power generation systems and CO₂ storage technology. The experience gained from capture and storage demonstrations funded by the Recovery Act will be a critical step forward achieving widespread, cost-effective deployment of CCS. In addition to the Recovery Act projects, the core research, development, and demonstration activities that leverage public and private partnerships will support the goal of broad cost-effective CCS deployment in the post-2020 timeframe.

Consistent with administration policy to phase out fossil fuel subsidies, the Office of Fossil Energy requested no funding for oil and gas research and development. In addition, Methane Hydrates R&D is transferred to the Office of Science. Over the next 2 years, the program will phase out production related R&D activities in favor of research to strengthen the fundamental understanding of methane hydrates: their formation and occurrence; their role in geological and ecological systems; their stability in natural and engineered systems; and their role in the carbon cycle. This transfer does not preclude academic institutions and laboratories from applying for grants to support research that addresses these more fundamental questions. This decision is based on the nature of the research and development activities not the type of competitively selected awardees.

Question. The Coal R&D program, which has been flat funded, is focused on developing a portfolio of technology options for future energy plants that will provide significant improvements in efficiency coupled with Carbon Capture and Storage. Given that the Environmental Protection Agency will begin regulating greenhouse gas emissions next year, how do you view the Coal R&D budget as adequate?

Answer. The Fossil Energy Research and Development fiscal year 2011 budget request of \$586.5 million represents more than 75 percent of FE's total fiscal year 2011 budget request and will help maintain DOE's leadership role in addressing the challenge of climate change, deliver to the Nation superior electricity generative technologies, and allow NETL to carry out new and ongoing energy and environmental research, development, and demonstration programs.

In addition, the Recovery Act provided \$3.4 billion for Fossil Energy Research, Development, and Demonstration FER&D to accelerate the commercial deployment of CCS technology.

The coal research and development (R&D) funding request in the President's fiscal year 2011 budget is sufficient to meet current needs. Ultimately comprehensive energy and climate legislation that puts a cap on carbon will provide the largest incentive for CCS because it will create stable, long-term, market-based incentives to channel private investment in low-carbon technologies.

Question. The Oil and Natural Gas R&D programs focus on long-term, high risk research and development, and are implemented by universities, national laboratories, research and development institutions, governments, and industry. These programs involve research and development on unconventional resources, such as

methane hydrates; natural gas locked in tight sands, coals, and shales; stranded oil; and crude oil in non-conventional reservoirs. I am advised that these resources are significant—billions to trillions of barrels and more than 1,000 trillion cubic feet of natural gas; however, technology advancements are required to develop these domestic resources. Furthermore, it is my understanding that the vast majority of the oil wells belong to independent operators eager to apply the technologies that the Department is helping them access. Why is the Department turning its back on these huge potential resources by zeroing out the Oil and Natural Gas R&D programs? What alternatives have you considered to improve the programs, rather than to eliminate them?

Answer. The Methane Hydrates R&D program is proposed to be transferred to the Office of Science. Over the next 2 years, the program will focus on research to strengthen the fundamental understanding of methane hydrates: their formation and occurrence; their role in geological and ecological systems; their stability in natural and engineered systems; and their role in the carbon cycle. This transfer does not preclude academic institutions and laboratories from applying for grants to support research that addresses these more fundamental questions. This decision is based on the nature of the research and development activities not the type of competitively selected awardees.

Question. During our January 2009 visit in my office, I urged you to visit the NETL in Morgantown. Have you made such a visit to any of the NETL campuses? What steps have you taken to schedule this visit?

Answer. Despite several attempts, I have not been able to visit the NETL in Morgantown. I look forward to the chance to see the NETL campuses and I am working with my staff to schedule a visit soon.

Question. I have been supportive of the concept behind FutureGen, and public-private partnership to build a first of its kind, coal-fueled, near-zero emissions power plant, provided that the Federal share of the project was not funded at the expense of the basic Coal R&D account. I understand that you intend to make a go/no go decision on the FutureGen project in the coming weeks.

If you determine that the FutureGen project should proceed, what additional Federal resources will be required to complete the project? How would the administration make up that shortfall? What assurance can you provide me that this shortfall will not be addressed by robbing the Coal R&D account?

Answer. The FutureGen Alliance submitted its Renewal Application to DOE on March 19, 2010.

The latest estimate of capital costs from the FutureGen Industrial Alliance has grown from the earlier one provided.

Currently, the Department is in discussions with the FutureGen Alliance about the most promising funding path forward. If additional funds are warranted, the Department may consider the use of prior year available funds but does not plan to fund the project through offsets from current year research and development (R&D) funding nor from future year requests for appropriated R&D funds.

Question. If FutureGen is a “go,” will the Department be able to obligate funds provided through the American Recovery and Reinvestment Act (ARRA) prior to the September 30, 2010, deadline? If those funds expire, how will the Department address the FutureGen funding needs?

Answer. The Department is planning to obligate the American Recovery and Reinvestment Act funds for the FutureGen project before the September 30, 2010, deadline.

Question. Should a determination be made not to proceed with the FutureGen project, how will the Federal funds that have thus far been made available for the project be redirected?

Answer. On March 19, 2010, the FutureGen Industrial Alliance submitted its Renewal Application to the Department of Energy. Currently, DOE is in discussions with the FutureGen Alliance about the most promising path forward toward a successful project.

Question. What goals of the FutureGen project being met through the current CCPI Round 3 and other funding opportunities provided through the ARRA?

Answer. Some of the environmental goals of FutureGen (emissions of criteria pollutants and mercury) will likely be met under the Clean Coal Power Initiative Round 3 and American Recovery and Reinvestment Act funded awards. The carbon capture and storage goals of FutureGen are more stringent than those required under the alternative funding opportunities; however, some of the projects being pursued under the CCPI would satisfy the 90 percent carbon capture goal and the sequestration goal of a minimum 1 million metric tons per year. The goal of fully integrating an integrated gasification combined cycle powerplant with sequestration in a saline formation remains unique to FutureGen.

Question. After spending most of our meeting last year discussing the importance I place on NETL, I was disturbed that your office did not take the time to notify me that NETL Director Carl Bauer had retired earlier this year. As the Department considers candidates, I urge you to seriously consider filling this position with someone who not only has a strong technical background, but also who knows how NETL is structured, how it works within the Department, and how to build relationships with outside stakeholders. What is the status of the Department's efforts to identify a new NETL director? I expect your office to notify me as soon as a formal decision has been made. I would very much like the opportunity to meet the new Director, and will rely on your office to help coordinate such a visit.

Answer. Your office was notified on April 1, 2010, that the Department named Anthony V. Cugini as the new NETL Director. Dr. Cugini has a strong technical background that includes expertise in a number of key energy and environmental research and development areas, including catalyst development, advanced carbon synthesis, hydrogen production and separation, gas hydrates, and CO₂ sequestration and computational modeling.

During Dr. Cugini's 23-year career at NETL he was responsible for overseeing the Office of Research and Development since 2007, where he supervised an organization with over 400 personnel at 3 NETL locations, which included cutting-edge research and computer simulations conducted onsite as well as that performed through partnerships, cooperative research and development agreements, financial assistance, and contractual arrangements with universities and the private sector.

Dr. Cugini's background provides an excellent combination of leadership abilities, scientific and research expertise, understanding of key technical challenges in clean energy, and familiarity with NETL's programs, personnel, and capabilities. Dr. Cugini's outstanding career at the laboratory has demonstrated a clear ability to continue NETL's important mission at a high level of achievement and accomplishment. The Department looks forward to the lab's continued progress and success under his leadership.

As requested, we will be pleased to arrange a visit with you and Dr. Cugini. The Department's Office of Congressional and Intergovernmental Affairs will contact your office to coordinate a visit.

Question. NETL also serves as a PMC for EERE. Approximately 122 NETL employees support the PMC by implementing 40 percent of EERE's projects and programs, including weatherization, power and vehicles, and buildings and industrial technologies.

The EERE program direction for the PMC at NETL did not allow for annual cost escalation and is \$3 million below what is required to sustain the 122 NETL FTEs supporting the PMC at NETL. If this funding shortfall is not addressed by Congress, how many NETL positions will be eliminated?

Please provide me with an update on the PMC activities at NETL, specifically, the long-term plans to continue this successful NETL-EERE collaboration.

Answer. In fiscal year 2010, the initial NETL Program Direction budget was \$14.2 million (same as fiscal year 2009), with the understanding that after we completed our midyear budget review an adjustment may be made based on need. NETL was notified that its final fiscal year 2010 regular program direction budget would increase by \$1.3 million to \$15.5 million (9.2 percent) above fiscal year 2009. In addition, EERE increased the NETL Recovery Act Program Direction budget by \$3.5 million. Therefore, there is no funding shortfall in fiscal year 2010, and no positions will be eliminated in fiscal year 2010. Upon receiving the fiscal year 2011 appropriation from Congress, EERE will reassess the funding requirements at the PMC locations, and ensure equitable distribution.

NETL has been a successful partner with EERE, and the long-term plan is to continue this working relationship.

Question. As American industries confront the challenges of reducing their carbon emissions and creating the clean energy jobs of the 21st century, how can the Industrial Technologies Program (ITP) help to place on a fast track major innovations in efficiency and cost-effective environmental performance? Certain components of this program were scaled down or terminated in recent years. Through the ITP, or perhaps through other programs, how do you intend to increase the Department's focus on maximizing the research, development, and deployment that can be achieved through public-private cost-share programs, with a view toward achieving bold advancements in the energy-intensive industries that are so vital to the future of America's clean energy job market?

Answer. The Nation faces serious economic, energy, and environmental challenges that are impacting all sectors of the economy, including manufacturing which has seen significant job losses over the past 2 years. Clean energy development and deployment, and a robust manufacturing infrastructure which supports this endeavor

are critical to U.S. energy security, jobs, and reducing carbon emissions, and have been a priority of the administration. In January, President Obama announced the award of \$2.3 billion in Recovery Act Advanced Energy Manufacturing Tax Credits for clean energy manufacturing projects across the United States. Additionally, in November 2009, Secretary Chu announced more than \$155 million in Recovery Act funds for 41 industrial energy efficiency projects across the country. ITP also funded additional Industrial Technical Assistance activities to assist energy-intensive manufacturers cut their energy bills, improve their productivity, and save jobs over the past few years.

Also during the summer of 2009, to help restock the technology development pipeline, ITP issued a funding opportunity announcement (FOA) for grand challenge concept studies to define requirements for transformational industrial processes and technologies that reduce the energy intensity or greenhouse gas emissions by a minimum of 25 percent while providing a return on investment of 10 percent or greater. Selections from this FOA are expected to be completed by May 2010.

Notwithstanding these efforts, ITP recognizes the significant long-term need for process innovation in manufacturing. The fiscal year 2011 budget re-prioritized the ITP program strategy. This new strategy emphasizes crosscutting technologies that provide significant savings across multiple energy intensive industries. ITP will continue to support industry-specific R&D for the energy-intensive chemical industry. The Program is developing breakthrough technologies that significantly reduce process energy- and carbon-intensity, and plans to undertake an exploratory study to identify pathways for significant carbon emission reductions from the cement industry. ITP will continue to work with other energy-intensive industries through its Energy Intensive Process R&D activities, which focus on developing innovative cross-cutting technologies applicable to multiple industries.

In addition, the fiscal year 2011 ITP budget request proposes a new subprogram entitled Manufacturing Energy Systems (MES). The MES program, to be anchored at two U.S. universities, will serve as knowledge development and dissemination centers organized around distinct manufacturing areas with critical technical needs. The centers will reduce the time necessary to translate innovation into commercial product for low or near-zero carbon processes and technologies.

ITP will continue to coordinate with other EERE program efforts focusing on the manufacturing of clean energy products as appropriate.

Question. What action is the Department taking to ensure that public and private clean energy investments will provide benefits to the residents of rural areas, small cities, and towns commensurate with the benefits provided to residents of larger metropolitan areas? How do these efforts differ from last year? Rural areas have long struggled to keep up with critical infrastructure and, if agencies such as yours do not provide clear leadership, these rural areas could be at risk of missing out on major new public works projects and investments. Please provide me with the proportions of the program funding that have been committed to rural areas in the State Energy Program and the Energy Efficiency and Conservation Block Grant program.

Answer. In the absence of statutory requirements, the Department of Energy (DOE) does not require States to allocate any specific proportion of State Energy Program (SEP) funding to either specific geographic areas or topics within the State. Through the SEP, DOE provides formula grant dollars to State Energy Offices (SEO) on behalf of each State. The SEO proposes energy efficiency and renewable energy programs that best fit the unique needs and resources within the State. DOE then reviews and approves the State programs and provides technical assistance as needed.

The American Recovery and Reinvestment Act of 2009 appropriated \$3.2 billion in funding for the Energy Efficiency and Conservation Block (EECBG) Program. Of this total, more than \$2.7 billion is available for distribution in the form of direct formula grants to over 2,350 eligible units of government such as cities and counties, States, U.S. territories, and Federal recognized Indian Tribes. This subtotal has been allocated, as directed by the Energy Independence and Security Act of 2007, to the following categories of grantees:

- Sixty-eight percent to formula-eligible units of local government (cities or city-equivalents with a population of at least 35,000 or that are one of the top 10 highest populated cities of the State, and counties or county-equivalents with a population of at least 200,000 or that are one of the top 10 highest populated counties of the State);
- Twenty-eight percent to States through formula grants;
- Two percent to Indian Tribes through formula grants; and
- Two percent for competitive grants to ineligible cities, counties, and Indian tribes (42 U.S.C. 17153(a)(1–4)).

A State that receives a grant under the EECBG Program shall use not less than 60 percent of the amount received to provide subgrants to units of local government in the State that are not eligible for a direct formula grant from DOE. Hawaii, the U.S. Virgin Islands, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands have no ineligible entities and are, therefore, exempt from the requirement to make subgrants. For example, West Virginia received more than \$14 million in direct formula awards to State and local governments. Out of this funding, over \$9.5 million was awarded to the West Virginia State Energy Office, which must subgrant a majority of these funds under the requirement described above.

The authorizing statute does not identify any eligible criteria that are specific to “rural” communities.

Up to \$453.72 million in Recovery Act funds will be awarded through competitive EECBG grants covering two topic areas, as described in Funding Opportunity Announcement DE-FOA-0000148.

The first topic area, the “Retrofit Ramp-Up” program, will award funds to innovative programs that are structured to provide whole-neighborhood building energy retrofits. DOE expects to make 8 to 20 awards under this topic area, with award size ranging from \$5 to \$75 million. Both formula eligible and formula-ineligible entities may apply for funds under Topic 1.

The second topic area, the “General Innovation Fund,” will award up to \$63.68 million to help expand local energy efficiency efforts and reduce energy use in the commercial, residential, transportation, manufacturing, or industrial sectors. DOE expects to make 15 to 60 awards, with award size ranging from \$1 to \$5 million. Only formula-ineligible entities can apply for funds under Topic 2. The award selection official may consider a proposed program’s “impact on, and benefits to, a diversity of communities, including low-income and rural communities” when making selections per page 38 of FOA-0000148.

These EECBG grants will almost certainly benefit small and rural communities beyond the direct recipients by adding substantially to the knowledge base surrounding the implementation and operation of energy efficiency/renewable energy projects (EE/RE). The grants will help to validate and refine best practices in a diversity of communities, including those with low-income and rural characteristics. These new data points will allow future EE/RE projects to be more closely tailored to the economic, environmental, and energy needs of Americans from all walks of life.

Question. With my strong urging several years ago, NETL began performing work under the auspices of the Office of Legacy Management (LM). Most recently, these staff relocated to the new 59,000 square-foot LM Business Center in Morgantown, West Virginia.

I was advised in June 2008 by LM officials that the LM Business Center would house 30 Federal and 60 contractor staff. Please provide me with the current Federal and contractor staffing levels at the Morgantown site. If the goals provided to me in 2008 have not been met, I would like a detailed explanation on how and when these employment goals will be achieved.

Answer. There are currently 9 Federal staff and 73 contractor staff at the Legacy Management Business Center (LMBC) located within the West Virginia University Research Park. None of these employees are associated with the National Energy Technology Laboratory. Over the last several years the Office of Legacy Management (LM) has been able to reduce total LM Federal staffing levels from an allocation of 83 to a current level of 57. This was accomplished by outsourcing work and using Federal employees from other organizations where it would be more efficient. Within the new staffing level there are presently 50 Federal employees in LM. We expect to hire additional Federal employees and 2–3 of those employees would support activities at the LMBC. However, we do not anticipate needing beyond approximately 12 Federal employees at the LMBC in the foreseeable future.

Question. Please describe in detail the functions that are being performed by Federal staff at the Morgantown site. Please provide the same detailed information about the contractor staff.

Answer. Federal staff assigned to the LMBC perform a variety of functions. Those functions include: management and storage of records; information technology infrastructure services; oversight of LM site activities (e.g., ensuring compliance with environmental regulations and management of natural, historical and cultural resources); budget formulation and execution; acquisition support and oversight; and, management of personal property.

The majority of contractor staff at the LMBC are associated with LM’s primary mission at this location which is the management of records and information technology. Contractor staff performs the following types of functions: Information Technology, Records Management, and a variety of business services. These programs

are based in Morgantown and support LM mission activities throughout the LM complex. LM's contractor also provides operation of the National Archives and Records Administration (NARA) certified Records Warehouse and the Consolidated Data Center; including environment, safety, and health oversight and conduct of operations.

Question. Please provide me with a schedule of anticipated closures of DOE nuclear operations across the country. What effect will these closures have upon the demand for the functions performed at Morgantown and the staff levels?

Answer. Responsibility for sites is transferred to LM after active remediation is completed, from programs within the Department of Energy, the Army Corps of Engineers, and from private licensees of former uranium mills. LM anticipates our site responsibility to grow from our current level of 87 to 112 by 2015. A list of sites projected to transfer by the end of 2015 is below. As a majority of the sites are in the Western United States, require only limited maintenance, and have small volumes of records and information we do not anticipate an increase in LMBC staffing levels.

Bear Creek, Wyoming; Gas Hills East, Wyoming; Gas Hills North, Wyoming; Split Rock, Wyoming; Inhalation Toxicology Lab, New Mexico; Lisbon Valley, Utah; Mound, Ohio; Uravan, Colorado; Durita, Colorado; Panna Maria, Texas; Church Rock, New Mexico; Ford, Washington; Gas Hills West, Wyoming; General Electric Vallecitos, California; Mercury Storage Facility (location TBD); Ray Point, Texas; Iowa Army Ammunition Plant, Iowa; Painesville, Ohio; Attleboro, Massachusetts; Combustion Engineering, Connecticut; Highland, Wyoming; Latty Avenue Properties, Missouri; Sequoyah Fuels, Oklahoma; St. Louis Airport, Missouri.

Question. What other LM functions could be housed in the new Morgantown facility?

Answer. LM has consolidated several of its business functions at the LMBC including records storage and management, and information technology infrastructure. In addition, Federal staff at the LMBC provide oversight of certain LM site activities (e.g., ensuring compliance with environmental regulations and management of natural, historical and culture resources); budget formulation and execution; acquisition support and oversight; and, management of personal property.

The documents to be stored, managed, and processed at the facility are inactive, temporary DOE records from the cold war nuclear sites. Records are retrieved to respond to various requests for information. The records currently stored at several NARA Federal Records Centers will be transferred to the LMBC for permanent storage.

Over the last few years LM has worked hard to both evaluate and optimize Federal staffing levels and locations. Based on LM's current functions, the locations where those functions are most efficiently performed, and the distribution of our sites within the country we do not anticipate the transfer of other LM functions to the LMBC.

Question. In February 2010, the President signed the Memorandum creating an Interagency Task Force on Carbon Capture and Storage (CCS). The Memorandum proposed a plan "to overcome the barriers to the widespread, cost-effective deployment of CCS within 10 years, with a goal of bringing 5 to 10 commercial demonstration projects online by 2016."

What is the status of your progress? What are your plans for going forward?

Answer. In the President's Memorandum, the interagency carbon capture and storage (CCS) task force has 180 days to produce a report proposing a plan to overcome the barriers to the widespread, cost-effective deployment of CCS within 10 years, with a goal of bringing 5 to 10 commercial demonstration projects online by 2016. The task force is on track to deliver the report to President Obama in August, 2010. On May 6, 2010, at the Grand Hyatt Washington from 8:30 a.m. to 6 p.m. a public meeting was held to provide input to the interagency CCS task force.

Question. How do these goals correlate with the Environmental Protection Agency's efforts to regulate mobile sources of greenhouse gas emissions this year and stationary sources of greenhouse gas emissions next year?

Answer. An area that the interagency carbon capture and storage (CCS) task force will investigate is the legal and regulatory issues associated with CCS. Per the Presidential Memorandum, the Task Force will consider how best to coordinate existing administrative authorities, as well as identify areas where additional administrative authority may be necessary.

Question. In June 2009, the administration released a Memorandum of Understanding (MOU) entitled, "Implementing the Interagency Action Plan on Appalachian Surface Coal Mining."

The MOU noted that "Federal agencies will work . . . to help diversify and strengthen the Appalachian regional economy and promote the health and welfare

of Appalachian communities. This interagency effort will have a special focus on stimulating clean enterprise and green jobs development . . .”

What new programs is the Energy Department proposing to advance economic diversification in Appalachia?

Answer. This question should be directed to the U.S. Department of the Army, the U.S. Department of the Interior, and the U.S. Environmental Protection Agency. See http://www.epa.gov/owow/wetlands/pdf/Final_MTM_MOU_6-11-09.pdf.

Question. What new resources is the Energy Department requesting to advance economic diversification in Appalachia?

Answer. The Department of Energy is not a party to this Memorandum of Understanding. This question should be directed to the U.S. Department of the Army, the U.S. Department of the Interior, and the U.S. Environmental Protection Agency. See http://www.epa.gov/owow/wetlands/pdf/Final_MTM_MOU_6-11-09.pdf.

QUESTIONS SUBMITTED BY SENATOR PATTY MURRAY

Question. Secretary Chu, I am pleased to once again see an increase in overall funding for EERE, because we’ve got to move forward toward a clean energy economy and the work being done at the Department will help keep us on that path.

I am concerned, however, that for the second year in a row the Water Program has been cut—by 25 percent this year—while nearly every other renewable energy program receives increased funding. As you know, the National Hydropower Association recently released a report citing the potential for additional, emissions-free hydropower—and hundreds of thousands of jobs that could be created.

We must continue investment in our existing hydro facilities to allow us to use those flexible resources to firm up intermittent renewable resources like wind and solar. And we must also increase our work to develop new marine and hydrokinetic technologies that may also be able to act as baseload resources in the future.

Given these recurring funding cuts for this important program, I am not assured that the administration sees the value of water as a clean energy source.

Can you please tell me what your goals are for the Water Power Program, specifically with regard to conventional hydro as well as marine and hydrokinetic technologies?

And is the Department using the Marine Science Laboratory at Sequim, Washington—the Department’s only national lab facility located on water—to help achieve these goals, particularly to understand the environmental impacts of energy devices as the industry begins to test at scale?

Answer. The Department of Energy is excited about the potential to develop emerging marine and hydrokinetic energy (MHK) technologies and untapped hydro-power resources. The \$50 million appropriated for Water Power in fiscal year 2010 has allowed the Department to continue aggressive efforts to develop advanced water power technologies, and we are working diligently to ensure that this increased level of funding is spent carefully and wisely. DOE believes that the \$40.5 million requested for Water Power in fiscal year 2011 is sufficient to continue the program’s ongoing efforts to develop water power technologies and accelerate the market adoption of these technologies. This funding is complemented by up to \$31.7 million in Recovery Act funds for projects to deploy advanced turbines and control technologies at hydropower facilities, thereby boosting generation of environmental sustainable hydropower and stimulating job creation and economic activity. As the size of the Nation’s water power resources and the ability of emerging technologies to capture that energy becomes clearer, the Department will be better able to determine if higher funding levels are necessary.

The Department’s goals for MHK energy technologies are to determine the baseline costs of energy and identify key cost drivers for MHK generation, to quantify the total MHK resource available by resource type, and to address barriers to the siting and permitting of these devices. For conventional hydropower, the Department’s goals are to facilitate the deployment of new sustainable hydropower generating capacity, including timely and low-cost upgrades at existing hydroelectric facilities, the powering of non-powered dams and constructed waterways, and assessing the potential for new small hydropower deployment. The Department also works with other Federal agencies, such as the Army Corps of Engineers and the Department of the Interior’s Bureau of Reclamation, to support the development of environmentally sustainable hydropower by increasing energy generation at Federal-owned facilities and exploring opportunities for new development of low-impact hydropower.

The Water Power Program has funded MHK technology research at Pacific Northwest National Laboratory (PNNL) since fiscal year 2008, and the capabilities of

PNNL's Sequim Marine Science Laboratory have been integral to that effort. Given Sequim's coastal location and strong marine environmental research capabilities, much of the work undertaken at the Sequim facility has been related to environmental baseline studies for MHK technology applications. PNNL is currently leading an effort to identify, analyze, and predict environmental impacts from MHK energy production. After prioritizing risks, PNNL will conduct experiments and field trials to investigate high priority environmental impacts to reduce uncertainty, and to gain insight into the cumulative impacts of multiple stressors from devices and arrays.

Question. Mr. Secretary, as you may know in January, as Chairman of the U.S.-China Inter-Parliamentary Group, I led a Congressional Delegation trip to China. Part of our charge was to focus on a variety of bilateral issues, including energy. If our two nations are to aggressively deploy clean energy technologies, much needs to be done to spur innovation across the energy sector to increase renewable energy use as well as reduce greenhouse gas emissions from coal fired electricity plants.

I know that DOE is doing much to drive a green energy future, and recognize the need to continue to invest in fossil energy programs. We know that current available technology is too expensive. I am concerned that the fiscal year 2011 DOE budget request seems to be missing programs that will drive the innovation we need now for successful deployment in a decade.

Can you please comment on DOE's intentions for developing a significant national program that rapidly accelerates revolutionary approaches to carbon capture?

Answer. In the fiscal year 2011 budget request the Office of Fossil Energy (FE) requested over \$84 million for capture technology. This funding will support bench and laboratory scale R&D for post combustion capture techniques such as solvents and sorbents. Pre-combustion capture funding will support the development of novel bench scale pre-combustion capture technology. In addition, the Advanced Research Projects Agency—Energy (ARPA-E) is supporting CCS research and development of next generation carbon capture technology with funds provided by the American Recovery and Reinvestment Act. The Office of Science is supporting R&D into the design of novel materials and separation processes for post-combustion CO₂ capture, as well as catalysis and separation research for novel carbon capture schemes that might be incorporated into the design of future power plants. These three programs, which closely coordinate, support the research and development necessary to reduce the cost and energy penalty associated with carbon capture technologies.

Question. Also, can you please tell me what methods the Department is looking at in addition to carbon capture and sequestration, such as carbon capture and recycle?

Answer. The American Reinvestment and Recovery Act allocated to the Department \$1.52 billion to support industrial carbon capture and storage (CCS) projects. Of the \$1.52 billion, \$17.4 million was allocated for industrial CCS applications is to test innovative concepts for the beneficial use of CO₂. Historically, enhanced oil recovery projects have been injecting CO₂ to stimulate the production of oil, and that is expected to expand as CO₂ becomes more readily available. In addition, FE has a solicitation, which closed April 20, 2010, targeting technologies that utilize CO₂ to produce products at a cost of less than \$10 per metric ton.

Question. Mr. Secretary, can you give me an update on the implementation of the U.S.-China Energy Research Centers? How are you implementing this program within the various offices at DOE and are you engaging the national labs who are also developing relationships with their Chinese counterparts?

Answer. On March 30, 2010, the Department released a funding opportunity announcement (FOA) with the availability of \$37.5 million over the next 5 years to support the U.S.-China Clean Energy Research Center (CERC). Funding from DOE will focus on advancing technologies for building energy efficiency, clean coal including carbon capture and storage (CCS), and clean vehicles. These are areas in which the United States and China have a shared interest in further developing technology to help our countries meet clean energy and climate change goals. Awards will be made to consortia with the knowledge and experience to undertake first-rate collaborative research programs. These consortia will help bring together top talent from both countries and are expected to generate key technological advancement through genuine collaboration between U.S. and Chinese researchers. The DOE funding will only go to American researchers and institutions, and grantees will match the Department's funding dollar for dollar, bringing the United States' contribution to \$75 million. All proposed projects must involve researchers from both countries. DOE anticipates notifying the applicants selected for awards and making the awards in summer 2010.

The implementation of the U.S.-China Clean Energy Research Program will be administered by the Office of Policy and International Affairs, through a CERC sec-

retariat, to be established and housed at the DOE headquarters. The secretariat will act as the principal coordinator of activities under the CERC. The Office of Fossil Energy (on clean coal and CCS), and the Office of Energy Efficiency and Renewable Energy (on building energy efficiency and clean vehicles) will have strong roles in supporting the CERC activities, along with the support from DOE national laboratories. In addition, DOE national laboratories are also eligible to apply as prime applicants.

Question. I know you when you visited the Pacific Northwest National Laboratory last year that you toured the Electricity Infrastructure Operations Center (EIOC). This center will be an important platform for advancing the smart grid and will be utilized in the Pacific Northwest Smart Grid Demonstration that is funded by the Recovery Act. What are DOE's plans to follow up on that investment, and what must DOE and the Federal Government do to ensure that the transition to the smart grid is completed?

Answer. DOE research and development funds helped establish the EOIC, and we expect it to continue to be a great asset in facilitating further research, as well as in validating technologies, systems and processes that advance the concept of a smart grid. Given its unique capabilities, we expect ongoing research, development and demonstration funds will continue to support Pacific Northwest National Laboratory, and the EOIC.

The transition to a smart grid is a process that will take years, and the role of the Federal Government is to ensure that progress is prudent, efficient, and validated by solid research. The Federal Government can also work to advance the transition by testing the next generations of technical and policy solutions to improve the electricity infrastructure, in collaboration with industry, academia, and our state partners.

QUESTIONS SUBMITTED BY SENATOR TOM HARKIN

Question. Dr. Chu, the Energy Policy Act of 2005 included the Renewable Fuel Standard commonly referred to as RFS2. It requires use of 15.2 billion gallons of biofuels in 2012, and 20.5 billion gallons in 2015. It is clear most of that fuel will be in the form of ethanol. At the same time, we are facing a challenge with integrating these increasing volumes of ethanol into our transportation fuels market. Specifically, these volumes go beyond the "ethanol blend wall" meaning the amount of ethanol that can be utilized in form of E10—fuel blends of 10 percent ethanol in gasoline. Now that problem will be somewhat alleviated if EPA grants a waiver that allows use of blends such as E15 in all highway vehicles, but what we really need are more flex-fuel vehicles that can use higher blends and more refueling stations that offer higher blends through the use of blender pumps.

Your Clean Cities Program is increasing the use of alternative fuels, but your budget for that program allocates over half of funding to support electric vehicles.

Given that electricity already is widely available while electric vehicles are still pretty scarce, and that we have this ethanol market limitation, why aren't you putting the major emphasis on your clean cities program on availability and use of higher ethanol blends?

To me, it's very clear that ethanol offers by far the greatest potential for reducing our dependence on petroleum for at least the next decade. Isn't it in our national energy security interest to make sure we can take full advantage of the petroleum displacement potential that ethanol provides?

Answer. DOE has continued to demonstrate strong support for deployment of E85 blends with recent financial assistance awards. In 2009, Clean Cities awards were announced that will help build an additional 198 E85 refueling locations during the 2010–2012 timeframe in more than 20 States through the Recovery Act and under a separate set of Clean Cities infrastructure grants. In 2006, DOE Clean Cities helped fund 169 E85 stations. Moreover, DOE Clean Cities continues to support the more than 2,000 E85 stations in the United States by providing user-friendly web-based station locators and mapping tools for convenient trip planning for flex-fuel vehicle (FFV) drivers and owners. In addition, in fiscal years 2007–2010, the Department funded a \$45 million test program focused on intermediate blends of ethanol in gasoline for blends up to E20. This program, intended to provide high-quality data to the Environmental Protection Agency for use in considering current and future ethanol blend waiver requests, covers materials compatibility, emissions, long-term durability of exhaust emissions control systems, and operational issues for E15 and E20 for new and legacy vehicles and non-road engines. The Department is also evaluating the compatibility of new and legacy fueling infrastructure equipment with intermediate blends; a portion of this infrastructure testing has been

funded through the Clean Cities Program. In a separate but related effort, Clean Cities has also engaged in studies of blender pumps and E85 fuel quality surveys.

For the fiscal year 2011 budget request, a portion of the Clean Cities budget is focused on activities related to electric vehicles and the infrastructure needed to support them. It is estimated that 15 to 20 new battery electric and 9 to 10 new plug-in hybrid electric vehicle models will be introduced by 2012, and that a million of these vehicles will be on the road by 2015 (which all need recharging stations). In addition, communities where electric vehicles are being introduced will need training for first responders, equipment installers and vehicle technicians. Clean Cities funding proposed in the fiscal year 2011 budget request would support these efforts and strengthen the participation of local coalitions.

While there is no question that high-level ethanol blends are important for U.S. energy security, the combination of E85 flex fuel technology and electric drive offers even greater potential. For example, General Motors has mentioned the possibility of a Chevy Volt extended range electric vehicle that could be E85 flexible fuel capable after 2010. It is an understatement to say that the combination of a plug-in vehicle that can also run on ethanol instead of petroleum will be an important event for promoting petroleum reduction—a key mission of the Clean Cities program and the Office of Energy Efficiency and Renewable Energy.

Question. The Artificial Retina Program at DOE has been an incredible success and was recently named a 2009 R&D 100 Award Winner. The real potential this program has to restore sight to over 10 million blind people in the United States could be a historical accomplishment for the DOE Science Program. The fiscal year 2011 budget includes only \$4 million for this program, and it includes detrimental language to terminate the program at DOE at the completion of the 240 electrode device, rather than the 1000 electrode device, which was the original intention of the program. While NIH has been a partner with DOE in doing the clinical trials, they simply cannot pick up the program now and develop the 1000 electrode device. With over \$70 million already invested in this program at DOE, I think it would be a gross mistake to prematurely end this program when it is so close to developing a technology that would help so many people. Given that this program has met every benchmark thus far, and DOE has already made a substantial investment in the program, why is DOE terminating the successful Artificial Retina Program when the final goal of the 1000 electrode device is so close to being achieved?

Answer. The original intention of this interagency program was to develop robust partnerships synergistically linking the strengths of the national laboratory, academic, and industrial researchers through proof of concept demonstration and engineering of a retinal prosthetic device. DOE supports fundamental research and technology development to advance DOE missions in energy, climate, and the environment, and is working to transition this successful project to other agencies with more direct mission responsibility for clinical research. The current 60 electrode device is in the midst of clinical trials, and early clinical trial results have allowed researchers to improve the design and fabrication of the 240 electrode device. Synthesis of the individual components of the 240 electrode device is expected to be complete at the end of fiscal year 2010. The \$4 million in the fiscal year 2011 budget is designated to facilitate an orderly transition of the device through pre-clinical testing and complete additional technology research required to bring the device to readiness for clinical trials led by partnering organizations. Increasing the number of electrodes does not guarantee improved clinical performance. The benefits of the 240 electrode Artificial Retina device will not be assessed until it enters formal clinical trials and statistically significant patient results are demonstrated. Since the early clinical testing results are just emerging for the Argus II 60 electrode device, the results from the 240 electrode device testing will be critically important to design any further device improvements and to determine whether those improvements should be specifically focused upon higher electrode density or improved neural and visual processing software development. Through implementing device improvements informed by clinical trial testing of the 240 electrode device, the goal of improving visual acuity to many people can be best realized.

DOE has contributed to the success of the Artificial Retina Project through its contributions in materials sciences and microfabrication of components, and it is important to transition the work to organizations that have a more direct role in the clinical testing and development and application.

QUESTIONS SUBMITTED BY SENATOR ROBERT F. BENNETT

Question. Approximately \$2.5 billion (7 percent) of the \$36.7 billion appropriated in the American Reinvestment and Recovery Act, enacted over a year ago, has been

spent. While around \$25 billion has been obligated, it's the funds that have been "costed" that mean jobs and results.

Why is the pace so slow getting these funds out?

Answer. As enacted, the Recovery Act's estimated cost of \$787 billion came in three pieces: roughly a third in tax cuts directly to the American people, another third in emergency relief for hard-hit families, businesses, and State governments, and a third in investments in the infrastructure and technology, creating platforms for economic growth. The Department of Energy's Recovery program focuses on the third leg, accelerating innovation to lay the foundation for long-term economic growth.

From the first day after the Recovery Act was signed into law, DOE has been focused on moving the money out the door quickly to create jobs and spur economic recovery. We have used competitive processes to select exceptional projects. We have streamlined DOE operating processes across the board. We are providing unprecedented transparency and insist on clear accountability every day.

DOE has \$36.7 billion in appropriations, including \$32.7 billion in contract and grant authority and \$4 billion in loan credit subsidy authority. We have made selections for over \$32 billion (98 percent) of our contract and grant authority. In total, we have obligated \$29.4 billion (90 percent) and outlaid over \$5.1 billion (16 percent). Environmental Management has paid out \$2.3 billion in outlays and weatherization has now outlaid over \$1 billion. Working with Treasury, we have also supported the processing of \$7 billion in additional tax awards: \$4.7 billion in 1603 grants in-lieu of tax credits and \$2.3 billion in 48c tax credits.

We will be finalizing our remaining selections in the next 3 months with the exception of loan guarantees. DOE will finalize selection of section 1705 loan guarantees by September 30, 2011.

We have obligated \$29.4 billion (90 percent of contract and grant authority). We are on track to obligate nearly 100 percent of our contract and grant authority by September 30. Since the March 10 resolution of the Smart Grid Investment Grant tax issues, OE has fully obligated all 100 Smart Grid Investment Grant projects and most of the Smart Grid Demonstration Grant projects. We sent nearly 20 HQ staff to the field to help in the negotiation process of the Retro-fit Ramp-Up awards. In just 5 weeks, they fully obligated all 25 awards (\$450 million). For all new selections, programs are using SWAT teams to ensure expeditious obligation. No major delays are expected. Fossil Energy and Loans will be the last to obligate.

We have outlaid over \$5.1 billion (16 percent of our contract and grant authority). We outlaid nearly \$700 million in May and are on our way to \$750 million in June. In addition to the various renewable energy research, development and deployment programs, three of the department's largest Recovery Act programs the Environmental Management Program and the Weatherization Assistance Program, and the Science Program are all at run rate. In the last 2 months, the vehicles program has ramped up operations and surpassed its May target by nearly \$18.5 million. Over the last 3 months, we have seen an average payment growth rate of 18 percent month-to-month. We outlaid \$472 million in March and \$569 million in April. We expect to hit reach our optimal monthly spend rate of \$800 million to \$1 billion this quarter.

In the first quarter of 2010, Department of Energy created and saved nearly 29,000 direct FTEs jobs at the prime and sub-recipient level. DOE has seen an average 50 percent quarter-to-quarter increase in recipient reported jobs. Recovery Act investments in the Office of Weatherization and Intergovernmental Program (OWIP) and Environmental Management program have seen the largest job creation. Going forward, DOE expects significant job creation from Recovery Act renewable energy and smart grid projects.

Question. When do you expect to have the full amount actually spent—not just obligated?

Answer. DOE Recovery Act appropriations are funding 144 projects, aside from loan guarantees, in 10 different program offices (e.g., Energy Efficiency, Fossil Energy, Science, etc.). Each of these projects has a unique structure and statutory time horizon for the deployment of these funds (i.e., R&D *vs.* infrastructure investment). For example, DOE's Office of Environmental Management has allocated nearly \$6 billion in Recovery Act funding to 17 sites with a goal to complete their work by the end of fiscal year 2011. Large scale, heavy infrastructure projects in the Fossil Energy program require extensive design and construction stages that will take their Recovery Act spending out until fiscal year 2014. As an agency, DOE expects to spend 70 percent of its ARRA funds by the end of CY2011, nearly 90 percent by CY2012, and 100 percent by CY2015.

Question. Why are there still unresolved tax issues for smart grid grantees, more than a year after enactment of the bill, and what is the Department doing to address them?

Answer. The tax issue has been resolved for the Smart Grid Investment Grant program, and finalization of the grants is well underway. On March 10, 2010, the Internal Revenue Service announced a determination on the tax treatment for grantees receiving Recovery Act funding under the \$3.4 billion Smart Grid Investment Grant program. Under the revenue procedure, the Internal Revenue Service is providing a safe harbor under section 118(a) of the Internal Revenue Code (IRC) for corporations receiving funding under the Smart Grid Investment Grant program. With the determination that Smart Grid Investment Grants to corporations are non-taxable, corporate utilities will be able to launch their investments with a clear indication of the tax status for their projects.

The Internal Revenue Service revenue procedure specifically did not apply to Smart Grid Demonstration grants because the programs, which are authorized by different statutory provisions, differ in several ways that may affect whether DOE's financial assistance can qualify as permanent contributions to capital under section 118(a). As a result, grantees under the different programs will require separate explanations for how the tax code applies. There are also fewer corporate recipients of Smart Grid Demonstration grants than of the Smart Grid Investment Grants. DOE has asked recipients of Smart Grid Demonstration grants to identify whether such tax treatment is applicable and necessary for the success of their projects and will consider recipients' responses in determining a path forward. Regardless, each recipient is free to pursue use of section 118 on its own, as well as any other tax treatment it believes is applicable.

Question. Approximately \$6 billion was provided for the Environmental Management (EM) program in the Recovery Act. A number of the sites are not currently on track to meet cost and schedule estimates. Why is this the case, and what steps is EM taking to address these issues?

Answer. The Recovery Act requires all funding to be obligated by the end of fiscal year 2010, and spent within 5 years of obligation. The Office of Environmental Management (EM) established a very aggressive goal of spending the majority of the money by the end of fiscal year 2011 in order to maximize the creation of jobs. The EM Recovery Act program has obligated more than \$5.4 billion of the \$6 billion of Recovery Act funding, and more than \$2.3 billion has been paid out. Approximately 10 percent of the 91 EM Recovery Act projects are now scheduled to extend into fiscal year 2012. In regard to project performance, a recent GAO report identifies that a number of the Recovery Act projects are not currently meeting their original cost and schedule goals. Examples of these project variances include: greater than initially planned volumes of contaminated soils, resulting in higher costs for excavation and disposal; delays due to changes in initial waste type characterization assumptions; and contract issues causing delays in work start date.

EM Senior Management continues to be fully engaged with all the Recovery Act projects on a regular basis, including monthly project reviews with each of the sites. EM Management also requires each project with less than satisfactory performance to develop a recovery plan that fully defines the issues and contains the corrective actions necessary to bring the projects back on-track and within cost and schedule. At this time it appears that all of the projects are recoverable and will meet Recovery Act performance objectives.

Question. The President recently named a prestigious group of individuals to form a Blue Ribbon Commission on Nuclear Waste. The chairmen are Lee Hamilton and General Brent Scowcroft. The Commission is expected to make recommendations within 18–24 months.

What should we expect from the Blue Ribbon Commission?

Answer. In my comments at the first open meeting of the Blue Ribbon Commission on America's Nuclear Future (the Commission) on March 25, 2010, I set forth several of my expectations for the Commission, which include a comprehensive review of the science, technology and other factors that influence the back-end of the fuel cycle. In addition, the Commission's charter specifies that this comprehensive review includes an evaluation of alternatives for storage, processing, and disposal of civilian and defense used nuclear fuel, high-level waste, and materials derived from nuclear activities, to be followed by advice and recommendations on a new plan to address these issues. I am confident the Commission will render useful advice and recommendations and fulfill its mission and responsibilities under its charter.

Question. How aggressive will the administration be in pursuing a permanent solution to the back end of the nuclear fuel cycle?

Answer. The establishment of the Commission speaks to the administration's commitment to a well-considered policy for managing used nuclear fuel and other as-

pects of the back end of the nuclear fuel cycle. The administration, armed with the final report from the Commission, is committed to working with Congress, States, and local governments to develop an effective strategy to meet the Government's obligation to dispose of our Nation's used nuclear material.

Question. What impact has the proposed closure of Yucca Mountain had on the clean-up plans, as far as the existing tripartite agreements and their associated milestones, for high level waste at Hanford, Idaho National Laboratory, and Savannah River?

Answer. The administration's decision not to proceed with the Yucca Mountain repository does not affect the Office of Environmental Management's (EM) plans to retrieve, treat, and store high-level wastes stored in tanks or to treat and store spent nuclear fuel. EM is focused on addressing environmental and health risks by placing high-level waste and spent nuclear fuel in safe and stable configurations. We intend to continue our tank waste projects as planned and in accordance with our compliance agreements as reflected in the fiscal year 2011 budget request.

Question. How will the administration pay for the awards such as the one recently announced for Energy Northwest?

Answer. All funding for settlements and damages awarded utilities in the ongoing litigation between the Government and the utilities for the Department's delay in accepting spent nuclear fuel from utilities by 1998 under the contracts is provided by the Judgment Fund in the U.S. Treasury.

Question. Regardless of what path we pursue in the future, some type of geologic repository will be needed for radioactive material stored at Hanford. The extensive scientific record that has been developed for Yucca Mountain would be extremely useful toward informing and providing lessons learned for any future repository program. What steps are you taking to ensure that this record will remain available for this purpose?

Answer. The Department is committed to preserving the scientific knowledge created through the Yucca Mountain Project. Records generated by the Office of Civilian Radioactive Waste Management (OCRWM) are managed and archived in accordance with the requirements of the Federal Records Act and related regulations. Paper and electronic media records that have been archived are stored at several National Archives and Records Administration Federal Records Centers (FRC) under FRC regulations, as well as in a DOE-leased facility in Las Vegas. In addition to records on paper and electronic media, images of records are electronically maintained in our Records Information System and DOE's documentary material relevant to the Yucca Mountain licensing proceeding is electronically available on the Licensing Support Network.

Question. Why did the administration move to withdraw the licensing application before NRC with prejudice rather than without prejudice?

Answer. As explained in its Motion to NRC's Atomic Safety and Licensing Board to Withdraw the pending license application with prejudice, the Department seeks this form of dismissal to provide finality in ending the Yucca Mountain project and to enable the Blue Ribbon Commission to focus on alternative methods of meeting the Federal Government's obligation to take high-level waste and spent nuclear fuel.

Question. DOE's loan guarantee program was authorized in 2005. Since that time only one final commitment has been made and five conditional commitments. Applicants have complained about the lack of transparency, the unwieldy application process (which differs depending on the sector), and DOE's complete risk-adversity (risk is impossible to avoid for small companies launching new technologies). DOE has identified multiple goals for the Loan Guarantee program—promoting innovation in the energy sector, helping to develop the capacity to confront the challenges that climate change poses, jumpstarting the construction of new nuclear reactors, ensuring the affordability of energy, and bolstering the competitiveness of the United States in global energy markets.

How is DOE prioritizing these ambitious goals and, as a practical matter, using them to select which projects to support?

Answer. Since issuing its first conditional commitment in March 2009, as of April 1, 2010, the Loan Guarantee Program has closed one loan guarantee and issued conditional commitments for seven additional projects. Projects supported by the Loan Guarantee Program reach conditional commitment and ultimately financial close based on each individual project's ability to fulfill the requirement outlined in the Energy Policy Act of 2005, its Final Rule and the relevant solicitation.

Question. DOE had planned to make a minimum of 21 conditional commitments for projects supported under the Recovery Act by the end of 2009. Instead, the Department made a total of 4 conditional commitments. While the Department has made a few additional conditional commitments since then, DOE is still far short

of its target. What explains the program's difficulty in adhering to its plan? What steps are being taken to address the sources of delay?

Answer. The Loan Guarantee program had substantial achievements in 2009 issuing four conditional loan guarantee commitments, one of which reached financial closing and issuance of the loan guarantee in September. The Program Specific Recovery Plan was based on best estimates at the time, developed very early in the planning process.

Question. What steps are being taken to ensure that the program will issue enough loan guarantees to use the funding authority provided under the Recovery Act before September 30, 2011, when funding authority expires?

Answer. The Loan Guarantee Program has a robust pipeline of projects eligible for both appropriated credit subsidy under the Recovery Act and able to meet the Recovery Act requirement to begin construction by September 30, 2011. In addition, the Loan Guarantee Program has two open solicitations and continues to receive applications from eligible projects.

Question. I understand the application review process differs by the type of technology. Applicants with nuclear power generation projects received a ranking from DOE before submitting the full application fee, while applicants with coal-based and other types of projects did not. Applicants with some types of technologies were allowed to brief DOE and explain their projects after submitting their applications while others were not, potentially denying them the opportunity to clear up misunderstandings about their projects. Why are applicants treated differently in these regards?

Answer. DOE strives to treat all applicants on an equitable basis. DOE understands that communication with applicants is critical as they seek to make business decisions. While the ultimate decision to issue a loan guarantee rests with the Department, DOE endeavors to provide early and thorough feedback to help all applicants make informed decisions regarding their application.

Question. Given how substantial the credit subsidy fees can be for applicants—an average of about 12 percent of the loan guarantee amount, and potentially more for some applicants—when in the application process are you giving applicants estimates? How long have they waited and how much money have they generally spent before receiving these estimates? How precise are these estimates?

Answer. Self-pay applicants can receive an estimated Credit Subsidy Cost, given as a range, early in the loan guarantee process. The Department has developed a process to provide estimates to applicants at key points in the application process. The intent of this process is to provide applicants with estimates of the likely cost so that they can use them for planning purposes. DOE produces early range estimates for self pay applicants under 1703.

The length of the due diligence process depends on the completeness, robustness and simplicity of the project. During this period, companies pay all associated legal and contractor fees, which are comparable to costs assumed for equivalent work in the private sector, and vary widely across technology sectors.

Question. About 90 percent of DOE's budget (over \$22 billion annually) is spent on contracts. DOE is the largest contracting agency in the Government after the Department of Defense. In 1990, GAO designated DOE contract administration and project management as "high risk" because of DOE's record of inadequate management and oversight of contractors, and failures to hold contractors accountable. The National Nuclear Security Administration and Environmental Management program, which account for the majority of DOE's contract budget, continue to experience significant problems.

DOE over the past several years has issued new guidance on performance-based contracting, including how to develop performance measures and incentives to motivate contractors to achieve results. What additional actions can the department take to hold its contractors accountable for meeting cost, schedule, and technical performance targets on projects?

Answer. In addition to performance measures set forth in individual contracts, the Department has undertaken a Root Cause Analysis (RCA) and is implementing fundamental systemic reforms that are being implemented under its Corrective Action Plan (CAP) to improve contract and project management. In addition to the long term improvement in the ability of the Department to meet its commitments on projects and contracts that are expected as a result of the RCA/CAP implementation, the Department is beginning to realize benefits as measured by the percentage of the total project cost (established at Critical Decision-2) that meet the performance metrics for capital asset projects and environmental cleanup projects. For capital asset line item projects, the percentage of projects that are within 110 percent of the Critical Decision-2 Total Project Cost has improved from the baseline level in 2007 of 70 percent to the current projected level of 100 percent. A similar trend

is noted for Environmental Management cleanup projects. For those projects baselined after the 2007 CAP, the projected percentage within 110 percent of the Critical Decision-2 Total Project Cost is 100 percent. While there are continuing challenges on the older projects, those that were baselined after 2007 exhibit greater schedule and cost discipline and are testimony to the continued improvements in major acquisition management within the Department. Specific activities undertaken as part of the RCA/CAP that will promote greater contractor accountability include:

- Improved project front-end planning and requirements definition by the Government will permit large projects to be segmented into smaller, better defined requirements that will support a shift to awarding more firm-fixed-price contracts. This reflects a shift of cost and performance risk to the contractor and is in alignment with President Obama's March 4, 2009, memo on Government Contracting.
- A new algorithm will be used by Federal project directors to analyze functional staffing requirements to ensure that major projects have adequate staffs to perform contract and project oversight.
- Additional training of Federal contract and project management workforce will ensure that the Government has the skill sets to perform the necessary project and contract oversight function.
- Better integration of the Government contract and project management functions in the acquisition planning process will ensure that contractor accountability is built into the contract terms and that conditions and enforcement mechanisms are in place.
- A new Project Assessment and Reporting System (PARS-II) will upload contractor schedule, cost, and performance data from the contractors systems into the Government system to provide consistent, transparent, and reliable data to all levels of DOE management.
- Expanded use of project peer reviews modeled on those in the Office of Science, which has successfully and consistently delivered projects on budget and schedule, is expected to improve overall project execution.
- Rigorous change control processes are in place and will mitigate cost growth on contracts and projects.
- Knowledge management will be improved by piloting a Project Management lessons learned program (ProjNet and the DOE Corporate Lessons Learned system) to collect and disseminate information and knowledge from past projects.

Question. Please describe how you systematically reward best performers, and use disincentives for poor performers?

Answer. DOE uses a variety of mechanisms to reward high quality performance and to hold contractors accountable for poor performance. Specific tools used are: effective use of past performance information; targeting award and other incentive fees to areas of concern; not using base fee on cost-plus-award-fee contracts; and paying no fee if contractors do not meet minimum levels of safety and security.

DOE recognizes contractors that deliver quality service by giving them past performance credit for good performance when making selections for future contracts. Past performance is a meaningful source selection factor in the award of negotiated acquisitions. DOE ensures its past performance information, which is reported electronically through its Contractor Performance Assessment Reporting System to the Past Performance Information Retrieval System, is accurate by its systems of internal procedures and control. These controls include DOE's Procurement Management Review, Balanced Scorecard Self Assessment, and Data Quality Review programs.

DOE considers a cost-plus-award-fee contract the appropriate contract type for DOE management and operating and other facility contracts. DOE does not generally use base fee on these contracts. All at-risk fee is dependent upon performance. DOE includes a conditional payment of fee clause in its management and operating and other facility contracts that reduces or entirely eliminates any fee the contractor would otherwise earn if the contractor has not met the safety and security requirements of the Department. This recoupment provision is an exceptionally strong incentive for contractors to perform critical functions well.

Question. How do you apply "lessons learned" across all contracts throughout all programs?

Answer. DOE has a robust program of continual guidance dissemination throughout the Department. Guidance is released through Policy Flashes, Acquisition Letters, new and updated Acquisition Guide Chapters, and Memorandums from the Senior Procurement Executive. This program includes sharing of lessons learned from recent procurements, from internal reviews, and from reviews conducted by outside groups such as the Department's Inspector General and the Government Accountability Office. Internal reviews include the Procurement Management Review

that documents finding and best practices within a knowledge management tool—a Web site that supports sharing of the lessons learned and best practices in the areas of acquisition, financial assistance, contractor pension/benefit management and property management.

In fiscal year 2008, the Department implemented a robust, comprehensive Procurement Management Review (PMR) Program. This program determines how effectively and efficiently the field area and site contracting organizations support their respective site mission requirements. It emphasizes the evaluation and compliance of critical contracting processes that are key. In addition, the program identifies noteworthy practices for export throughout the Department as well as deficiencies and obstacles to avoid. This knowledge management component of the program is facilitated by a headquarters core review team augmented by experienced field contracting personnel. Integration of experienced field staff with senior-level headquarters staff facilitates the transfusion of knowledge and experience among and between DOE's contracting activities via the sharing of lessons learned and best practices. The team incorporates peer reviews from other DOE procurement/financial assistance locations and helps spread practices throughout the Department.

Additionally, DOE created a position titled "Source Evaluation Board (SEB) Secretariat and Knowledge Manager (SKM)" specifically tasked with ensuring that lessons learned are recorded and shared across the Department. The SKM developed a "SEB lessons learned" template and all SEBs whose acquisition value exceeds \$25 million must document their lessons learned, which will be shared with all DOE procurement personnel. The lessons learned will be analyzed for trends, and areas where additional guidance, and/or policy may be needed. The SKM is also responsible for source selection training for SEBs, and the establishment of SEB reporting requirements and tracking the status of SEB activities against established milestones. A monthly SEB reporting requirement has been put in place, and both lessons learned and trends will be identified and shared with DOE procurement personnel.

Question. Last year we were told the Department faced a major crisis with funding for its contractor pension programs. I understand you have changed the way you are budgeting for pensions and the problem is less of a crisis.

Could you please explain in detail the changes in budgeting you have or intended to implement?

Answer. Due to the rising costs for the reimbursement of DOE Management and Operating (M&O) and major site management contractor employee defined benefit (DB) pension plan contributions, the Department has improved and strengthened its management and oversight of DB pension plans.

Specifically, in January the Department eliminated the requirement that every contractor employee DB pension plan be funded—and thus annual contributions budgeted—at the 80 percent level. The new reimbursement action requires the Department to reimburse contractors for the amounts required to fund their DB pension plans at a level equivalent to the minimum amount required by the Employment Retirement Income Security Act (ERISA) as amended by the Pension Protection Act (PPA), or higher if necessary for a contractor DB pension plan to have a funded status of at least 60 percent. Exceptions to the new reimbursement action will be reviewed on a case-by-case basis. Additionally, the Department has institutionalized an annual pension management plan review process with the specific objective of improving cost predictability and containing current and future costs. Each contractor is required to provide annual DB pension plan data and information to DOE for review in January of each year, so that DOE and the contractor can engage in fact-finding and discussions concerning the contractor's management approach and plans for its employee pension plans prior to the contractor's actuarial certification of the DB plan as required under the PPA. In an effort to improve planning and budgeting accuracy, contractor representatives also will discuss with DOE personnel, among other things, assumption elections, usage of credit balances, investment performance, and future year contribution estimates. Although actual contributions required by a contractor to fund a DB pension plan cannot be known prior to the start of the fiscal year, the Department has acquired modeling capabilities to estimate funding requirements and will work closely with the contractors to include accurate contribution estimates in future budget requests.

Question. What is the fiscal year 2010 pension liability and how does that compare to what the Department budgeted for that fiscal year? How will that change in fiscal year 2011?

Answer. Based on the information provided by the contractors during the annual pension management plan review, the Department anticipates fiscal year 2010 contributions by contractors to their DB pension plans of approximately \$650 million. Although contractor contributions are an indirect cost allocated in accordance with

the Cost Accounting Standards and are not broken out as line items in the fiscal year 2010 budget request, these contributions are covered by the fiscal year 2010 budget.

For fiscal year 2011, the Department currently estimates these contributions will be approximately \$1 billion, which is reflected in its fiscal year 2011 budget request. Actual contributions may change, as they are highly sensitive to underlying data, methods, assumptions, and capital market performance.

Question. What are the impacts of higher pension liability on the amount of work performed by the contractors?

Answer. The Department anticipates that contractor DB pension costs will continue to rise for the foreseeable future, some of which can be attributed to the current reimbursement action. The Department's recent efforts to improve and strengthen its management and oversight of the contractor's management of its DB pension plan costs were motivated by the need for greater predictability and better control over costs, as well as to ensure that contractor DB pension costs do not impact performance of mission work. As a result of the Department's revised DB pension cost reimbursement action, as well as improved market factors and improved transparency, the Department anticipates that additional resources may in fact become available in fiscal year 2010 and fiscal year 2011 for performance of mission activities. However, as the additional resources that may become available to DOE in the short-term in fiscal year 2010 and fiscal year 2011 is due to the current reimbursement action, in the long term, it may come at the expense of the need for additional reimbursements in the future.

That said, the Department anticipates facing rising contractor DB pension costs (due in part to the change in reimbursement action, and to the ever-increasing overall contractor employee compensation and benefits structure which includes pension benefits) for the foreseeable future and will continue to work closely with the contractor community to minimize any impact on mission work.

Question. How does the Department propose to resolve this situation?

Answer. The Department will continue to use the annual pension plan review process to assess this situation and will continue to engage with the contractors to mitigate any impacts, while continuing to meet contractual and statutory obligations to reimburse the costs of the contractor's DB pension plan.

Question. As one of the largest research agencies in the Federal Government, DOE spends billions of dollars each year on publicly funded research.

How is DOE using its labs to develop technologies to address the complex task of cleaning up decades of accumulated nuclear and hazardous wastes? Please provide some examples.

Answer. The Office of Environmental Management (EM) directs the national laboratories, particularly those with close ties to EM sites such as the Savannah River National Laboratory (SRNL), the Pacific Northwest National Laboratory (PNNL), and the Oak Ridge National Laboratory (ORNL) to develop environmental cleanup technologies. The focus of our technology needs is primarily on Tank Waste. The reason EM is tasking the labs to do this is because we need transformational technologies to vastly reduce the life cycle cost and schedule of the tank waste system. Examples of technologies under development at the national laboratories include advanced glass formulations for increased radioactive waste loadings, an advanced cold crucible induction melter, and advanced chemical cleaning technologies for radioactive waste tanks.

Question. To what extent are DOE sites using similar cleanup technologies, when possible, to help reduce development costs and increase cleanup efficiency?

Answer. The Technology Development and Deployment program seeks, wherever possible, to develop technologies that can be used at multiple sites. Current projects with multiple site application include:

- At-Tank/Near Tank Processing.*—Use of at- or near-tank equipment will allow solids and radionuclides to be removed, accelerating processing rates and allowing early operations at both Hanford and Savannah River Site (SRS).
- Glass Optimization.*—Improved glass formulations applicable to the Hanford WTP and the SRS DWPF will allow a higher waste loading and reduced life cycle costs.
- Alternative Treatment/Disposal Processes.*—A Fluidized Bed Steam Reforming (FBSR) technology is being developed that could be applied to waste streams at both Hanford and SRS.
- Mixing/Blending Systems Optimization.*—The use of lab and pilot scale data to verify and calibrate Computational Fluid Dynamic (CFD) or other types of numerical models will be used to improve the modeling of Hanford and SRS tank waste mixing and processing.

—*Integrated Systems Analysis.*—To analyze alternatives to current radioactive tank waste disposal technologies, EM has developed a limited life-cycle model applicable to both the Hanford and SRS tank wastes. The next steps will be for site-specific process characteristics from current systems plans to be loaded into the model and validation runs to be completed.

Question. Why are three sites with tank waste—Savannah River, Hanford, and Idaho Falls—all using different technologies to treat their tank waste?

Answer. The three sites do use different technologies due to the composition of the radioactive tank waste. Hanford produced large volumes of about 20 different types of waste. SRS, built a decade after Hanford, produced two main types of waste using the plutonium-uranium extraction (PUREX) process and the H-modified PUREX process.

Another factor contributing to the use of different technologies are the waste tanks themselves. The Hanford and SRS tanks are constructed of carbon steel and cannot contain acid. Therefore the wastes were neutralized with caustic to produce an alkaline waste. The Idaho tanks were constructed with stainless steel and therefore the wastes were not neutralized with caustic. As the Idaho radioactive wastes were acidic, a different disposition approach, calcination, was appropriate.

Question. Aside from the Recovery Act, the Department has unobligated balances in excess of \$1 billion. What is DOE's policy regarding maintaining carryover balances? What is the rationale for such large unobligated balances? To what extent can these balances be used to offset the fiscal year 2011 budget request? Why should the subcommittee not require that all salaries and expenses appropriations be single-year, as they are in most other agencies?

Answer. It is my intention to use departmental resources wisely. A key component of this effort is to use funds as intended by Congress and in as efficient and timely a manner as possible.

Given the importance of minimizing unobligated balances, progress toward fully obligating each account is one of the key metrics evaluated during quarterly execution reviews. There are some instances where it is not prudent to obligate fully and therefore, establishing a blanket goal across the Department is unwise. Some examples of appropriate delays in obligations include: late passage of or anticipated delay in enacting annual appropriations; complex or specialized efforts for which it is difficult to find contractors; and programs that accumulate balances over several years before obligating—the Clean Coal Power Initiative, for example.

When there are excess balances the Department's Chief Financial Officer and the programs work to address any impediments to carrying out approved activities. Where impediments to carrying out activities are identified, mitigation efforts are put in place. Where these are unsuccessful, or where the funds are no longer needed, unobligated balances may be identified as sources to pay for new activities. When this is possible, we propose this to Congress.

In general, the Department has a good record of obligating funds. Over the last 5 years, the Department has obligated an average of 95 percent of available funding by the end of each year. The small amount of unobligated balances is useful to help manage activities during Continuing Resolutions. I am confident the Department does not abuse the no-year availability of this funding and urge you to leave it no-year money.

Question. With the NP2010 ending this year, you have reorganized the Nuclear Energy budget.

How would you characterize the changes you have made in the Office of Nuclear Energy in terms of projects that focus on applied science versus those that focus on basic science?

Answer. The research budget of the Office of Nuclear Energy (NE) is directed toward attaining breakthroughs that would specifically support the advancement of nuclear power technologies, which we generally consider applied research. However, NE is also engaged with other offices, such as the Office of Science, in coordinating research that is at a more basic level. For example, NE is funding materials research, where the results could be used by the nuclear industry for future fuel cycle facilities, but also potentially by multiple industries.

Question. What would you highlight in the Office of Nuclear Energy as your most important programs? How important is sustaining the current fleet of reactors, potentially for operation beyond 60 years, in terms of reducing greenhouse gas emissions?

Answer. NE has established a broad research portfolio to support nuclear power in multiple ways. All of the programs are important to nuclear energy's future, though certainly different programs are more important with respect to specific objectives: extending the lifetime of the current fleet, enabling new builds, developing a sustainable fuel cycle, etc. Safely continuing operation of the current fleet of reac-

tors, potentially beyond 60 years, helps avoid greenhouse gas emissions and as such would have an effect on the Nation's carbon emissions profile.

Question. What is DOE doing to research the potential to keep these plants on the grid? Are you aware of any Energy Information Agency forecasting that include the current 104 reactors on grid through 2040?

Answer. The Light Water Reactor Sustainability program is conducting research to investigate the possibility of extending the operating lifetime of current plants beyond 60 years. The program plans to look at a variety of issues, including materials aging and degradation, safety margin characterization, efficiency improvements, instrumentation and controls, and advanced fuels for light water reactors. The long-term EIA projections go out to 2035, so we are not aware of any forecasting that includes the current 104 reactors remaining on grid through 2040.

Question. For the first time, DOE is proposing to work cooperatively with industry on small modular reactors. These are reactors that can be built in U.S. factories and shipped to plant sites. Can you explain why the Department is proposing this program at this time?

Answer. DOE has engaged in discussion with small modular reactor (SMR) vendors, utilities, the Nuclear Regulatory Commission (NRC), Department of Defense, and other possible end-users of SMR energy. Through these discussions, we became convinced that there is potential in the small modular reactor concept. We will hold a workshop to gain further information about potential technical needs and industry challenges and from there the administration evaluate potential priorities in the context of the appropriate Federal role to identify the most cost effective, efficient, and appropriate mechanisms to support further development.

Question. The budget increases the Fuel Cycle Research and Development Account by \$65 million. Could you please tell the Committee what activities you are planning for 2011?

Answer. The Fuel Cycle Research and Development program is continuing the shift begun in fiscal year 2010 from a near-term technology development and deployment program to a long-term, results-oriented, science-based R&D program. We intend to expand the scope of the program in two areas in fiscal year 2011, which accounts for the increased funding request: (1) Used Nuclear Fuel Disposition R&D and (2) Modified Open Cycle R&D.

The Used Nuclear Fuel Disposition R&D technical area is being increased from \$9 million to \$45 million to continue and expand R&D related to storage, transportation, and disposal options for used nuclear fuel and high-level waste. Much of the work in these areas was previously within the scope of the Office of Civilian Radioactive Waste Management. In addition, as necessary, these funds will also be used to respond to technical inquiries from the Blue Ribbon Commission.

The Modified Open Cycle R&D program has been established as a new technical area in the program in fiscal year 2011. It is important to examine the full range of fuel cycle strategies in order to provide future decisionmakers with adequate information to make decisions on how best to manage used nuclear fuel. The modified open fuel cycle has not been studied as thoroughly as the once-through fuel cycle and full recycle fuel cycle options. The modified open fuel cycle is a strategy that is "modified" in that some limited separations and fuel processing technologies are applied to the used light water reactor fuel to create fuels that enable the extraction of potentially much more energy from the same mass of material and accomplish waste management and nonproliferation goals. There are many technical challenges and unanswered questions associated with this option. The program will investigate priority issues related to fuel forms, reactors, and fuel/waste management approaches.

Question. Could you please describe how you fund, monitor, and enforce compliance issues within the Energy Star Program?

Answer. For fiscal year 2010, EERE is using American Reinvestment and Recovery Act (Recovery Act) funds for verification testing of ENERGY STAR® products in support of the Recovery Act-funded Appliance Rebate Program (SEEARP). If models fail to meet ENERGY STAR® program requirements, States are being notified and, at their discretion, can remove those models from their rebate eligibility lists. Also, if a model does not meet requirements, EERE notifies the Environmental Protection Agency who will take ENERGY STAR® enforcement action with the manufacturer and, in most cases, would disqualify the product from the program's qualified product list. In the event testing shows the product also does not meet minimum energy efficiency standards, the Department of Energy will begin enforcement actions to insure the product is not sold illegally in the market. The 2009 MOU was written with the intent EPA will handle matters pertaining to ENERGY STAR® enforcement while DOE would continue to handle any minimum standards violations.

In fiscal year 2011, the Department will expand the categories of ENERGY STAR® products to be tested, along with supporting EPA's managed market-based verification program. DOE continues to request appropriated funds for work supported by DOE.

Question. How many staff does the Department employ for ENERGY STAR® compliance, monitoring, and enforcement, and are there any specific plans to increase this capacity in fiscal year 2011?

Answer. In fiscal year 2010, the Department is using 2.0 Full Time Equivalent (FTE) for ENERGY STAR® verification testing, compliance and monitoring, and program transition functions. Based on DOE verification testing, EPA is handling the enforcement portion of the program. In the event testing shows the product also does not meet minimum energy efficiency standards, the Department of Energy will begin enforcement actions to insure the product is not sold illegally in the market. The 2009 MOU was written with the intent EPA will handle matters pertaining to ENERGY STAR® enforcement while DOE would continue to handle any minimum standards violations. In addition, 1.0 FTE has been used to support the State Energy Efficiency Appliance Rebate Program. In fiscal year 2011, the Department anticipates increasing staff support to 3.0 FTE in order to increase its testing, compliance and monitoring functions, to begin developing/revising test procedures for the program and to provide technical analyses for EPA's program requirements' development and revision. The State rebate program will be winding down and only require 0.25 FTE in fiscal year 2011.

Question. DOE staff has briefed congressional staff on transferring the promotion of several ENERGY STAR® products to the EPA, such as windows, refrigerators, dishwashers and compact fluorescent lights, within the fiscal year 2011 budget request. However, the budget still references these products as part of the DOE.

Is it the administration's intent to transfer the promotion of ENERGY STAR® labels for these appliances from the Energy Department to the EPA? Please describe the funding, rationale, and implementation schedule anticipated for this transfer, if it is undertaken.

Could you please describe how the DOE intends to release more than 20 final appliance rules by June 30, 2011 and whether the amount of funding requested in the budget is adequate to ensure that these final rules are issued by the deadline.

Could you please break-down funding for the various components of the ENERGY STAR® Program for fiscal year 2011?

Answer. In order to improve the efficiency of the ENERGY STAR® Program based on the capabilities of the two agencies, the agencies agreed to new roles managing this program. The Environmental Protection Agency will now take on one set of responsibilities across all ENERGY STAR® product categories. This includes both program requirements establishment, or revision, and the promotion of these products. DOE will take on the roles of testing procedure development and product testing where appropriate. This transition is currently taking place and will be completed during fiscal year 2010. In fiscal year 2011, the DOE proposes to fund the development or revision of test procedures for ENERGY STAR®, testing and verification of products, and providing technical support to EPA as described in the September 30, 2009 Memorandum of Understanding signed by the two agencies. For fiscal year 2011, the Department requested \$10 million for ENERGY STAR® Program activities of which \$5 million will be focused on test procedure development and revision, \$4 million for testing and verification, and \$1 million for analyses and technical support to EPA.

DOE established detailed schedules for development and issuance of all rulemakings governed by the Consent Decree or statutory deadlines, and is putting in place the staff, internal processes and other resources necessary to ensure that these deadlines are achieved. For fiscal year 2010, the Department requested and received \$35 million to support implementation of the appliance standards programs. For fiscal year 2011, the Department requests \$40 million for these efforts. This funding is adequate to enable DOE to meet the established deadlines and to undertake new efforts to improve compliance and enforcement. part of that money will go to the enforcement of minimum appliance standards that DOE promulgates. While we will report and share data with ENERGY STAR®, the Appliance Standards program is not responsible for enforcing ENERGY STAR® efficiency levels.

Question. The Next Generation Lighting Initiative will provide significant energy savings through more efficient lighting. Given the DOE's management in the development and understanding of this new technology, could you please describe how DOE will oversee this initiative, as well as other activities related to the initiative?

Answer. The Department of Energy (DOE) has taken a comprehensive approach to overseeing the Next Generation Lighting Initiative, a part of the Energy Policy Act of 2005. This approach covers a balance of engineering and science in R&D, and

market-based programs. Elements include Core Technology (applied research), Product Development, Manufacturing R&D, Commercialization Support, and SSL Partnership (with the Next Generation Lighting Industry Alliance). Over 70 active R&D projects address the key science and engineering challenges. Workshops are held each year to keep the program focused on the priority R&D challenges. All R&D projects are competitively-awarded and cost-shared. A collection of Commercialization Support programs, such as CALiPER, GATEWAY and Standards development, provide information and direction to market players, and link back into the R&D program for further improvements. The commercialization support programs have over 150 partners involved. The program has produced performance achievements in efficacy each year, moving the market/technology upward in efficiency.

QUESTIONS SUBMITTED BY SENATOR THAD COCHRAN

Question. Mr. Secretary, I have been waiting for a year for a report on the Strategic Petroleum Reserve, specifically on the Mississippi site for expansion, and I have yet to receive any word from the Department. Why? I brought this up at last year's hearing because funding for the project remained contingent on the issuance of the report. What is the status?

Answer. The Omnibus Appropriations Act, 2009 (Public Law 111-8), enacted March 11, 2009, requires “. . . That none of the funds provided for the new site expansion activities may be obligated or expended for authorized activities until the Secretary of Energy has submitted a Report to the Congress on the effects of expansion of the Reserve on the domestic petroleum market.” DOE has prepared the report and it is under review.

Question. What is the status of DOE-funded nuclear energy workforce training and education programs? Are we going to have enough people trained to work at nuclear plants and at DOE facilities in the next 10 years?

Answer. In 2011 the Department will implement RE-ENERGYSE (Regaining our Energy Science and Engineering Edge), which will enable education and inspire students to pursue careers in science, engineering, and entrepreneurship related to clean energy. This new effort will provide important support to bolster nuclear engineering and science programs at U.S. universities and will be an effective and appropriate means of providing educational support.

The existing program within NE that provides scholarships and fellowships will be terminated at the end of fiscal year 2010. This existing program—the Integrated University Program (IUP) will provide \$5 million to fund 88 scholarships and 30 fellowships to be awarded in the summer of 2010. In fiscal year 2011, NE will fund these activities at the same level through the RE-ENERGYSE initiative.

Question. I am concerned about the utility ratepayers of Mississippi who have contributed to the nuclear waste fund. What is the justification for continuing to collect these funds from Mississippi when DOE has now decided to terminate the national repository program? Mr. Secretary, I believe it would make better public policy to suspend collections until Congress determines future funding needs and funding methods when it enacts a new program based on the Blue Ribbon Commission's recommendations. I would like to work with your staff on this issue.

Answer. The administration is fully committed to meeting the responsibilities for the safe storage and management of spent nuclear fuel and nuclear waste. The fees collected from the nuclear industry are legally mandated and reviewed every year and will pay the cost of the long-term disposition of the materials. The Blue Ribbon Commission has been charged with making recommendations on these issues, including how the fees should be handled moving forward.

Question. On the subject of terminating the national repository program, Mr. Secretary, what steps are you taking to appropriately retain the data gained from the billions of dollars invested in research on the repository?

Answer. The Department is committed to preserving the scientific knowledge developed through the Yucca Mountain project. Records generated by the OCRWM program in the course of activities at Yucca Mountain are managed and archived in accordance with the requirements of the Federal Records Act and related regulations. Paper and electronic media records that have been archived are stored at several National Archives and Records Administration Federal Records Centers (FRC) under FRC regulations, as well as in a DOE-leased facility in Las Vegas. In addition to records on paper and electronic media, images of records are electronically maintained in our Records Information System and the DOE's documentary material is electronically available to the public on the Licensing Support Network.

Question. Mr. Secretary, in speaking with my colleagues today, you mentioned salt domes as possible nuclear waste storage sites. Could you please tell me which

salt domes the Department is looking at for this purpose, and could you give more information about this idea?

Answer. The Department is not currently studying any specific site as a replacement for Yucca Mountain, nor is DOE considering any specific salt dome as a possible nuclear waste storage site.

Question. I understand the DOE is proposing \$3 million for international nuclear energy cooperation. Can you please explain this program to the subcommittee?

Answer. The INEC budget request of \$3 million will be used to provide advice and support to Office of Nuclear Energy (NE) programs in implementing international cooperative research and development (R&D) activities. The R&D is the responsibility of other NE programs, not INEC. INEC would also work with other NE programs, other Department offices, and other agencies on implementing new agreements having civilian nuclear energy aspects. Some of the funding will focus on bilateral and multilateral agreements and implementing arrangements to carry out cooperative technical R&D-based activities with countries including Argentina, Brazil, China, India, Kazakhstan, and the Republic of South Africa and possibly other countries as U.S. international policy is developed. Typically, before international collaborative work is initiated, DOE works closely with other domestic agencies, such as the Department of State, to convene experts-level meetings with foreign counterparts to discuss the policy, technical and legal parameters of cooperation. Once these are established, assessments of capabilities and technology requirements are typically conducted to identify the most mutually beneficial areas of cooperation. It is in these initial steps of laying the foundation for cooperation that much of the INEC budget request would be applied.

NE collaborates on a bilateral and multilateral basis with a wide array of countries including Japan, Russia, the Republic of Korea, France, Ukraine, and others, but the implementing arrangements for cooperation with these countries are already in place. In such cases, policy and technical support from NE's Office of International Nuclear Energy Policy is less intensive.

Examples of potential areas of international civilian nuclear energy collaboration that NE programs would engage in include, but are not limited to: research, development, testing, and evaluation of advanced nuclear reactor systems; advanced nuclear fuel and material irradiation and use of experimental facilities; technical expert exchange programs to share best practices at civilian nuclear power plants; small and medium-sized reactor development; reactor life sustainability; probabilistic safety assessments and risk analyses for operating reactors; improvements in reactor fuel burn-up efficiencies; and, together with other global partners, the exploration of ways to enhance the international framework for civil nuclear cooperation so that countries can access nuclear power for peaceful purposes while minimizing the risks of proliferation.

Question. Congress appropriated funds in the Recovery Act specifically for pilot and demonstration scale biofuels projects. In my home State of Mississippi, we have a company that is ready to start building a biorefinery capable of producing close to 18 million gallons of biofuel per year. This project is shovel-ready and will create green jobs in our State. It is our understanding that several of these projects are currently being evaluated by the Loan Guarantee Program. Can you give us a sense of what the timing is on issuing loan guarantees for biofuels projects?

Answer. The Departments' Biomass Program and Loan Programs work in conjunction to support the development of cellulosic ethanol from research and development, demonstration and piloting, and finally, full commercial scale-up. In 2009, the Department's Biomass Program committed over \$610 million in Recovery Act funds to increase investments in integrated biorefineries at the pilot and demonstration scale as well as for biofuels infrastructure activities. This Recovery Act funding is in addition to the over half of a billion dollars of DOE investments in integrated biorefinery projects from fiscal years 2007 through 2010. The purpose of DOE's investments in pilot, demonstration, and small commercial scale biorefineries is to generate techno-economic data from their operations in order to validate full commercial-scale readiness. Once a technology has been proven in the pilot and demonstration phase, it may be eligible for a DOE loan guarantee to support the project's full commercial scale up. Under the Recovery Act funding for the Loan Guarantee Program, all biofuel projects must represent advanced technologies.

The Loan Guarantee Program is working closely with the Renewable Fuels Association to facilitate dialogue with biofuels companies. As a result of this collaboration, on April 7, 2010, the Loan Guarantee Program held a roundtable discussion with members of the biomass community to discuss issues that the industry faces in obtaining loan guarantees.

Question. President Obama reiterated his support for biofuel development in May 2009 and again on February 3 of this year. Are there any issues that are holding up approval of these biofuels projects? Are these projects a priority for DOE?

Answer. Bioproduct projects present some unique challenges. Many are capital intensive, provide a commodity product, and have no off-take agreements. The Loan Guarantee Program is working closely with the Renewable Fuels Association to facilitate dialogue with the biofuels companies. As a result of this collaboration, on April 7, 2010, the Loan Guarantee Program held a roundtable discussion with members of the biomass community to discuss issues that the industry faces in obtaining loan guarantees.

Question. In the 2007 energy bill we set a renewable fuels standard that requires 36 billion gallons of renewable fuel by 2022. How does DOE envision achieving this goal?

Answer. Achieving the Renewable Fuel Standard (RFS) requires the creation of a new industry that will produce a high volume of liquid transportation fuels that are cost competitive with petroleum fuels. Several factors have led to unanticipated reductions in the near-term pace of growth of the cellulosic biofuels industry, including the economic recession, oil price drops, and the reduction of credit available to investors who wish to invest in these technologies.

The Department of Energy (DOE) believes the United States must accelerate renewable fuels production to meet the RFS requirement of 36 billion gallons. The key to such a large-scale transition and meeting the RFS targets is to make cellulosic biofuels and other advanced biofuels cost competitive with corn-based ethanol and gasoline. That is why the DOE is performing fundamental research on next-generation bioenergy crops to provide the transformational breakthroughs that can contribute toward more efficient cellulosic ethanol production and development of other advanced biofuels. Additionally, DOE has a robust applied R&D and deployment program focused on driving down the costs of key components of producing advanced biofuels through both biochemical and thermochemical pathways. DOE also works to establish a sufficient and sustainable supply of bioenergy feedstocks and cost-effective systems for harvest and transport of feedstocks to biorefineries. Moreover, DOE is cost sharing a total of 27 biorefinery projects with industrial partners at the pilot, demonstration, and commercial scales, all of which focus on cellulosic or other non-food feedstocks to produce advanced biofuels in support of the RFS. DOE has developed public-private partnerships to reduce the risk of deploying first-of-a-kind cellulosic biorefineries to produce biofuels. The Energy Information Agency's Annual Energy Outlook 2010's reference case scenario projects that biofuels will account for most of the projected growth in liquid fuels consumption, reaching 26 billion gallons in 2022.¹

QUESTIONS SUBMITTED BY SENATOR GEORGE V. VOINOVICH

Question. The DOE Office of Nuclear Energy budget lists a new program for Reactor Concepts R&D in the amount of \$195 million. The Reactor Concepts R&D request carries on activities for a variety of previously appropriated activities, and includes a new program for Small Modular Reactors (SMRs) in the amount of \$38.9 million. Given recent strong commercial interest in the new reactor technologies funded by Reactor Concepts R&D, there is a need for adequate, dedicated funding for cost-sharing of the development of Small Modular Reactors by public/private partnerships to reduce financial uncertainty. The cost-sharing amount needed to support two small light-water-reactor designs has been estimated to be not less than \$35 million. This means that additional funds of about \$20 million are needed to support research for the SMRs. How is DOE ensuring that adequate cost-sharing funds and research funds are available for small light water modular reactors, and how is DOE ensuring that this cost-sharing information is publically known and available so that the private sector will have certainty in investing?

Answer. DOE has engaged in discussion with small modular reactor (SMR) vendors, utilities, the Nuclear Regulatory Commission (NRC), Department of Defense, and other possible end-users of SMR energy. Through these discussions, we became convinced that there is potential in the small modular reactor concept and have requested an appropriate amount of funding for SMR activities in the fiscal year 2011 budget. DOE will hold a workshop on SMRs in June 2010 to obtain information from vendors and suppliers, potential utility customers, national laboratories, universities, NRC, and interested stakeholders on priorities, activities and projects that

¹“EIA’s Long-Term Biofuels Outlook” EIA Presentation, 2010 Energy Conference, April 6, 2010 <http://www.eia.doe.gov/conference/2010/session2/gross.pdf>.

will inform our strategy. As noted in the budget, the administration will evaluate potential priorities in the context of the appropriate Federal role to identify the most cost-effective, efficient, and appropriate mechanisms to support further development. Any cost-sharing within the SMR program will be based on a competitive award process. We believe that both the DOE cost-share award process and NRC licensing process will help ensure that information gained through this program is made available to others to the greatest degree possible.

Question. The Clean Energy Park concept builds upon a DOE initiative to re-industrialize and transform former weapons complex sites into clean energy production centers. Through this approach, the local communities, States and regions that supported our Nation's defense mission for so long will benefit from the sustainable economic development opportunities of such large-scale commercial projects. As you are aware the Southern Ohio Clean Energy Park Alliance (SOCEPA) has held several meetings with officials in the Department over the past year regarding their shared interest with the Department in creating a Clean Energy Park initiative. This project would provide a unique opportunity for the Department to support many of the missions of its own internal offices in a cross-cutting nature, including carbon footprint reduction of the Nation's electric generation, asset reutilization and re-industrialization of former weapons complex sites, and support for deployment of electric generation that relies on low carbon and zero carbon technologies.

While the Department has voiced support for the concept, it is not clear how DOE is progressing in developing it. Examples of program developments could be formation of a program office within DOE including funding, identification and policies for coordination of issues across departments, and policies for organizations to use in developing sites and local support.

What is the Department doing to develop this concept?

Answer. In early 2009, representatives from the Office of Environmental Management (EM) discussed EM's "footprint reduction" initiatives for several Department of Energy (DOE) sites and the potential future use of land with regional stakeholders and local communities. However, the administration is focusing Environmental Management activities on its core cleanup mission, which continue to experience project management, technical, and regulatory challenges. Completing remediation of these sites on cost and schedule is the most effective way for the Department to support local officials, businesses, and others in these communities with their economic development plans.

Question. Is there any legislation that is needed?

Answer. The administration is not proposing or requesting any legislation.

Question. I am concerned that the regulatory and technical infrastructure, as well as the industrial base in manufacturing and fabrication technologies may not be ready to support the development of new and innovative reactors. This includes cross-cutting technologies for identification, development, demonstration and qualification of advanced manufacturing and construction techniques, modern codes and standards, supply chain development, and qualification, and training of people. How is DOE ensuring that adequate resources have been set aside to ensure that this infrastructure continues to develop and will be in place in a timely manner?

Answer. In general the private sector is expected to respond and accommodate the manufacturing and construction needs as industry decides to move forward and build new reactors. The Department's recent loan guarantee announcement has sent a strong signal to the private sector that nuclear needs to be part of our energy mix, and we expect the private sector to continue to make adjustments in order to build new reactors. We are also working, through programs such as RE-ENERGYSE, to train the next generation of nuclear engineers and scientists. And, the Department will participate in codes and standards activities as appropriate.

Question. I would like to commend you for DOE's recent announcement to provide a \$45 million cost share for further development and demonstration of the American Centrifuge Plant (ACP) in Piketon, Ohio. Your decision is a strong commitment by the Department to this important technology.

However, I am concerned about your response to Senator Bennett's question during the Energy and Water hearing regarding when DOE will close on the loan guarantee application by Areva for their proposed enrichment facility. The premise in your response "We are closing on it as quickly as possible" implies that Areva will receive a loan guarantee without United States Enrichment Corporation (USEC) having the opportunity to update their previous application for the loan guarantee.

I urge you to ensure that the USEC technology is not precluded in the consideration for a loan guarantee. As you know, USEC has been working to address the technical and financial concerns that were raised last summer by the DOE loan guarantee program. USEC has indicated that they have made significant technical progress in demonstrating the reliability and the high quality manufacturability of

the centrifuge machines to support certainty in the cost and performance needed for a commercial plant. DOE's commitment to providing \$45 million in demonstration and development funding has enhanced USEC's ability to demonstrate the technical requirements needed for the loan guarantee program. Financially, USEC has disclosed that they are exploring strategic alternatives to raise additional capital for the American Centrifuge project, and that assurances for a clear path forward for a loan guarantee would be important to their ability to obtain third-party financing.

From a timing standpoint, USEC appears to be nearing the final stages of meeting their obligations for a loan guarantee. The ACP is "shovel ready" and has the potential to quickly create about 8,000 good American jobs in numerous States. The Areva project is not as mature and will take several years before we would see this kind of job growth, assuming the project is successful. As we have discussed before, funding of this centrifuge technology is essential to U.S. job growth and the future of clean, abundant energy in the United States.

If DOE is, in fact, nearing a decision on the Areva technology, I urge you as strongly as possible to also provide a clear path forward for ensuring loan guarantee funding is also available for the American Centrifuge Plant. A failure to do so, I fear, would lead to further job loss and ultimately jeopardizing the success of this project so crucial to our energy and national security needs. I request that you support USEC's commitment to fulfilling the requirements for a loan guarantee and do not shut the door on this vital project. Specifically, will DOE have additional loan guarantee funds available for both the Areva and the USEC ACP, and what legislative authority and appropriations does DOE need to support this?

Answer. In response to a June 30, 2008 solicitation for Federal loan guarantees supporting Front End Nuclear Facilities, the Department received two applications for Federal loan guarantees to support two different front-end nuclear facility projects. In total, the two applicants requested DOE to provide loan guarantees in excess of the \$2 billion available authority.

On March 25, 2010, the Department sent a reprogramming request to the appropriate Congressional Committees notifying them of DOE's intention to use up to \$2 billion of the fiscal year 2007 Authority, made available to the Department under the Revised Continuing Appropriations Resolution, 2007, for front end nuclear fuel facilities. The balance of the fiscal year 2007 Authority will remain available for loan guarantees for eligible project applicants under the 2006 Solicitation for fossil, energy efficiency and renewable energy systems projects that employ innovative technologies.

SUBCOMMITTEE RECESS

Senator TESTER. I wish you all the best, Secretary Chu.

And this subcommittee hearing is recessed.

[Whereupon, at 12 noon, Thursday, March 4, the subcommittee was recessed, to reconvene subject to the call of the Chair.]