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BUDGET FOR FISCAL YEAR 2009 FOR THE DEPARTMENT OF ENERGY

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

SECOND SESSION

TO

RECEIVE TESTIMONY ON THE U.S. DEPARTMENT OF ENERGY'S BUDGET FOR FISCAL YEAR 2009

FEBRUARY 6, 2008

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BUDGET FOR FISCAL YEAR 2009 FOR THE DEPARTMENT OF ENERGY

WEDNESDAY, FEBRUARY 6, 2008

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

The committee met, pursuant to notice, at 10:04 a.m. in room SD–366, Dirksen Senate Office Building, Hon. Jeff Bingaman, chairman, presiding.

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

The CHAIRMAN. Ok. Why don't we get started here? Today's hearing will examine the President's budget proposal for the Department of Energy for fiscal year 2009.

We welcome our witness Secretary Bodman to the committee this morning. The President's energy budget proposal has some very meritorious aspects as they relate to the Department of Energy budget and some problematic ones, at least in my view. On the positive side the overall budget of the Department is increasing. This is in a year which other Federal agencies, for example the Forest Service, are slated for steep and damaging cuts.

Within the Department there are a number of well run programs that are proposed for strong increases. All of us here, I believe, would generally support the commitment that the budget shows to basic research in the Office of Science. We need that strong commitment to keep our Nation globally competitive in science and engineering as Congress called for in the America Competes Act and that the President signed last year.

These programs did not fare well in the omnibus spending bill that Congress passed at the end of the last Congress, last session. I very much appreciate the impact analysis of these problems that you sent to my office earlier this week. We have an important job to do to try to enumerate these problems in this fiscal year.

The budget proposal also gives strong support for biofuels, advanced hybrid batteries, solar and geothermal energy to diversify our energy portfolio. In the case of geothermal energy, I'm pleased that the Administration listened to and worked with Congress to define a new profile for that program in the recent energy bill and came through with a good funding proposal in this budget request.

That said, the new budget proposal has several specific proposals for cuts that are difficult to square with sound energy policy. Let me mention three that I'll return to in the question and answer period. First, I'm concerned about the proposed 27 percent decline

from the current funding levels for the Office of Energy Efficiency and Renewable Energy. I'd hoped that the Department would have taken the strong support by the Congress for this office to put forward an equally strong request. That does not appear to be the case.

A big part of the budget decline in this office is due to the decision to eliminate the Department of Energy's Weatherization Assistance Program that looks to me to be wrong headed. The Weatherization Assistance Program is a valuable and successful program. The types of activities it funds are viewed by outside experts as being some of the most cost effective ways we have of improving national energy efficiency.

Cutting funding for this important program is particularly hard to understand when heating oil prices have almost doubled since 2003. Propane is up 75 percent. Natural gas is up by more than 50 percent and electricity by more than 21 percent.

Second I'm concerned with the cost of expanding the strategic petroleum reserve. I think that the proposal there outweighs the benefits. In this budget the Administration proposes to spend 584 million, to buy millions of barrels of crude oil and take them off the market. It seems odd to be spending a half billion dollars of taxpayer dollars on an activity that will help keep oil prices high.

When Congress passed the Energy Policy Act of 2005 we included specific language that any filling of the SPR avoid excessive cost and minimize expense. I can't understand why the Administration would continue to take crude oil off the market when according to the Department of Energy's Energy Information Administration, crude oil prices over the next few years will be lower than they are today.

Finally I'd like to hear more on the Department's rationale for changing the programmatic direction on Future Gen. We need to have a clear path forward for advanced coal technologies and carbon capture and storage associated with such plants. While the Future Gen project may certainly have its flaws, the question is whether we have something better that is proposed to take its place.

Again Secretary, thanks for being here. Let me call on Senator Domenici for any comments he has.

[The prepared statement of Senator Salazar follows:]

PREPARED STATEMENT OF HON. KEN SALAZAR, U.S. SENATOR FROM COLORADO

Mr. Chairman, thank you for holding this hearing today on the Department of Energy's fiscal year 2009 budget. And, thank you Mr. Secretary for coming today. It is always a pleasure to see you and have the opportunity to discuss the absolutely essential work that your Department undertakes.

Today I would like to highlight a few issues that stand out as I examine the Department's proposed budget for the next fiscal year. Secretary Bodman, you have been quite supportive of the National Renewable Energy Laboratory in Golden, Colorado, as well as Energy Efficiency and Renewable Energy programs in general.

Once again, however, I see a lack of strong leadership by this Administration for supporting EERE programs, and in particular for NREL. I believe our strategic energy and environmental security needs demand a robust expansion of EERE programs. However, this year's budget request shows a 27% decrease in spending for EERE programs over FY2008 spending levels. Even accounting the unwise proposed cancellation of the Weatherization Assistance program and the planned ramp-down of hydrogen technology spending, EERE faces a cut.

While I applaud the proposed increase in biomass and biorefinery R&D funding, the proposed cut in solar energy research simply does not make sense. Juxtaposing the top-line EERE number to those for nuclear and fossil energy programs, I am left with no other conclusion than that the Administration does not believe developing renewable energy sources should be a major national priority.

Toward that end, I am extremely concerned that NREL is essentially flat-funded. After major recent investments in new laboratory infrastructure, including the new Science and Technology Facility and the planned Energy Systems Integration Facility, it is disappointing that the Administration continually fails to acknowledge NREL's growth capacity from a programmatic standpoint. Instead of maintaining the status quo, we should be working together to put NREL on a path to double its budget—not because this is some arbitrary goal, but because NREL has the capacity to grow and provide even more new insights into our most pressing energy needs.

Like several of my colleagues I am also disturbed by the proposed cancellation of EERE's Weatherization Assistance program: Thousands of low-income families have benefited from this program over the years. Many such families live in older rental properties; I imagine it is not uncommon for landlords to be disinterested in making a major investment in new windows or insulation for example when they are not the ones paying the utility bills.

At a time when energy costs are soaring, it is unconscionable to consider pulling the rug out from under the families that need help most. Around 4,000 homes in Colorado are weatherized under the program every year, and I intend to fight for this program's survival. I am aware that DOE claims the program is outside EERE's core RD&D mission, but that is scarcely reason to do away with it altogether.

Unfortunately, I was also disheartened to see a proposed cut in the budget of the Office of Electricity Delivery and Energy Reliability funding: Achieving better energy efficiency in our electric infrastructure—from demand-response to transmission and distribution—should be a national priority. Instead of expanding this office's vital work this budget takes a step backward.

I am pleased that the Administration proposes to expand the Clean Coal Power Initiative and Carbon Sequestration budgets. The success of these programs will go hand-in-hand in transforming the environmental footprint of our nation's coal industry. Achieving these goals is absolutely critical to our energy and environmental security, and to ensuring that the coal industry remains a workhorse of our economy well into the future.

Finally, I am also pleased that the Administration is maintaining its commitment under the American Competitiveness Initiative to double the budget of the DOE Office of Science in the coming years. These programs are the bedrock of the Nation's energy science enterprise. I was disappointed with the very late decision of the appropriators to roll back the widely-supported increase for the Office of Science in the last fiscal year. I understand that some programs were cut significantly, and I am hopeful that that will be an aberration.

Each year the formulation of a budget is a painstaking process. I have appreciated the Secretary's candor in the past, and I look forward to working with him to ensure that the American people get the most prudent investment in energy programs and research possible.

Thank you, Mr. Chairman.

STATEMENT OF HON. PETE V. DOMENICI, U.S. SENATOR FROM NEW MEXICO

Senator DOMENICI. Mr. Secretary you have done an outstanding job in the time that you have been given the mantel of Secretary of Energy. But I don't believe the American people or any of us have been successful in attacking the problem of our energy insufficiency and the fact that we must import so much. I don't think we have attacked it with the sense of urgency that it's entitled to.

I really don't think we know how bad the effect is on the United States of the billions of dollars that are sucked out of our economy every month to buy oil. It is making other countries rich. Therefore it seems logical to me that it is making us poorer. I can't get any economist to produce a study on this. I've checked and they all aren't sure. But I'm sure. We are becoming a weaker Nation by the day because of the tremendous amount of our own assets that are

getting removed from us every day and shipped to other countries who can only grow and prosper because they're getting these high astronomical prices for oil.

So I wish we had a bigger and stronger program, but we've all tried. I don't think there's much we're doing that carries with it an absolute state of urgency where we say we must do this. It's an American commitment to our own salvation.

But we have done a lot of things and I do want to put in the record, Senator, Mr. Chairman, all of the things that we have produced in the past 3 years by way of energy bills starting with the Energy Policy Act of 2005 and then the Energy Independence and Security Act of 2007 and all the things that went with it. To the extent that we charged ourselves, we just about did everything we could and what we asked for in legislation. These two sheets of summary will show all of the things that have been accomplished, many of which are being run by the distinguished Secretary now. He knows there are many new things, some of which are truly marvelous and are achieving great things.

Senator DOMENICI. First, I want to make a brief comment on National Laboratories funding. Overall this is a good budget for the National Laboratories. I hope we can avoid last year's devastating scenario when the House acted as they did. You are not asking them to do that so they will have to do it of themselves because there is nothing in the budget asking them to do that.

At the same time I'm concerned about the insufficient funding and the pace of certain projects such as the LANSCE Facility. I believe the pace proposed in these budgets is too slow. I intend to address that during the appropriations process to see if we can move those programs ahead a little faster.

I'm pleased with our investment in nonproliferation including the MOX program. I think you will probably chalk that one up as a very, very big accomplishment of the Department if we can continue on course and get it done. It's the one that President Carter decided to put away. He said if we don't do it the others will follow us and not do it. You recall we didn't do it, they all did.

Now we didn't do it because we were afraid of proliferation and other things. Now we're the last one coming along with mixed oxide as a method for treating defense waste. Now I'd like to turn to a discussion of nuclear overall.

I want to commend you for the considerable investment in nuclear energy. I believe that these nuclear power investments hold great promise for our efforts to produce greenhouse gas emissions. I remind the committee, and you, Mr. Secretary, that when we passed the 2005 Policy Act, we sent a message that the United States was serious again about nuclear power in this country. The message was heard around the world. Nuclear power is the largest source of carbon free energy on earth.

I'm encouraged by the continued support of your Department of nuclear power. The Administration seeks to increase funding for nuclear energy science and technology by 37 percent to 1.42 billion for the NP 2010 Initiative. That's increased by 80 percent. That shows we are concerned and that investment is probably one of the few that is up to the problem. It shows that there is a serious problem we are going to resolve. So we seek to address global climate

change. We must continue to invest even more in the promises of nuclear power which this budget request obviously acknowledges.

Loan guarantees, Mr. Secretary. Now let me discuss the budget proposal on loan guarantees in title 17 of the Energy Policy Act of 2005. I'm very pleased that the budget request reflects the agreement reached in the 2008 Omnibus Appropriations Act.

Your proposal to extend the date authorized to issue loan guarantees to 2010 for non-nuclear projects, in 2011 for nuclear projects, will help ensure that the 38.5 billion you made available will be fully utilized. I hope that you will even be successful in issuing a loan guarantee before this Administration ends. I don't know if that's possible, but I watch a few and see that you might indeed be able to do that.

As you know we passed the important bipartisan America Competes Act incorporating the view of the Augustine Report. The President and the Republicans and Democrats alike in Congress all worked on that. Your budget proposed an increase of 750 million rounding it to the Office of Science for a total of 4.7 billion. This proposal keeps funding available. We double the Office of Science in 10 years. I applaud you for that. That was the commitment and that was done. There were more commitments. They weren't all done, but that one was.

While I support this increase, I do plan on asking some questions about how your Department plans to integrate the America Competes Act with the budget. Not as easy as we thought when we were doing the work. Easy to draw one, hard to do the other.

I share the same concerns on weatherization that my counterpart, the Chairman, does. It kind of looks to me, Mr. Chairman, that something happened. That they took it out here, but they planned it, expected it to show up somewhere else. I hate to ask the Secretary that, but that's what it looks like to me. They got it out here and didn't put it in where they expected. I haven't seen him give any clues to whether that statement is correct or not, but I'll ask him about it.

I'm disappointed that the Future Gen project must take a different direction. The project had relevant, difficult, questions about the best way to advance clean coal with taxpayer's dollars. We may find that restructuring Future Gen might be the right decision.

However, the Department will have to fully digest feedback on their request for information and we have questions on that topic for you. People just still don't know that we're spending a lot of money on carbon capture and sequestration. We're doing a lot of big science and big engineering.

The 2009 budget marks a continuation of a dramatic funding increase for carbon capture and sequestration. Our effort to reduce greenhouse gases while sustaining an affordable energy supply hinges upon cost effective demonstrations is a huge sum. I want to say that the 648 million dollars for research and demonstration in that particular field seems to me to be another very positive reaction to a very serious problem in a way that makes sense.

Mr. Secretary, I look forward to working with you in the limited time that we have this year which will be my last time, limited or otherwise, and we'll try to get some things done. Thank you very much.

The CHAIRMAN. Thank you, sir. Mr. Secretary, why don't you go right ahead with your testimony and then after that we'll each have questions.

STATEMENT OF HON. SAMUEL W. BODMAN, SECRETARY, DEPARTMENT OF ENERGY

Secretary BODMAN. Mr. Chairman, Senator Domenici, members of the committee, I want to thank you all for giving me the opportunity to appear here before you for what is now the fourth time in order to discuss our Department's budget request. I think it is safe to say that the goals of our fiscal 2009 budget are largely unchanged from our budget goals in previous years. This budget request provides us, in my judgment, the resources needed to continue to move forward on our five central missions and those are: the promotion and enhancement of energy security, nuclear security, scientific discovery and innovation, environmental responsibility and management excellence.

Since 2001, this Administration has invested more than 180 billion dollars in the Department of Energy and its programs. These investments have been used to address the growing demand for affordable, clean and reliable energy. They have helped safeguard our national security and have enabled scientific research leading to significant improvements in our quality of life and the health of our people.

The Department's fiscal year 2009 request in the amount of 25 billion dollars was developed with the need to continue these activities in mind and to address the energy challenges that confront us everyday. An investment of this size allows us to fulfill our central missions as well as advance the goals of the President's Advanced Competitiveness Initiative and to ensure U.S. technological competitiveness and economic security. It also allows us to continue our progress toward the goals of the President's Advanced Energy Initiative accelerating the research, the development and the deployment of clean, alternative energy technologies.

The Department of Energy is responsible for promoting America's energy security. We encourage the development of reliable, clean and affordable energy supplies and we strengthen U.S. competitiveness by leading in innovation and scientific discovery. At the same time we continue to ensure the security of the nuclear stockpile and we reclaim and restore the sites that are the Nation's environmental legacy from those efforts to develop the nuclear chemistry and physics that I've just referred to. All of this is done under a rubric of sound management consistent with the President's Management Agenda to improve performance and accountability.

But this budget request also reflects our concerns about America's energy future. The projected growth in global energy demand is a major challenge for us all. It is a challenge that must be met with responsible action.

Global demand will continue to grow. We cannot depend solely on hydrocarbons to meet it. This is a problem for all nations, energy producers and consumers alike. I believe, therefore, that it is vital that the United States pursue policies that enhance global energy security not just our own. We need new energy options, clean-

er more efficient technologies and alternative fuels and we must support fully the research and innovation necessary for their development. We must diversify our energy supplies, diversify our energy suppliers and establish and secure additional energy supply routes.

This budget document should also be viewed as a road map showing the future course of America's energy security. This course will not, in my judgment be an easy one, but I believe it is a necessary one. These efforts will require a sustained commitment on the part of government. It will require strong private sector investment and strategic collaborations between the government, the private sector and the research community including academia. Our goal is to foster continued economic growth and promote a sustainable energy future.

Mr. Chairman, I believe the committee has a copy of my written statement which I now ask be included in the record so that in the interest of time we might move to any questions that you or members of the committee might have. Thank you very much.

[The prepared statement of Secretary Bodman follows:]

PREPARED STATEMENT OF HON. SAMUEL W. BODMAN, SECRETARY, DEPARTMENT OF ENERGY

Mr. Chairman and members of the Committee, I am pleased to be before you today to present the President's fiscal year (FY) 2009 budget proposal for the Department of Energy. The strength and prosperity of America's economy is built on the security of our nation and the reliability of energy sources. Since 2001, the Administration has committed $183 billion through the Department of Energy (DOE) to help drive America's economic growth, provide for our national security, and address the energy challenges that face our nation. The Department of Energy's FY 2009 budget request of $25 billion stays on course to address the growing demand for affordable, clean and reliable energy; preserve our national security; and enable scientific breakthroughs that could have significant impacts on our quality of life and the health of the American people. The FY 2009 budget was developed to continue to meet these goals.

In FY 2009, the Department will advance the President's American Competitiveness Initiative aimed at ensuring U.S. technological competitiveness and economic security, and implement the Advanced Energy Initiative, to accelerate the research and development of clean energy technologies to diversify our nation's energy supply. These efforts, combined with investments to meet our commitment to protect the United States as stewards of our nation's nuclear weapons stockpile and to environmental cleanup, will foster continued economic growth and promote a sustainable energy future.

This budget, while focused on delivering results to meet the nation's priorities, also serves as the roadmap for the future of America's energy security. The FY 2009 budget request translates into investments that will:

- Expand research, development, and demonstration of cost-effective carbon capture and storage,
- Accelerate technological breakthroughs outlined in the Advanced Energy Initiative,
- Provide enhanced energy security through the expansion of the Strategic Petroleum Reserve,
- Continues to foster scientific leadership with the American Competitiveness Initiative,
- Advance environmental cleanup and nuclear waste management,
- Maintain the safety and reliability of the nuclear weapons stockpile and continue transforming the weapons complex, and
- Work with other countries to prevent the spread of weapons of mass destruction.

To highlight, in FY 2009 the Department of Energy continues to meet this vision and strengthen the framework built over the last eight years to ensure our national energy security and reliability. The FY 2009 budget request:

- Invests in Climate Change Technologies.—In support of the Administration's initiatives that support climate change technology and to implement the U.S. Climate Change Technology Program's Strategic Plan, the FY 2009 budget emphasizes a two-pronged strategy for its climate change technology programs: invest in carbon dioxide ($CO_2$2) mitigation technologies for coal with carbon capture and storage (CCS) and in nuclear power, and invest in near-term, $CO_2$2 mitigation technologies focused on improving energy efficiency. The budget provides $407 million to research and $241 million to demonstrate advanced coal technologies which includes cost-effective CCS for coal-fired power plants. The Department also continues to help work with the Department of the Treasury to administer $1.65 billion in investment tax credits from the Energy Policy Act of 2005 that will accelerate commercial deployment of technologies that are central to carbon capture and storage.

  Through international collaboration, the United States strives to maintain a leadership role in promoting and deploying clean energy technology domestically and around the world. President Bush believes that the greatest progress will be assured by working together with other nations to advance the related objectives of improving economic and energy security, alleviating poverty, improving human health, reducing harmful air pollution, and reducing the growth of greenhouse gases. The United States, Australia, China, India, Japan, Canada, and South Korea work to implement the objectives of the Asia-Pacific Partnership (APP) on Clean Development and Climate. This Partnership is helping to advance the President's goal of developing and accelerating the deployment of cleaner and more efficient technologies and practices. It builds on existing multilateral climate initiatives including the Carbon Sequestration Leadership Forum, the International Partnership for a Hydrogen Economy, and Methane to Markets. In FY 2009, the Department is requesting $15.0 million, evenly divided between the Fossil Energy Program and the Energy Efficiency and Renewable Energy Program, to continue to support this important initiative.

- Advances the American Competitiveness Initiative.—In 2007, President Bush launched the American Competitiveness Initiative (ACI) to encourage innovation throughout the economy and to give America's children a firm foundation in math and science. A request of $4.7 billion in FY 2009, $748.8 million above the FY 2008 enacted level, will increase basic research in the physical sciences that will have broad impacts on future energy technologies and environmental solutions. ACI funding will support the construction and operation of world-class scientific facilities and will support literally thousands of scientists and students—our current and future scientific and technical workforce. Scientific and technological discovery and innovation are the major engines of increasing productivity—indispensable to ensuring growth, job creation, and rising incomes for American families in the technologically driven twenty-first century. This investment is essential if the United States is to maintain its worldclass, scientific leadership and global competitiveness.

- Accelerates the Advanced Energy Initiative.—At a request of $3.2 billion, $623 million above the FY 2008 enacted appropriations of $2.5 billion, the President's Advanced Energy Initiative (AEI) will continue to support clean energy technology breakthroughs that will help improve our energy security through diversification and help to reduce our dependence on oil. The FY 2009 budget for AEI includes funding to promote the licensing of new nuclear power plants and research on an advanced nuclear fuel cycle. Also, AEI's diverse energy portfolio includes investment in making solar power cost-competitive with conventional sources of electricity by 2015 and supports a robust vehicle technology program that includes developing lithiumion batteries, plug-in hybrids, and drive-train electrification.

- Expands the Resurgence of Nuclear Energy.—Nuclear energy is an important source of energy in the United States and is a key component of the AEI portfolio. Nuclear energy is free of greenhouse gas (GHG) emissions, safe, and reliable, and currently supplies about 20 percent of the nation's electricity. The Department is leading the Administration's efforts to spur a nuclear renaissance in the United States to meet energy and climate goals. We continue to work with industry partners to promote the near term licensing and deployment of the first new nuclear plants in over 30 years, as well as to extend the life of current plants. Furthermore, the Department is developing advanced, more proliferation-resistant nuclear fuel technologies that will maximize energy from nuclear fuel. These technologies will further support the expansion of nuclear power as a safe, efficient, and cost-effective source of energy capable of sup-

porting continued economic growth in the 21st century. In FY 2009, a total of $1.4 billion is requested for nuclear energy activities including $487 million for the Mixed Oxide Fuel Fabrication Facility.

It is critical to note that the growth of nuclear power is only possible if we continue to develop a responsible path for disposing of spent nuclear fuel. Therefore, $494.7 million is requested in FY 2009 for the continued development of the geologic waste repository at Yucca Mountain, Nevada, and to support the defense of the License Application that we will submit in 2008 to the Nuclear Regulatory Commission for authorization to construct the repository.

- Transforms Our Nuclear Weapons Complex.—The FY 2009 budget reconfirms the Department of Energy's steadfast commitment to the national security interests of the United States through stewardship of a reliable and responsive nuclear weapons stockpile and by advancing the goals of global non-proliferation. Through the National Nuclear Security Administration (NNSA), the Department directs $6.6 billion in this request for Weapons Activities, a $320.6 million increase from the FY 2008 enacted appropriation, to meet the existing requirements for stewardship of the nation's nuclear weapon stockpile, technologies and facilities, as well as to continue to transform the nuclear weapons complex with the goal of a much smaller size by 2030. This transformation effort is structured to achieve President Bush's vision to create a more efficient and less expensive nuclear weapons complex of the future that is able to respond to changing national and global security challenges.

- Reduces the Risk of Weapons of Mass Destruction (WMD) Worldwide.—The Department has provided $1.8 billion in this request for detecting, securing, eliminating and disposing of dangerous nuclear materials around the world. The amount includes $1.2 billion within Defense Nuclear Nonproliferation, $487 million within the Office of Nuclear Energy, and $117 million funded in Weapons Activities. The Mixed Oxide (MOX) Fuel Fabrication Facility project remains a key activity of the nation's nuclear nonproliferation efforts. The FY 2009 request for MOX is $ 208.2 million more than the FY 2008 enacted appropriation reflecting continued support for this project. Further, the request provides significant out-year growth to fulfill our international agreements and accelerate our work to reduce the risk of (WMD) threats. Among many advances, the FY 2009 budget provides for the installation of radiation detection equipment at an additional 49 foreign sites in 14 countries and at 9 additional Megaports; continues to implement an aggressive, prioritized work schedule to complete all shipments of Russian origin spent highly-enriched uranium (HEU) fuel stored outside reactor cores by the end of 2010; and maintains a schedule allowing completion of the construction of the second of two fossil-fueled power plants located in Zheleznogorsk, Russia, in 2010. The Seversk project is scheduled for completion by the end of December 2008.

- Meets Our Commitments to Public Health and Safety and the Environment.—During my first days at the Department of Energy, I announced safety as my top priority and the number one operating principle of the Department. To implement my vision, I created a new Office of Health, Safety and Security. Ensuring the safety of workers across the DOE complex is my top priority and this new office will go a long way in strengthening our safety and security organization. We must be world class not only in how we carry out our mission, but in the safe, secure, and environmentally responsible way in which we manage operations at our facilities across the country. The organization's FY 2009 budget request of $446.9 million, builds on a number of actions the Department has taken over the past two years to increase safety of DOE workers.

  The FY 2009 budget includes $5.5 billion for the Environmental Management program to protect public health and safety by cleaning up hazardous, radioactive legacy waste left over from the Manhattan Project and the Cold War. This budget allows the program to continue to make progress towards cleaning up and closing sites and focuses on activities with the greatest risk reduction. By the end of 2009, cleanup projects at Sandia National Laboratory and Argonne National Laboratory will be finished.

  As the Department continues to make progress in completing clean-up, the FY 2009 budget request of $186 million for Legacy Management supports the Department's long-term stewardship responsibilities and payment of pensions and benefits for our former contractor workers after site closure.

In light of the increased number of sophisticated cyber attacks directed at all facets of our communities, from military to civilian to private users, the Department is taking significant steps to secure the virtual pathways and mitigate the threat from cyber intrusions. Implementing these steps will be seamless and will not interrupt the availability of information systems resources while preserving the confidentiality and integrity of the information and their contents. A budget request of $157 million in FY 2009 supports the Department's efforts to defend against emerging, complex cyber attacks. Through these efforts, the Department will be in a better position to effectively manage and monitor cyber risk across the complex. In FY 2009, DOE will increase support on a Department-wide basis to deploy new cyber security tools and cyber security management activities to detect, analyze, and reduce the threat across the complex.

PROMOTING AMERICA'S ENERGY SECURITY THROUGH RELIABLE, CLEAN, AND AFFORDABLE ENERGY

The FY 2009 request will deliver a balanced and diverse portfolio of solutions to strategically address the urgent energy and environmental challenges facing our country today. Our goal can be met by: 1) accelerating the development of clean and renewable energy technologies to dramatically increase the amount of clean energy produced in the United States; 2) advancing energy efficient technologies and practices that use less energy; and 3) providing information from research, development, and demonstration activities, which could help stimulate private sector choices that will drive change in our energy systems. DOE's applied energy programs are taking pro-active steps to catalyze the advancement of these important technologies through research and development, innovative partnerships, international cooperation through the Asia Pacific Partnership, and collaboration with states, industry leaders, and other stakeholders.

The budget lays the groundwork for implementing key elements of the Energy Independence and Security Act of 2007 (EISA). It contains elements that are unprecedented in size, scope and timeframe for increasing our energy security, diversifying our energy system and making America's energy systems stronger, safer and cleaner for future generations. We can further advance the U.S. commitments made at the U.N. Climate Change Meeting in Bali and the Major Economies Meetings to employ clean energy technologies in the global effort to reduce greenhouse gas emissions.

Consistent with the President's initiatives and the EISA, the FY 2009 budget contributes to key elements of the American Competitiveness and Advanced Energy Initiative that will help reduce our dependence on foreign sources of energy, and change the way we power our homes, businesses, and automobiles.

The proposed Office of Energy Efficiency and Renewable Energy (EERE) budget of $1.255 billion provides a diverse portfolio of solutions to our challenges, including:

- Fuels and Vehicle Solutions (Biomass, Vehicles, and Hydrogen programs: $592.3 million)
  - —Advancing essential R&D projects to achieve cost competitive, commercial scale cellulosic ethanol production by 2012;
  - —Conducting R&D on lithium-ion batteries, plug-in hybrids, and drive-train electrification to diversify and make our nation's vehicles more efficient to reduce petroleum dependency;
  - —Continuing to research and develop critical hydrogen technologies that enable a commercialization decision in 2015; and
  - —Supports fuel testing and validating codes and standards that will help accelerate new fuel and vehicle solutions to the market.
- Renewable Power Solutions (Wind, Solar, Geothermal, and Water Power programs: $241.6 million)
  - —Integrating renewable energy technologies with energy storage technologies to resolve the intermittency challenge;
  - —Supporting wind power R&D to enable wind turbines to produce an increasing amount of the nation's electricity;
  - —Investing in solar power to make photovoltaics widely available nationwide and commercially cost-competitive with conventional electricity by 2015;
  - —Accelerating a refocused geothermal program that conducts enhanced geothermal systems R&D; and
  - —Pursuing water power technologies as part of EERE's R&D portfolio.
- Efficiency Solutions (Buildings and Industrial Technologies programs: $185.9 million)

—Reducing energy consumption and transforming the carbon footprint of the built environment through the development of zero energy buildings; and
—Supporting the advancement of clean and efficient industrial technologies and processes that will drive a 25 percent increase in U.S. industrial energy productivity by 2017.

Our energy portfolio also recognizes the abundance of coal as a domestic energy resource and remains committed to research and development to promote its clean and efficient use. Because coal in the U.S. accounts for 25 percent of the world's coal reserves, the FY 2009 request focuses on carbon capture and storage.

- Integration of advanced Integrated Gasification Combined Cycle (IGCC) coal technology with Carbon Capture and Storage remains the foundation of the Department's clean coal research program to establish the capability of producing electricity from coal with near-zero atmospheric emissions. The Administration remains strongly committed to FutureGen and is requesting $156 million in FY 2009. An additional $407 million is requested within the Coal program to support research and development on technologies that support the concept.
- The Coal program continues to fund large-scale demonstrations through the Clean Coal Power Initiative (CCPI) with $85 million requested in FY 2009 to support a Round 3 solicitation which will focus on demonstrating carbon capture and storage technologies.
- As part of the greenhouse gas mitigation strategy, the Department continues the Carbon Sequestration program through its large-scale field testing, and will inject carbon dioxide into several types of geological formations. Within the $407 million requested for coal research and development activities, the Department is requesting $149 million for continued work in this area.

Consistent with the FY 2006, 2007, and 2008 budget requests, the FY 2009 budget request continues to shift resources away from oil and gas research and development programs, which have sufficient market incentives for private industry support, to other energy priorities. Federal staff, paid from the program direction account, will work toward an orderly termination of the program in FY 2009.

To further assure against significant oil supply disruptions that could harm our economy, this budget also proposes $171.4 million for expanding the Strategic Petroleum Reserve (SPR) to an ultimate capacity of 1.5 billion barrels by 2029. In FY 2008, DOE will use available balances for the purchase of additional SPR oil and will continue to fill using federal royalty oil until 727 million barrels is achieved in FY 2009. Capacity expansion from 727 million barrels to 1.0 billion barrels will begin in FY 2008 with land acquisition activities. The request also funds National Environmental Policy Act (NEPA) activities associated with the further expansion of SPR capacity to 1.5 billion barrels.

The EPACT 2005 included authorization for a new Loan Guarantee Program. The Department requests $19.9 million in funding in FY 2009 for administrative expenses to operate the Office and support personnel and associated costs. This request will be offset by collections in the same amount, as authorized under EPACT 2005. In addition, during fiscal years 2008 through 2011, commitments to guarantee loans under Title XVII of the EPACT 2005 will total $38.5 billion. In the Energy and Water Development and Related Agencies Appropriations Act of 2008, Congress authorized the Department to issue loan guarantees under the Title XVII program until September 30, 2009. The FY 2009 budget now seeks to extend that authorization through FY 2010 and 2011 and specifies amounts and uses of loan guarantee authority for those periods consistent with Congressional guidance accompanying the FY 2008 Appropriations Act. Of the total provided, $20.0 billion will be available through fiscal year 2010 to support projects such as Uranium Enrichment, Coal Based Power, Advanced Coal Gasification, Renewables, and Electricity Delivery. The remaining $18.5 billion will be available through FY 2011 to support nuclear power facilities. The $38.5 billion provided in FY 2008 through 2011 will be in addition to the $4.0 billion in authority provided in FY 2007 under P.L. 110-05 Section 20320(a) for a total loan volume limitation of $42.5 billion.

Reliable energy information plays a critical role in promoting efficient energy markets and informing the public and policy makers. This budget requests a total of $110.6 million for the Energy Information Administration to improve energy data and analysis programs, reflecting a 16 percent increase over the FY 2008 enacted level.

The FY 2009 budget requests $301.5 million for the Advanced Fuel Cycle Initiative, the technology development element of the Global Nuclear Energy Partnership (GNEP). The request supports research and development activities focused on methods to reduce the volume and long-term toxicity of high-level waste from spent nu-

clear fuel, reduce the long-term proliferation threat posed by civilian inventories of plutonium in spent fuel, and provide for proliferation-resistant technologies to recover the energy content in spent nuclear fuel.

Recognizing the potential of nuclear energy, the President announced GNEP in February 2006. GNEP seeks to bring about significant, wide-scale use of nuclear energy through the development of better, more efficient and proliferation-resistant nuclear fuel cycles while reducing the volume of nuclear waste requiring ultimate disposal.

GNEP will build upon the Administration's commitment to develop nuclear energy technology and systems and enhance the work of the United States and our international partners to strengthen nonproliferation efforts. The GNEP strategy will accelerate efforts to:

- Provide abundant energy without generating carbon emissions or greenhouse gases (GHG);
- Recycle spent nuclear fuel to minimize waste and reduce proliferation concerns;
- Enable developing nations to safely and securely deploy nuclear power to meet their energy needs;
- Increase energy recovery from spent nuclear fuel; and
- Reduce the number of required U.S. geologic waste repositories to one for the remainder of this century.

Through GNEP, the United States will work with key international partners to develop new recycling technologies. Improving the way spent nuclear fuel is managed will facilitate the expansion of civilian nuclear power in the United States and encourage civilian nuclear power internationally to evolve in a more proliferation-resistant manner. The United States and other countries having the established infrastructure could arrange to supply nuclear fuel to countries seeking the energy benefits of civilian nuclear power, and the spent nuclear fuel could be returned to supplier countries for eventual disposal in international repositories. In this way, foreign countries could obtain the benefits of nuclear energy without needing to design, build, and operate uranium enrichment or recycling technologies to process and store the waste.

GNEP would also help resolve America's nuclear waste disposal challenges. By recycling spent nuclear fuel, the heat load and volume of waste requiring permanent geologic disposal would be significantly reduced, delaying the need for another repository in addition to the one at Yucca Mountain for the remainder of this century.

Beginning in FY 2008 in accordance with the Consolidated Appropriations Act, 2008, the Office of Nuclear Energy is funding the MOX Fuel Fabrication Facility, which was previously funded by the National Nuclear Security Administration's (NNSA) Nuclear Nonproliferation program. In FY 2009, the Department funds the MOX Fuel Fabrication Facility program within the Office Nuclear Energy under the Other Defense activities account at a request of $487 million.

To support the near-term domestic expansion of nuclear energy, the FY 2009 budget seeks $241.6 million for the Nuclear Power 2010 program to support cost-shared, near term technology development and licensing demonstration activities with industry that focus on enabling an industry decision by 2010 to build a new nuclear plant. To this end, the program will continue to support industry interactions with the Nuclear Regulatory Commission on new plant license applications, as well as first-of-a-kind design finalization for standardized reactor designs.

The technology focus of the Nuclear Power 2010 program is on Generation III+ advanced light water reactor designs, which offer advancements in safety and economics over older designs. If successful, this 7-year, 50–50 industry cost-shared program could result in a new nuclear power plant order by 2010 and a new nuclear power plant constructed by the private sector and in operation by 2015. EPACT 2005 authorizes DOE to enter into contracts with the first six sponsors that are issued a license and begin construction of new nuclear facilities and meet all contractual conditions to provide risk insurance for certain regulatory and litigation delays in the full power operation of their facility. Up to $500 million in coverage is available for the initial two licensed plants for which construction is started and up to $250 million is available for the next four plants. The program will allow DOE to offer standby support/risk insurance to protect sponsors of the first new nuclear power plants against the financial impact of certain delays that are beyond the sponsors' control. In FY 2009, the Department may issue conditional agreements for standby support to sponsors of new nuclear power plants.

The FY 2000 budget request includes $70 million to continue the development of nextgeneration nuclear energy systems known as "Generation IV (GenIV)." These nextgeneration technologies will enhance the safety, cost-effectiveness, and proliferationresistance of nuclear power, while harnessing its potential to generate

hydrogen for use as a fuel. Gen IV's FY 2009 resources will be primarily focused on long-term research and development of a gas-cooled very-high temperature reactor, the reactor technology of choice for the Next Generation Nuclear Plant (NGNP) project.

STRENGTHENING U.S. SCIENTIFIC DISCOVERY, ECONOMIC COMPETITIVENESS, AND IMPROVING QUALITY OF LIFE THROUGH INNOVATIONS IN SCIENCE AND TECHNOLOGY

Today our nation's ability to sustain a growing economy and a rising standard of living for all Americans depends on continued advances in science and technology. Scientific and technological discovery and innovation are the major engines of increasing productivity and are indispensable to ensuring economic growth, job creation, and rising incomes for American families in the technologically driven 21st Century. Today it is especially vital that nations around the globe—not only the developed nations but also the largest developing ones—increase their strategic national investments in scientific research with an eye to global economic competition.

The Science program at the Department of Energy 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. Science 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 our energy security and address issues ancillary to energy, such as climate change, genomics, and life sciences. In FY 2009, the Department requests $4.7 billion, an increase of 18.8 percent over the enacted FY 2008 appropriation, to continue to invest in science research that supports the American Competitiveness Initiative.

The High Energy Physics ($805.0 million) program conducts basic research on the nature of matter and energy at its most fundamental level, seeking to understand the universe by investigating the most basic constituents of matter and energy and exploring the nature of space and time, and probing the forces that bind them together. Support is provided for operation of the Tevatron and Neutrinos at the Main Injector (NuMI) beam line which are both located at Fermi National Accelerator Laboratory (Fermilab). In addition, the request supports the research of U.S. scientists at the Large Hadron Collider in Switzerland ($72.5 million) and the U.S. involvement in the global research and development effort for a potential International Linear Collider ($35 million). The program also funds non-accelerator physics to investigate dark energy and dark matter, supernovae, solar neutrinos, black holes, and other topics, including support for the Joint Dark Energy Mission (JDEM) in partnership with NASA.

The Nuclear Physics ($510.1 million) program conducts research to understand the structure and interactions of atomic nuclei and the fundamental forces and particles of nature in nuclear matter in terms of their fundamental constituents. Support is provided for operation of the Relativistic Heavy Ion Collider ($161.00 million), which enables us to glimpse conditions of the very early universe, and the Continuous Electron Beam Accelerator Facility (CEBAF) ($106.4 million) which provides insight into the quark structure of matter.

The Biological and Environmental Research (BER) ($568.5 million) program provides the environmental and biological knowledge that promotes national security through improved energy production and use, supports the President's National Energy Plan, and conducts research to protect our environment. This research is focused in two areas: Biological Research and Climate Change. BER supports the Genomics: GTL program supports the most advanced biotechnology tools and techniques to probe for biological and biologically inspired solutions to Department mission challenges in energy, carbon sequestration, and environmental remediation. The FY 2009 request includes $75 million for three innovative Bioenergy Research Centers that will bring together multidisciplinary teams of some of the nation's leading researchers in a mission-driven laboratory setting to probe plants and microbes at all levels (molecular, cellular, system) in an effort to crack nature's code and achieve the breakthroughs that will make biofuels production truly cost-effective on a national scale. Climate change research includes the study of the scientifically-based predictions and assessments of the potential effects of greenhouse gas on climate and the environment, and funds DOE participation in the nation's Climate Change Science Program ($145.9 million).

The Basic Energy Sciences ($1.568.2 billion) program supports research and operates facilities to provide the foundation for new and improved energy technologies and for understanding and mitigating the environmental impacts of energy use. The FY 2009 request enhances support in high priority research areas addressing both grand challenge science and basic research needs for energy-related science. One implementation strategy will be new Energy Frontier Research Centers, which will

bring together the skills and talents of multiple investigators to enable research of a scope and complexity that would not be possible with the standard individual investigator or small group award. The Materials Sciences and Engineering subprogram supports basic research to explore the scientific foundations for the development of materials that improve their efficiency, economy, environmental acceptability, and safety for energy generation, conservation, transmission, and use. Applications include lighter, stronger materials to increase fuel economy in automobiles, alloys and ceramics that improve the efficiency of combustion engines, and more efficient photovoltaic materials for solar energy conversion. Chemical Sciences, Geosciences, and Energy Biosciences support research crucial for improving combustion systems, solar photoconversion processes, and for applications to renewable fuel resources, environmental remediation, and photosynthesis. BES supports the Advanced Energy Initiative with solar conversion and biomass production research. A major part of the BES mission is to build and operate world-class user facilities including the Spallation Neutron Source at ORNL, the world's most powerful neutron scattering facility. All five of the Nanoscale Science Research Centers, part of the National Nanotechnology Initiative, will be fully operational in FY 2009 with a total request of $101.2 million.

The Advanced Scientific Computing Research ($368.8 million) program delivers forefront computational and networking capabilities to scientists nationwide that enable them to extend the frontiers of science. Leadership in scientific computation is a cornerstone of the Department's strategy to ensure the security of the nation, and to succeed in its science, energy, environmental quality, and national security missions.

Fusion is the energy source of stars, including our own sun. The Fusion Energy Sciences ($493.1 million) program is the national research effort to advance plasma science, fusion science, and fusion technology—the knowledge base required for an economically and environmentally friendly, carbon free energy. DOE is also one of seven international parties participating in the ITER project, an international burning plasma fusion experiment to be built in Cadarache, France. The FY 2009 request provides $214.5 million for the U.S. contribution to this international effort.

ENSURING AMERICA'S NUCLEAR SECURITY

The National Nuclear Security Administration (NNSA) continues significant efforts to meet Administration and secretarial priorities, leveraging science to promote national security. The FY 2009 President's budget request is $9.1 billion, essentially level with the FY 2008 appropriation, to meet defense and homeland security-related objectives:

- Transforming the nuclear weapons stockpile and infrastructure while meeting Department of Defense requirements;
- Conducting innovative programs in the nations of the former Soviet Union and other countries to address nonproliferation priorities;
- Supporting naval nuclear propulsion requirements of the U.S. Navy;
- Maintaining comprehensive physical and cyber security for facilities, employees and information by implementing and sustaining upgrades throughout the complex;
- Providing nuclear counter-terrorism and emergency response assets in support of homeland security;
- Reducing the deferred maintenance backlog and achieving facility footprint reduction goals; and
- Providing corporate management and oversight for NNSA program operations.

The United States continues a fundamental shift in national security strategy to address the realities of the 21st century. The FY 2004-directed reductions to the U.S. nuclear weapons stockpile were completed in 2007, five years early. Today's nuclear weapons stockpile is now the size envisioned for 2012, and by 2012 it will be almost 15 percent less than that—a total that is just 25 percent of what it was at the end of the Cold War. Consistent with the Administration's Nuclear Posture Review, the Department of Energy has created a vision for a revitalized nuclear weapons complex that is significantly more agile and responsive, and will allow further reductions in the nuclear stockpile by providing an industrial hedge against geopolitical or technical problems.

In compliance with the National Environmental Policy Act, NNSA is preparing a Complex Transformation supplement to the 1996 Stockpile Stewardship and Management Programmatic Environmental Impact Statement. In January 2008, NNSA announced a preferred alternative for the future nuclear weapons complex infrastructure that identifies the proposed major facilities, and consolidations of mis-

sions, capabilities, and special nuclear materials. The FY 2009 budget includes funding to pursue a program consistent with the preferred alternative, with NNSA planning to promulgate a Record of Decision in 2008.

The FY 2009 budget request of $6.6 billion for Weapons Activities includes programs to meet the immediate national security requirements of the stockpile, including stockpile surveillance, annual assessment, life extension programs, and warhead dismantlement. The campaigns are focused on long-term vitality in science and engineering, and on R&D supporting current and future stockpile stewardship and DoD requirements. Readiness in Technical Base and Facilities supports facilities and operations across the governmentowned, contractor-operated nuclear weapons complex. A number of these NNSA programs and facilities also support scientific research users from other elements of the Department, federal government, and the academic and industrial communities.

Growth areas in the Weapons Activities appropriation include Cyber Security and Nuclear Weapons Incident Response. The Cyber Security activities increase to support a major five-year effort focused on revitalization, certification, accreditation and training across the NNSA complex. The Nuclear Weapons Incident Response program increases due to functional transfers of emergency management and counterterrorism-related activities. Defense Nuclear Security activities focus on maintaining and implementing security upgrades needed to address the DOE Design Basis Threat. A new Transformation Disposition program is proposed at $77.4 million to begin to eliminate excess NNSA facilities in concert with transformation activities.

The FY 2009 budget request for the Defense Nuclear Nonproliferation appropriation totals $1.2 billion. The appearance of a significant decrease is due to the final FY 2008 enacted appropriations that added about $480 million in funding above the President's request to programs in this account. In addition, the Consolidated Appropriations Act, 2008, (P.L. 110-161) shifted the funding for the Mixed Oxide (MOX) Fuel Fabrication Facility to DOE's Office of Nuclear Energy and funding for the related Pit Disassembly and Conversion Facility/Waste Solidification Building (PDCF/WSB) project to the Weapons Account. This shift represents over $600 million in funding that would have been requested within the Defense Nuclear Nonproliferation appropriation in FY 2009. These shifts do not change or diminish in any way the importance of these projects to the nation's nuclear nonproliferation efforts, and in total, the funding commitment to DOE's nonproliferation activities is $1.8 billion in FY 2009. The budget describes a shift in emphasis from work completed under the Bratislava agreement to additional Second Line of Defense sites, including Megaports, and continued expansion of nuclear and radiological material removal under the Global Threat Reduction Initiative.

In FY 2009, NNSA's nonproliferation programs will complete major activities in the Elimination of Weapons Grade Plutonium Production program, as well as complete upgrades associated with the agreement from the Bratislava Summit. Our focus shifts to sustainability support to Russian warhead and material sites with completed upgrades, and acceleration of projects to assist the Russian Federation and other partner countries in establishing the necessary infrastructure to sustain effective material control operations. The budget request also provides for the installation of radiation detection equipment at an additional 49 foreign sites in countries and at 9 additional Megaports, for a total of 32 ports completed.

The FY 2009 request also supports research and development on detection technology, and a new Next Generation Safeguards Initiative (NGSI), which aims to strengthen international safeguards and revitalize the U.S. technical base. The budget request supports continued significant expansion of nuclear and radiological material removal under the Global Threat Reduction Initiative; and initiates support of disablement, dismantlement, and verification of nuclear programs in North Korea.

NNSA continues to support the U.S. Navy's nuclear propulsion systems. The FY 2009 request for Naval Reactors of $828 million is an increase of about 6.9 percent over the FY 2008 appropriation. These programs ensure the safe and reliable operation of reactor plants in nuclear-powered submarines and aircraft carriers, and fulfill the Navy's requirements for new nuclear propulsion plants that meet future requirements.

PROTECTING THE ENVIRONMENT BY PROVIDING RESPONSIBLE SOLUTIONS TO THE ENVIRONMENTAL LEGACY OF NUCLEAR WEAPONS PRODUCTION

The federal government has the dual responsibilities of addressing the nuclear weapons production legacy of our past and providing the necessary environmental infrastructure for today that will ensure a clean, safe and healthy environment for

future generations. As such, the Department is committed to strategic acquisitions for long-term waste treatment projects and the implementation of sound project management principles to meet our long-term cleanup commitments. In FY 2009, a total of $6.2 billion is dedicated to supporting three key pillars that set the framework for the Department to reach these goals. The first pillar is to continue the environmental cleanup ($5.5 billion) of contaminated Cold War sites across the country. The second pillar is to continue to provide long-term stewardship and to carry out our responsibilities ($186 million) to our former contractor workforce. The third pillar completes the framework by working to construct a permanent nuclear waste repository at Yucca Mountain ($494.7 million) to address long-term nuclear waste disposal and to defend the License Application that we will submit in 2008 to the Nuclear Regulatory Commission for authorization to construct the repository. Secretary Bodman's core principle of safe operations throughout the Department will be dynamically applied within this framework.

To deliver on the Department's obligations stemming from 50 years of nuclear research and weapons production during the Cold War, the Environmental Management program (EM) continues to focus its resources on those activities that will yield the greatest risk reductions, with safety as the utmost priority. To achieve a balance of risk reduction and environmental cleanup, the FY 2009 request of $5.5 billion supports the following activities, in priority order:

- Stabilizing radioactive tank waste in preparation for treatment (about 34 percent of the FY 2009 request);
- Storing and safeguarding nuclear materials and spent nuclear fuel (about 20 percent of the FY 2009 request);
- Disposing of transuranic, low-level and other solid wastes (about 14 percent of the FY 2009 request); and
- Remediating major areas of our sites and decontaminating and decommissioning excess facilities (about 23 percent of the FY 2009 request).

The Administration recognizes that EM's FY 2009 budget request of $5.528 billion is based on, and would implement, an environmental management approach under which the Department would not meet some of the milestones and obligations contained in all of the environmental agreements that have been negotiated over many years with regulators. It is also important to recognize that some upcoming milestones will be missed regardless of the approach that is chosen and its associated level of funding. Moreover, some of the relevant agreements were negotiated many years ago, with incomplete knowledge by any of the parties of the technical complexity and magnitude of costs that would be involved in attempting to meet the requirements. This incomplete knowledge, coupled with other issues including contractor performance, overly optimistic planning assumptions, and emerging technical barriers, also have impeded the Department in meeting all milestones and obligations contained in the environmental compliance agreements.

In planning its environmental cleanup efforts and developing the budget for those activities, the Department seeks to focus on work that will produce the greatest environmental benefit and the largest amount of risk reduction. The Department strongly believes that setting priorities and establishing work plans in this way is the most effective use of taxpayer funds and will have the greatest benefit, at the earliest possible time, to the largest number of people. In determining these priorities, the Department works closely with federal and state regulators, and will seek the cooperation of those entities in helping evaluate needs and focus work on the highest environmental priorities based on current knowledge, particularly where doing so necessitates modification of cleanup milestones embodied in prior agreements with DOE.

In FY 2009, EM is aggressively pursuing the consolidation and disposition of surplus plutonium and other special nuclear materials to enhance national security and to minimize the storage risks and costs associated with these materials. In addition, EM continues to make significant progress on the construction and operation of waste treatment and immobilization facilities across the complex. The budget continues shipments of remote-handled transuranic waste to the Waste Isolation Pilot Plant.

The EM program has made great strides in achieving cleanup results. Since 2001, EM has cleaned up and closed 14 sites, including three former weapons production sites—Rocky Flats and Fernald, with Mound to be completed in FY 2008,—as part of its riskreduction cleanup strategy. In the fall of 2007, DOE transferred nearly 4,000 acres of its former Rocky Flats nuclear weapons production site to the Department of Interior's U.S. Fish and Wildlife Service for use as a National Wildlife Refuge. Additionally, the Rocky Flats Cleanup Team received the 2007 Service to America Medal for Science and Environment for completing the first successful cleanup

of a former nuclear weapons facility. In 2007, DOE's Waste Isolation Pilot Plant in New Mexico celebrated its 6000th safely received shipment, reached a milestone for disposal of over 50,000 cubic meters of waste and began disposing of remote-handled transuranic waste. DOE's Closure Project at Fernald, a 900-acre former uranium processing facility located in southwest Ohio—was named the 2007 Project of the Year by the Project Management Institute.

Recognizing that cleanup completion dates at the majority of EM sites extend beyond 2013, EM is working to improve project and program management in a number of areas. EM is strengthening its project baselines, verifying the reasonableness of scope, cost and schedule of all environmental projects. These baselines will provide the basis for conducting credible analyses to better assess existing priorities and identify opportunities to accelerate cleanup work. Working collaboratively with the sites, EM is also continuing 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. Developing robust life-cycle planning capabilities, realistic near-term baselines, as well as a focused technology program, a best-in-class project management system, an acquisition strategy that promotes performance and efficiency, and a proactive human capital plan allows EM to build a reliable, high-performing organization that will continue to advance risk reduction and cleanup across all EM sites.

After the Environmental Management 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). 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 benefit continuity for contractor retirees.

Over the last 50 years, our country has benefited greatly from nuclear energy and the power of the atom. We need to ensure a strong and diversified energy mix to fuel our nation's economy, and nuclear power is an important component of that mix. Currently more than 50,000 metric tons of spent nuclear fuel is located at over 100 above-ground sites in 39 states, and every year reactors in the United States produce approximately 2,000 additional metric tons of additional spent fuel. In order to ensure the future viability of our nuclear generating capacity, we need a safe, permanent, geologic repository for spent nuclear fuel (SNF) and high-level nuclear waste (HLW) at Yucca Mountain. The FY 2009 budget of $494.7 million sets us on the path to meet that goal. The funding will support continued development of a repository including:

- Robustly defending the License Application (LA) that we plan to submit to the Nuclear Regulatory Commission in 2008;
- Progression of preliminary designs for facilities required for the receipt of SNF and HLW;
- Continuing essential interactions with state, local, and tribal governments needed to support national transportation planning;
- Completing the horizontal layout of the Right-of-Way application for the Nevada Rail Line;
- Enhancing the design, staffing, and training of the OCRWM organization so that it has the skills and culture to design, license, and manage the construction and operation of the Yucca Mountain Project with safety, quality, and cost effectiveness;
- Addressing the federal government's mounting liability associated with unmet contractual obligations to move SNF from commercial nuclear plant sites; and
- Planning a compliant and well-integrated safeguards and security, safety, and emergency management program for the disposal, transportation, and management of SNF and HLW.

Designing, licensing and constructing a permanent geologic repository for spent nuclear fuel and high level waste will help resolve the challenge of safe disposal of these materials and make construction of new nuclear power plants more feasible, helping to expand our energy options and secure our economic future. In addition, a repository is necessary to support nuclear nonproliferation goals, contributing to national security objectives.

In late 2006, the Department announced its "best-achievable schedule" to initiate repository operations was in 2017. The opening date of 2017 was predicated upon enactment of pending legislation and was developed without regard to budget con-

straints. Given the funding levels in FY 2007 and FY 2008, the "best-achievable schedule" of 2017 for the initial operating capability date is no longer possible. There is an immediate and strong need to address the funding of the repository construction program now for FY 2009 and beyond. To ensure program success it is critical that the Administration's legislative proposal, the Nuclear Fuel Management and Disposal Act, be enacted to provide stability, clarity, and predictability to the Yucca Mountain repository project. Without funding reform, development of a credible schedule for the program is not possible.

ENABLING THE MISSION THROUGH SOUND MANAGEMENT

The Department of Energy is committed to continuing the transformation of its management culture and increasing its focus on results. The Department has continued its efforts to improve in key functional areas and is using its strategic plan as the roadmap to instill management excellence.

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. The Department has revised its human capital management strategic plan to address future organizational needs, workforce size, skill gaps, performance management systems and diversity. In FY 2009, the Department will implement key components of this strategic plan, especially critical efforts to ensure the Department's workforce has the necessary skills to carry out its critical mission. To accomplish this goal, the Department will continue to implement 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 continue to improve the Department's 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 2007 financial statements were reviewed by independent auditors and received an unqualified "clean" 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. The Department in FY 2009 will continue its effort to build and improve its integrated business management system, I-MANAGE, with the deployment of budget execution and formulation modules.

The Department continues to make strides in improving performance. The Department and OMB have worked collaboratively to complete a Program Assessment Rating Tool (PART) review for 51 of the Department's 56 programs (91 percent). Since 2002, the Department's average PART score has steadily improved from Adequate to Moderately Effective. The Department is also leading the government in the number of Effective and Moderately Effective programs.

In FY 2007, the Department improved the quality of its performance measures. This was accomplished by evaluating 30 percent of the Department's FY 2008 performance measures against a standard set of criteria. This analysis identified a need for the Department to improve some of its performance measures to make them more outcome focused and trendable.

In FY 2008, DOE will work with OMB to improve the quality of PART performance and efficiency goals. This initiative will support implementation of Executive Order 13450, Improving Government Program Performance. The quality review will result in improved goals, more consistency between performance information in the PART and the budget submission, and improved performance measures.

To improve financial performance in project management, the Department enhanced the use of Earned Value Management (EVM) techniques that 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. In FY 2009, the Department will continue toward our goal of ensuring all projects have certified systems which will make projects far more likely to stay within planned cost and schedule.

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 per-

forming investments. Through the establishment and use of an Enterprise Architecture that aligns to the Federal Enterprise Architecture, DOE 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 longstanding, systemic weaknesses in DOE'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.

To manage the Department's large real property portfolio requires reliable data. The Department has improved its Facility Information Management System and satisfied the Federal Real Property Council's goal of 100 percent reporting of all data elements. Further, the Department implemented a statistical validation program to ensure the integrity of real property data and better support real property decision-making. To make continuous improvements, the Department will invest in its infrastructure to reduce overall facility square footage, improve energy efficiency and sustainability, and implement an active asset management plan to align resource needs with key Departmental goals.

CONCLUSION

I appreciate the opportunity to appear before you to present the FY 2009 budget proposal for the Department of Energy. I will be happy to take any questions that members of the Committee may have.

The CHAIRMAN. Thank you very much. Let me start with a couple of questions. This issue of funding on weatherization, I believe I'm correct that the Administration's budget that was submitted calls for zero funding for continuation of that program.

We received a report that McKenzie and Company prepared in December which tried to look at what the concrete steps were that could be taken to reduce greenhouse gas emissions. They looked at 250 different opportunities to reduce or prevent greenhouse gas emissions and tried to list those in terms of which were the most cost effective, the least cost for the most benefit. Building insulation came out first on their chart of things that should be done to reduce greenhouse gas emissions and the only significant effort we've got at the Federal level to promote this building insulation or the, sort of, main effort is the Weatherization Program.

In light of that, how is the Administration reaching the conclusion that we should eliminate the program?

Secretary BODMAN. Mr. Chairman, this program resides in the office that we call EERE, Energy Efficiency and Renewable Energy. We've looked very hard at the array of activities that they undertake, particularly looking hard at the questions related to building codes with respect to the construction of new and different kinds of buildings. That is something that we have taken steps on in our own case at the NREL Operation out in Colorado. But more importantly we have worked hard to establish tighter and more effective building codes throughout the country.

When we look at the effectiveness of the various programs and simply the Weatherization Program does not, in my judgment, stack up with the other things that they do. That is why it was zeroed out. It was simply a matter in tight budgets of looking hard at the array of things that are done in this particular office and it is not something that made it.

The CHAIRMAN. So your view is McKenzie and Company was wrong in identifying weatherization or building insulation as the highest payoff?

Secretary BODMAN. No, I saw this when I walked in this morning. So, I have not studied it. But I would tell you that the design and construction of buildings so that they can be insulated more effectively and utilize the sunshine that we have with reflecting glasses and so forth, all of that is, I think, what is included in building insulation. It would be inappropriate, I think, to describe the building insulation as something that the Weatherization Program does in its complete program.

The CHAIRMAN. Let me ask on this issue of improved efficiency building codes. We had a provision that we enacted in the 2005 legislation that authorized the establishment of a grant program to help states adopt the latest energy efficiency building codes, to improve code compliance. I can't find anywhere in the budget where you're proposing to fund that. Am I missing it there somewhere?

Secretary BODMAN. No, I think we have small amounts that are in the EERE budget that are intended to help the states, but it's a few million dollars. It's not hundreds of millions of dollars.

The CHAIRMAN. So there's no real grant program that's been established?

Secretary BODMAN. No, sir——

The CHAIRMAN. What should Congress do since we've already authorized that. I guess we go through the appropriations process, if we want to see grants provided of that type we need to add funding to the appropriations.

Secretary BODMAN. I think that's right. I think it's fair to say that the Administration looked at that and concluded that it was not something that was worthy of and competed effectively in looking at solar energy, wind energy, biofuels, all the other things that go on in EERE's office.

The CHAIRMAN. In the Office of Science one thing I would commend you on is I understand your proposal is to establish an applied hybrid vehicles program there and you're requesting 33 million dollars for that in the Office of Science. I was told 3 years ago that you were intending to initiate a similar Office of Science Program on applied solid State lighting. I can't find any evidence that that has been proposed for funding or has happened. Do you know what's been done there or what you're proposing to do there?

Secretary BODMAN. I think it's in there. We do have efforts that are underway. I don't recall. I'd be happy to get you the numbers for the record, sir, but I do believe that it's there.

The CHAIRMAN. I would appreciate that.

Secretary BODMAN. All right.

[The information referred to follows:]

In the Spring of 2006, we held a workshop on basic research needs for solid state lighting. Had the FY 2008 appropriation supported the requested level, we would have been able to initiate solid state lighting research during FY 2008; however, it did not. The FY 2009 budget request proposed Energy Frontier Research Centers which will bring together teams of investigators to address the grand challenges in basic research, asidentified in several grand challenges workshops, and could include both solid state lighting and electrical energy storage. These new activities will complement the core research programs in semiconductor physics, nanostructured materials synthesis and design, and fundamental light-matter inter-

actions, which provide the underpinning knowledge base for a broad range of energy utilization and conversion applications.

The CHAIRMAN. One other issue I wanted to ask about that's not directly in your budget, but we passed as part of the 2005 legislation, various tax provisions to encourage development of alternative energy, to encourage more efficient use of energy and the production tax credit, section 45, the investment tax credit for solar energy. Those are scheduled to expire at the end of this year. There's nothing in the budget, the overall budget, that the Administration that proposes to extend those. They're all scheduled to expire before this Administration leaves office.

I asked Secretary Paulson yesterday at our hearing in the Finance Committee if that was an indication that the Administration didn't want those tax provisions extended. He said that it was not, but that he was not an expert on energy and I should ask you as to what the Administration's position was on that subject. It struck me that those tax provisions were some of the most useful things we did in the 2005 bill to actually promote development of alternative energy. I think it would be unfortunate if we were to allow them to expire. But I would be interested in your view.

Secretary BODMAN. No, this is not meant to indicate, you know, either support or opposition to the extension of the tax credits. I think it's a question that I expected to be asked and we would be happy to work with you on that and to make a determination as to whether or not and if so, how long and how much the subsidies should be.

The CHAIRMAN. Senator Domenici.

Senator DOMENICI. Thank you very much, Senator Bingaman. Mr. Secretary, I think I indicated how happy I was after a couple of years of not being so happy when we finally got your office loan guarantees and you have experts there. It seems to me you're up and at 'em and that you've—we've got authorization for you for a very substantial amount, 18 plus billion for nuclear. I don't remember the number for——

Secretary BODMAN. I think it's two for the enrichment of the nonutility part of it and then there is an extent to the total is some, but it's an additional 18 billion dollars or 18 ½ billion dollars for presumably largely renewable energy.

Senator DOMENICI. Right. I guess I'm asking do you really anticipate that the insurance of a loan guarantee before the end of this year could happen?

Secretary BODMAN. Yes, sir.

Senator DOMENICI. That's terrific.

Secretary BODMAN. I believe that it could. We have had 16 of the over 100 applications that were deemed to be worthy of further study. We have now met and completed meeting with all 16 companies and then we have asked them to deliver to us, which we expect to be here in the next couple of months, or that kind of timeframe, their formal applications. I would think that we would then go to work on them and I would expect that we would be in a position to issue loan guarantees, I hope, before the end of this year.

Senator DOMENICI. Mr. Secretary, when we did this we were quite surprised to find the House with the interest that they had, but they wanted a very large amount of dollars for renewable, non-

nuclear which we hadn't looked at the big, big dollars. But we now have big dollars available for the non-nuclear renewables. What might that be as you see it?

Secretary BODMAN. First of all, the Energy Policy Act of 2005 requires us to notify the appropriators of both the Senate and the House, I believe, of our intention to undertake a loan guarantee solicitation. I would expect that that notice would be made to you all sometime in the next couple of months. That means that this summer we would then there remains, I think, a 45 day period after we notify Congress. After that then we are free to proceed with the solicitation.

I would expect that we would probably refer to both nuclear as well as renewable energy and undertake them both at the same time. It may not be that we can process them. Renewable energy projects tend to be smaller. They tend to be less expensive and therefore the care with which we need to study it and look at it would be greater, I would believe. So it may be that the renewable ones would get done faster, but we would therefore still be undertaking and looking hard at the nuclear side.

Senator DOMENICI. I have one last question and then I'll stick around and go a second round if the Chairman has one. Increasing the science investment in the NNSA Laboratories, I'd like to ask you, Mr. Secretary. You have spoken frequently about the need to support the investment in science to build science capabilities at Los Alamos.

I believe it's critically important that we initiate the process including providing sufficient funding for the refurbishment of the Los Alamos linear accelerator. You're aware of what it would lead to?

Secretary BODMAN. Yes.

Senator DOMENICI. It could lead to a completely new process ending up at Los Alamos. This facility is badly needed and in need of an upgrade to sustain the laboratory scientific capability into the future. Since a new management team has been in place I've endorsed the laboratory and encouraged them to develop a new science plan.

It is a conclusion of the laboratory leadership and cooperation with the Department that the lab should focus on building upon their expertise and materials under extreme conditions. LANL can use the refurbished accelerator to demonstrate and expand this capability for both the defense mission as well as open scientific research, they have come up with a scientific facility known as MARIE, Matter-Radiation Interactions in Extremes. You've got to have MRIE because nobody could possibly use the others.

The first step in this process of refurbishment is LANSCE. Get Lance up to speed. The President's budget seems to say we want to do this by MARIE, but then it provides a miniscule amount of money to support the study of the upgrade. What does that mean to you?

Secretary BODMAN. I think it means that there are other ways of funding it. Within the Science Office there is a new program. I think that we've asked for 100 million dollars for the program that would be run on a competitive basis, but I would think that might

be a reasonable source of supply of funding for the work on MARIE.

I don't think there is any question that we're serious about it. I'm pleased to be able to say that to you.

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

The CHAIRMAN. Senator Dorgan.

Senator DORGAN. Mr. Chairman, thank you and Mr. Secretary, thank you for being here. I have a lot to ask you, but I won't have the time with 5 minutes. I want to talk with you at some point about Future Gen and where we're headed and the urgency of finding ways to continue to use coal without releasing CO_{22} into the atmosphere. If it's not Future Gen what is the timing and the urgency to get this done.

So there are a lot of issues and I will with——

Secretary BODMAN. In a quick word, sir, it is carbon capture and sequestration, I believe. But that's the answer and that's what the re-management of Future Gen is intended to do, to do it in multiple sites and so that in a simple way that's the answer to your query.

Senator DORGAN. On the appropriations side, Senator Domenici and I, Chair and Ranking Member, will, I assume, have the opportunity to ask at greater length on those issues.

Secretary BODMAN. Right.

Senator DORGAN. Other appropriations issues. I want to talk to you about SPR. I'll be introducing today some bipartisan legislation that says let's take a time out in putting oil underground. Let me just describe my strong feelings about this issue and have you respond to it.

SPR is almost 97 percent full. Our international requirements are 90 days of strategic stocks. Your own Web site says that there's 118 days of public and private stocks for import protection in this country. That's from your Web site.

Now when oil is 90 and 100 dollars a barrel and the Department is taking 50,000 barrels a day and much of it sweet, light crude in royalty in kind payments and then sticking it underground. I just think it defies all common sense. You've got a half a billion dollars down at the Department from the exchange of oil from Katrina back in September and October. You're not using that half billion dollars. You could to go out and buy in the market to fill SPR, but you're not doing it.

I understand why you're not doing it. Why would you do this when prices are bobbing around 90 and 100 dollars a barrel? Yet when you take in the royalty-in-kind oil from the Gulf what you're doing is just sticking that underground.

Now this committee has testimony from Mr. Vergler who said this, let me just read it quickly. The rise in light, sweet crude prices to almost 100 dollars a barrel in November came about in part because the Department of Energy has been removing a significant share of the daily volume of this type of crude from the market for storage in SPR. The volumes have amounted to as much as three-tenths of a percent of the global supply of sweet, light crude available. The DOE's action may have added as much as 10

percent to light, sweet crude price given the low estimated price elasticity of that kind of oil.

So my question is with prices 90, 100 dollars a barrel, why on earth would we reduce the supply of oil available in the marketplace which clearly has the effect of driving up prices. Your position seems to be let's top it off. My position is time out.

Now I don't know which is going to prevail, but I'm going to introduce bipartisan legislation today to say stop it. There's an appropriate time to do this, but we have testimony before this committee saying your actions are driving up the price of gasoline. It's just intuitive to me that we ought not to be doing this when prices are at their record highs. So Mr. Secretary, respond please.

Secretary BODMAN. As I visited with you before the hearing started, sir, we are required to undertake a study before we initiate either the royalty in kind or the use of cash to purchase oil for the SPR. I would respectfully disagree with the testimony that you just cited. I'm an engineer and not an economist and that apparently this gentleman is an economist. But I would respectfully disagree with his conclusions. They certainly differ from the results of our work which is ongoing as we speak.

We're re-running it. We do this on an annual basis looking hard at whether the royalty in kind acquisition of oil would affect the price in any meaningful way. The conclusion is that it does not.

Senator DORGAN. It clearly affects the price. You're just saying it doesn't affect the price in a meaningful way.

Secretary BODMAN. It does not affect the price to any meaningful degree. It is less than one tenth of 1 percent of all of the oil that is used in the world everyday. We're now using about 70,000 barrels a day. We use about 85 million barrels a day of oil.

So it is simply that. It is the work that is done. We have by our accounts 58 days. That does not count the privately owned inventories, but I believe that we are correct in being conservative and looking just at the government owned inventories. That's the reason that we do it.

Senator DORGAN. Mr. Secretary——

Secretary BODMAN. There is room in my judgment for different opinions on this and that's our view.

Senator DORGAN. Mr. Secretary it's not being conservative to go out and buy oil at the highest prices at this point. My only point is this. I used to teach some economics in college and I understand that you can make the point that there's not a meaningful increase, but you can't make the point that there's not an impact on the price if you reduce supply.

My point is simply that the sweet, light crude which has been referenced to us as much more important and different market. You take that portion of sweet, light crude off the market, 50,000 barrels a day. The point is it does affect the price and you know, I mean, who's right?

Why not be cautious on the side of helping customers and consumers at this point who are out there driving up to the pumps and wonder why the Department of Energy's taking 50,000 barrels of oil and sticking it underground. You're not doing that with your own money that you got a half a billion dollars. I assume if you thought if it was a good idea to keep doing that you'd spend your

half billion dollars, but you know it's not a good idea to take it off the market at a hundred dollars a barrel and stick it underground, so——

Secretary BODMAN. Senator, I just would say to you that the theory of your criticism and your comments are that these are very high prices. There is a reason that markets are and that people are buying oil at 88, 89 dollars a barrel. They think it's going higher and so that's what a market means.

Senator DORGAN. Secretary, sure they do. We've got investment bankers and hedge funds buying. We have got, for the first time in history, investment bankers buying storage to keep oil off the market precisely because they believe they're going to make money. The fact is every bubble bursts and this bubble will burst as well.

I've gone far off field here but I do hope we can have continued discussions about whether we'll end up with more oil on top.

Secretary BODMAN. I'd be happy to talk about it, sir. Anytime.

The CHAIRMAN. Senator Barrasso.

Senator BARRASSO. Thank you, Mr. Chairman. I'd like to follow up a little bit on this one-tenth of 1 percent or less than one-tenth of 1 percent—maybe an insignificant or unmeaningful amount. I see that of this budget of 25 billion dollars less than one-tenth of 1 percent or 22 million is going to be expended in Wyoming, in my home State. To me that is an insignificant amount in a State where we are right at the top in terms of coal, in terms of oil, in terms of natural gas, uranium, renewables, wind power and plus your budget would recommend a 36 percent reduction in expenditures in Wyoming and that is very concerning to the people of Wyoming.

Specifically in a State where we have enormous energy resources and enormous amounts of coal I believe that the Department is not moving as expeditiously as it should with respect to clean coal research. Now, I notice that Future Gen was brought up and perhaps some time for additional questioning. Last year you said the foundation of the Department's clean coal research program is the Future Gen project. Could you explain to me what has changed and if you're going to be submitting a reprogramming request for perhaps a restructured Future Gen?

Secretary BODMAN. Yes, I think we have attempted to do that Senator. I think the goal of the revised Future Gen project should be the carbon capture and sequestration program. Without that, the use of coal in at least the near term, for the next five to 10 years, is going to be in question.

So we have got to demonstrate that and we've got to demonstrate it in a variety of ways. So we are working very hard, everything from the Office of Science to the Fossil Fuel Office which has a programming war. I've just been handed a note, so I'm now trying to read and talk at the same time.

Senator BARRASSO. Take your time, Mr. Secretary.

Secretary BODMAN. No, no. But our goal is to try to sequester the carbon dioxide and to undertake it in a variety of ways and so that we can do it in multiple sites. That's really what the goal is going to be. I am hopeful that we will be programming that.

I have not, I guess—the note that was handed to me says that we have, that in terms of reprogramming, we have not decided whether a formal reprogramming is going to be required or not and

so that we're not using that term as such. But I just wanted to say that I think that the heart and soul of using coal which we are great believers in, is going to be using carbon capture and sequestration and that's exactly what we're trying to accomplish.

Senator BARRASSO. I suggest that perhaps Montana, Colorado, North Dakota or Wyoming could be helpful to you as you look to develop some of those projects. Will you today commit to some progress being made during this Administration on this specific area which is so crucial to our future?

Secretary BODMAN. To?

Senator BARRASSO. Carbon capture and sequestration.

Secretary BODMAN. I will commit to you that we are very motivated to try to look very hard at this. We have now undertaken a request for information coming from the industry, from companies, largely utilities that may have an interest in an integrated gasification and combined cycle process. Then at the same time whereby we would then fund the establishment of, I think it's a million tons a year of carbon capture and sequestration for that unit. That would be our funding. So I can easily commit to you that we are heavily motivated and we will work very hard on it.

Senator BARRASSO. We certainly believe that clean coal research is going to be crucial to the future needs of our Nation and the world, and we need to be a leader in that, Mr. Secretary.

Secretary BODMAN. Yes, sir.

Senator BARRASSO. Thank you.

Two other quick issues, one is the Western Research Institute which has a relationship with both the University of Wyoming and the University of North Dakota. That has been zeroed out in its appropriation line.

I think these two locations have been a real success story in energy innovation in terms of research, in terms of leveraging private funds, and in terms of coming up with patents and technologies. I'm sort of curious why the Department of Energy would decide to walk away from this endeavor.

Secretary BODMAN. I can't really respond. I'd be happy to respond for the record. I've got books full of things that I've been informed about, but that isn't one of them.

[The information referred to follows:]

The Western Research Institute (WRI) located in Laramie, Wyoming is a de-federalized institution that has been part of the Cooperative R&D budget line in the Fossil Energy R&D Program since 1983. The Coopertive R&D Program supports activities of Federal, Industry and research institute endeavors and partnerships. A new solicitation was issued in FY 2007 and WRI was selected along with the University of North Dakota Energy and Environmental Research Center (UNDEERC) in December 2007 for the continuation of their cooperative agreement for the next five years with a requirement for private sector cost sharing of 20%.

The Department did not request any funding for this program because we believe that WRI and UNDEERC can apply for funding on a competitive basis for awards from various programs in Fossil Energy and the rest of DOE. The centers perform valuable research; however, the taxpayers will benefit more if these institutions were selected for awards on a competitive basis.

Senator BARRASSO. The other is a testing site called the Rocky Mountain Oil Testing Site.

Secretary BODMAN. That one I know about.

Senator BARRASSO. There's a producing component as well as a testing component.

Secretary BODMAN. Right.

Senator BARRASSO. I toured there within the last month. They do remarkable work. They've been very significant from both a research as well as a production standpoint and I'd commend you for keeping that, at least at your level, and would recommend that you continue to support such a productive program.

Secretary BODMAN. Thank you.

Senator BARRASSO. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator Tester.

Senator TESTER. Thank you, Mr. Chairman. I want to thank you for being here today, Sam.

Secretary BODMAN. Yes.

Senator TESTER. I want to step back a little bit just to clarify what you said that deals with the weatherization assistance grants. What I thought I heard you say to the chairman was that in the overall budget there wasn't the cost benefits to that program to even flat line the funding and that's why you took—that's why it was reduced by some 220 million dollars.

Secretary BODMAN. That's correct, sir.

Senator TESTER. That's a bit confusing because I think this book is one that you guys put out, right?

Secretary BODMAN. I don't know.

Senator TESTER. I think it is. It's your energy budget request. It says in here that by 2030——

Secretary BODMAN. Oh, then we did put it out, yes.

Senator TESTER. So this is your language not mine. By 2030 this program could provide cumulative consumer's savings of 2.5 billion and roughly the same savings to electric power industry. Consumer savings would grow to more than 200 billion by mid century. Additionally if you want to talk about carbon sequestration and capture this will help eliminate that. Carbon savings could be 250 million metric tons more than 500 metric tons down the line.

That tells me that you're justifying this program here in your language. Yet you're pulling the money out over here and——

Secretary BODMAN. All I can tell you is sir, I don't have that document in front of me, but I can tell you that when we looked at the effectiveness and the financial returns from the efforts to weatherize homes they did not match up with the cost. I think the return on it was between five and 10 percent. That was viewed on our terms as being less than we could accomplish by working on zoning, working on energy star appliances, working in a variety of ways that that office does.

Senator TESTER. Ok. I can just tell you that this is exactly the opposite of everything I've heard. The low hanging fruit in energy and energy security for this country, I've always read and I would frankly believe is conservation and efficiency.

Secretary BODMAN. I agree with that.

Senator TESTER. This tends—this seems to be pulling away from that heading in a different direction. But I think we've made the point. My only concern is I hope that this particular line item in the budget was put forth in good faith. I'm not assuming that. This is a good enough program with the legislature the Congress will put it back in.

Secretary BODMAN. Sir, it was done for the reasons that I mentioned.

Senator TESTER. Ok. Thank you. It is my understanding that the Department of Energy is committed to funding several regional carbon sequestration partnerships, phase three partnerships, and if you're not familiar with these let me know. I think there's seven.

Secretary BODMAN. That's correct.

Senator TESTER. That will be funded and I believe that's still the intent, correct?

Secretary BODMAN. That is correct. We have issued funding for four of the seven.

Senator TESTER. When will the other three be funded?

Secretary BODMAN. I don't know. I think it's going to be a question of and I'd be happy to give you more something more specific, but the question has been posed.

Senator TESTER. Ok.

Secretary BODMAN. How effective is going to be the scientific study of making sure that if you do put the carbon dioxide beneath the surface of the earth that it stays there? How do you instrument it? That's the question.

Senator TESTER. That absolutely is the question and I applaud the agency's investment in this technology. As Senator Barrasso pointed out, it's critically important if we're going to have coal in the future. I think most people we talk to think that coal is going to be part of the energy portfolio for quite a while to come.

So if you could get back to me and tell me there's a project in Montana and Wyoming, Big Sky Sequestration Project and tell me when that will be funded.

Secretary BODMAN. I'd be happy to do that.

Senator TESTER. I would certainly appreciate it.

Secretary BODMAN. Sure.

[The information referred to follows:]

DOE has made awards to four of the Regional Carbon Sequestration Partnerships (RCSP) for Phase III Large Volume Sequestration Testing. The remaining three Phase III projects are in the process of being negotiated. The negotiation process requires finalizing the technical scope of the project along with undertaking an evaluation and cost analysis of the proposed costs to verify their appropriateness. Independent cost verification is being undertaken by DOE to ensure the project costs are adequate prior to award. Independent technical review will be conducted at the end of March 2008. This technical review, conducted by an internationally renowned group of experts, will ensure that science plans are adequate. DOE is conducting reviews concurrently with negotiations and plans to award the remaining RCSP Phase III Projects when completed. The estimated time-frame for the remaining awards, including the Big Sky Regional Partnership is the summer of FY 2008.

Senator TESTER. Just a side—I know that I've only got about 30 seconds left—the Future Gen project is a little bit confusing to me. That is it was recently scrapped because, the information I got, it cost too much money.

Secretary BODMAN. That's right.

Senator TESTER. Now we're coming back with another program, another Future Gen program that has what, three or more. I think three facilities, right?

Secretary BODMAN. We don't know.

Senator TESTER. This is going to add money to the budget now for this and it looks to me like last week it cost too much. Next week it looks like a good project so we're shifting gears. That kind

of bothers me because particularly in energy policy we ought to be looking out 3 to 5, 10, 20, 50 years from now. So I don't get that part.

Secretary BODMAN. Let me try to explain it to you. That project was originally 950 million dollars. That's what I was told when I came into this job. It was re-estimated at being a billion eight. That was last summer.

It was at that point in time that I blew the whistle on the project and with the management of the companies that were involved here and said look, this meant that the government was going to have a billion three of funding that we were required to put up and they were going to have the remaining 500 or 400 million dollars.

Senator TESTER. Who's they?

Secretary BODMAN. This is the called the Future Gen Alliance. It is a group of utilities, coal companies——

Senator TESTER. Ok.

Secretary BODMAN [continuing]. That operate. It's international.

Senator TESTER. It's the private sector.

Secretary BODMAN. It's the private sector and we asked them. I said look, we're going to live with this billion three. We'll do that and we will go to bat with OMB to try and get the money for it, but I want you to sign up for a different split. If the cost goes beyond the billion eight, I think the cost is going to go much higher.

Senator TESTER. What did they say?

Secretary BODMAN. Eventually they said they would do it, but they would fund it by being able to borrow against it and thereby increasing the risk of the, in my view, of the entire project. So, that is the reason that I felt, that it didn't make sense to go forward. That is the reason that we have focused on trying to identify those utilities that have an interest in building an IGCC plant and that we would then fund the carbon capture and sequestration.

We hope it will be a multiple of units. That is to say it would be three or four units. I don't know that because I don't know how much it's going to cost.

Senator TESTER. Ok. Thank you, Mr. Chairman. Thank you.

The CHAIRMAN. Senator Craig.

Senator CRAIG. Thank you very much, Mr. Chairman. Mr. Secretary, again welcome to the committee. I know this is your last time presenting a budget before this committee.

Secretary BODMAN. Yes, sir.

Senator CRAIG. So let me say at the onset how much I've appreciated working with you on a tremendous number of issues and I think the legacy that you've helped us establish through the Energy Policy Act of 2005 and the one we passed last year. The chairman, the ranking member and others that have participated in this is a positive one for our country.

Secretary BODMAN. Thank you, sir.

Senator CRAIG. I think history will recognize the sense of urgency that we've developed in the last decade on a need for new energy technologies, independence, all of those kinds of things that lead us where we are headed.

Let me turn parochial though in my last time before the committee. In working with you over the next many months to solve some problems and look and recognize the future of the National

Lab in my State that is now the lead nuclear lab doing really some phenomenally positive things as many of our labs do for our country. I want to talk about our need to spend valuable dollars for revitalizing infrastructure, the R and D to support our Nation's nuclear renaissance that is so important and what I believe in part is a waste. A waste of money as it relates to waste.

Do you know the status and if not can you get back to me within a week regarding the request I made that the Legacy Waste liabilities currently under the INL responsibility be transferred to the ENM program this year. That helps us sort out the money so that money can flow to infrastructure while keeping our clean up on track on program.

Secretary BODMAN. I don't see how that is going to help the problem. We've got issues in Idaho with enough funding. I admit that. But I don't know how moving money around within the Department. It's all one budget.

Senator CRAIG. We divided the contract out there. We've redirected, as you know, during your tenure and others to reshape that. Let me work with you in that arena. There are many who disagree with your assumption as it relates to how best to spend the money.

Secretary BODMAN. I'd be happy to work with you, sir, under any circumstances.

Senator CRAIG. The National Academy of Sciences report laid out a number of recommendations on how DOE working with the INL could fix the ailing infrastructure at the lab. How are these recommendations considered when compiling the FY2009 budget request? Were they used as a template of any kind?

Secretary BODMAN. This is with respect to the two buildings that were to be?

Senator CRAIG. That is certainly a part of it.

Secretary BODMAN. That's a part of it? They were looked at by the NNSA and their recommendations to me and to the deputy who did the work on the budget were that it was very expensive. That it was going to be a very expensive undertaking. That we had better uses for the money in Idaho.

Senator CRAIG. Buildings 651 and 691 are the ones we are talking about in part.

Secretary BODMAN. Right.

Senator CRAIG. As it relates to upgrades needed for the special nuclear materials issues, the GNEP issues that are still on course, I think.

Secretary BODMAN. Right.

Senator CRAIG. My staff requested a briefing with NNSA on these upgrades and we are still waiting for a response. Are you aware of DOE NNSA's intent at the time? Obviously you are by the recommendations that were made.

Secretary BODMAN. Yes.

Senator CRAIG. Is there a need for clarification from Congress on this issue?

Secretary BODMAN. I think that we will apply for a reprogramming of the funds. I think there's some 14 million dollars that were put in the budget in fiscal year 2008 and we will be asking for a reprogramming of those funds because it was viewed that neither

of the two buildings for which this money was intended made any sense, at least as we saw it. So, I would be happy to encourage you to encourage the NNSA to make sure that they meet with your staff.

Senator CRAIG. Yes. Ok. I'd like to sit down with you on those at least to understand what you and your people are seeing that we're not.

Secretary BODMAN. All right, sir. I'd be happy to do it.

Senator CRAIG. The Idaho Clean Up Project could well be the next Rocky Flats type success. We're just on the verge of that opportunity.

Secretary BODMAN. Yes.

Senator CRAIG. What is the logic of reducing funding and delaying clean up when the end is in sight and the DOE can hang on their chalkboard another major clean up success? That's my next question.

Secretary BODMAN. We have within the Department, this has been a very—each year is a challenging budget year. We have a number of sites where we are not going to be able to meet milestones and legal agreements that we have signed on to because we simply don't have the funds as we have looked at it and Idaho is one of them. Because the view is that we have other sites where there is much greater danger to the environment and much greater, much more serious problems.

Therefore we have reduced the funding for Idaho. We've reduced it at Oak Ridge. We've reduced a number of places in order to focus on Hanford and on Savannah River and other sites. We've reduced it in part at Oak Ridge and increased the funding elsewhere at Oak Ridge.

Senator CRAIG. Mr. Chairman, I know I'm out of time. One very quick followup. By your answer are you telling me that you're going to miss milestones at Idaho this year by the reduced funding?

Secretary BODMAN. I don't know the answer to that.

Senator CRAIG. Because if that's happening or if that's the intent of the budget process that you're laying before us.

Secretary BODMAN. Yes.

Senator CRAIG. Then you'd better begin dialogs with the State in rapid succession.

Secretary BODMAN. I think that we are. We have begun dialogs with all of the State governments of which where we will be falling short in terms of milestones.

Senator CRAIG. Thank you.

The CHAIRMAN. Senator Akaka.

Senator AKAKA. Thank you very much, Mr. Chairman. I want to say good morning and hello to all here.

Secretary BODMAN. Yes, sir.

Senator AKAKA. I want to commend and thank Chairman Bingaman for all of his hard work throughout 2007 to ensure the passage of the Energy Independence and Security Act, and also thank Ranking Member Domenici for his efforts, as well. I want to welcome Secretary Bodman; and, thank you for the work you do——

Secretary BODMAN. Thank you, sir.

Senator AKAKA [continuing]. For our country. I'm happy to see that you have brought some good news to our meeting today and

that there has been an overall growth in the Department of Energy budget. I'm pleased to see this overall increase as well as the increase in the budget for research and development of biofuels and geothermal technology. I'm so glad that you are focusing on global energy security in the future.

Secretary, it is my understanding that you've increased the budget for biofuels R and D by 26.82 million dollars while reducing the budget for hydrogen fuel R and D by 64.84 million dollars. My question to you—is there a particular feedstock you're pursuing more than others? Specifically I'm serious and curious about your research in the use of algae as a feedstock and how much progress has been made in this regard?

Secretary BODMAN. With respect to algae, as it turns out, algae has the ability to manufacture a fuel that can be withdrawn from the algae merely by pressing it. That it is a diesel fuel. We are making, as you know, good progress on that.

In addition, a lot of that is going on in the private sector. There is a lot of work going on both in what the government is working on as well as the private sector.

Senator AKAKA. Since you are cutting your hydrogen fuel research moneys, are you currently taking any action in the area of methane hydrate research and exploring its potential as a fuel source in the future?

Secretary BODMAN. No, we are not funding methane hydrates within the Department. That is being done in other parts of the government. NOAA being one I believe. So that it is something that, at least as we viewed it, methane and the production of natural gas with eight dollar natural gas which is today's price, we think it's difficult to warrant or to justify spending taxpayer money on the production of methane hydrate.

Senator AKAKA. Secretary, I'm pleased to see that you've increased your funding for geothermal technology——

Secretary BODMAN. Yes, sir.

Senator AKAKA.[continuing]. By 51.4 percent. As you know, we have a geothermal plant on the Big Island of Hawaii, which supplies about 20 percent of that island's total electricity needs. There are other countries, such as Iceland, that have not only become energy independent largely because of geothermal, but have also turned it into a successful economic venture. Do you have plans to work collaboratively with other countries that have taken the lead in geothermal energy? If so, what are they?

Secretary BODMAN. You know I don't know the answer to that question. I do know that the work that we are doing on geothermal energy is intended to be in a new research direction that actually came out of MIT. The faculty up there wrote a report and recommended that a substantial increase in geothermal energy could be accomplished by this government by the, what they call enhanced geothermal systems.

That means breaking up the rock. What they used to call fracking in the oil business. Breaking up the rock beneath the surface of the earth and thereby producing more steam and more energy. So, I do know that. That's what motivated, I think it's an increase of substantial sum, the 30 million dollars of funding for that we've asked for in this budget.

But in terms of what work we are doing with foreign governments, I don't know our foreign companies. But I'd be happy to get back to you on that.

[The information referred to follows:]

In 1997, the Department of Energy was an original signatory of the Geothermal Implementing Agreement, administered under the auspices of the International Energy Agency. Today, the Department is active in the Agreement, which includes 12 countries and 3 private companies working in cooperation to share information about geothermal energy development around the world. The opportunity identified by MIT, Enhanced Geothermal Systems (EGS), has spurred renewed interest in geothermal energy in many countries, and within the past few months the Department has been in discussions with officials from Iceland, Australia, and New Zealand about stronger collaborative ties. At this year's Washington International Renewable Energy Conference, we met withinterested parties from those countries and others to discuss how we might form a partnership to work more closely on EGS technology development.

Senator AKAKA. Thank you. I look forward to that. Let me finally say, regarding the decrease in funding for water power—you mentioned that current funds are sufficient. As this new program gets underway and a program road map is established, I just want you to know that I'm interested to know what type of road map you envision, as well as a timeline.

Secretary BODMAN. When you say water power what is it that you mean? Do you mean hydro power or do you mean tidal power?

Senator AKAKA. Tidal power.

Secretary BODMAN. Tidal power. Yes, that's something that I think the Congress put into the budget in fiscal year 2008 and we've added another three million dollars to it in order to get it got done late in the year. So we will not have spent the whole ten million dollars. So we will have 13 million dollars that we will make available to basically do a study of what's available. Where's the work that's going on and where might we be funding? What kind of research might we fund? That's the mission. That's the program.

Senator AKAKA. Thank you very much for your responses.

Secretary BODMAN. Yes, sir.

The CHAIRMAN. Senator Corker.

Senator CORKER. Mr. Chairman, thank you. I'm certainly delighted to have the opportunity to talk with our great leader at the Department of Energy. I'm glad you brought up Oak Ridge and I notice there was a reduction in Environmental Management funding that we can talk with on the phone or in some other setting. I don't want to waste everybody's time on a parochial issue that I'm sure we'll talk about in due time.

I appreciated Senator Tester's line of questioning in particular. But Senator Dorgan has talked to you a little bit about an issue today that I know we'll be taking a vote on at some time. He's an outstanding promoter of his ideas on the Senate floor and I just wondered what your response would be if his bill were to pass. Talk about the flip side of that, if in fact his bill passed.

Secretary BODMAN. This is the bill related to strategic petroleum reserves?

Senator CORKER. That's right.

Secretary BODMAN. Sure.

Senator CORKER. What impact would that have on our country strategically? What would you argue? I know you all mostly talked about economics.

Secretary BODMAN. Right.

Senator CORKER. But from the standpoint of our country's strategic interest what impact would that have?

Secretary BODMAN. The way I look at life we've got about 57, 58 days of protection in, right now as of today. That if we're successful in getting the SPR filled to its 727 million barrel capacity as it now exists, we'll be at 60 days of protection. We really need to be higher than that.

So that the idea would be by going to a billion barrels which is, as I see it, part of what the Congress has approved and that we've asked for funds in the budget that is before you for that. That would get us roughly to 75 days looking at an increase in the imports that is expected over the next seven or 8 years, I believe it's by 2017. The President has proposed going to a billion and a half barrels. That would get us up to the 90 day level of protection by the year 2025. So those are the steps that we would expect there to be.

Senator CORKER. Now the President's proposal, is that based upon input from people looking at our strategic interest? Where did this designated goal, if you will, come from?

Secretary BODMAN. The 90 days came from the agreement that we have entered into as a part of our membership in the International Energy Agency, IEA, which is in Paris, France. It's part of the OECD and so that is a commitment that we have to have 90 days worth of protection.

Senator CORKER. The President in his State of the Union talked about a Clean Technology Fund. I know that's not part of your particular budget directly.

Secretary BODMAN. Right.

Senator CORKER. But I assume that that's something you were highly involved in creating.

Secretary BODMAN. Yes.

Senator CORKER. Could you expand a little bit on what in essence we're talking about there and what the objectives are?

Secretary BODMAN. The goal, I think it started off with a request in the Treasury. This is a program that has been run in the Treasury, I believe that Secretary Paulson is responsible for. I think the goal would be to have up to two billion dollars made available by the United States. I think in the budget for this, for fiscal year 2009, I think it's 400 million dollars. So the idea would be that over a 5-year period we would increase the commitment to it.

I do know that he has been busy working with finance ministers around the world to encourage them to participate in it. So it would be a, I don't know, 5 to 10 billion dollar program. The idea would be that those would be funds that would be made available to the developing nations to use more efficient technology, more effective technology in the expansion and in dealing with their energy problems.

Senator CORKER. So the parameters really are not yet truly set. It's sort of being developed.

Secretary BODMAN. It's going to be a function of how much money we, you know, how effective Secretary Paulson is in getting contributions from other countries.

Senator CORKER. Mr. Chairman, I know my time is up. I would love at some point to, Mr. Secretary, talk about carbon sequestration. I know how important that is to the coal industry and to our country, actually, with all the reserves that we have.

I guess we've had testimony regarding that. There still seems to be a lot of issues to be resolved, many, many issues. At some point I hope we can talk more about the actual, practical ability to be able to use that in a way that's going to make a difference with cap and trade bills that we're going to be talking about in the very near future.

Mr. Chairman, thank you for the time.

The CHAIRMAN. Thank you.

Senator Salazar.

Senator SALAZAR. Thank you very much, Senator Bingaman and Ranking Member Domenici. It has indeed been a pleasure to be a member of this committee now and hearing you, Secretary Bodman, for the fourth year in a row. It just reminds me of how fast time flies around here.

Secretary BODMAN. It does happen fast.

Senator SALAZAR. It does happen fast. I very much want to get a copy of Senator Domenici's two pages of some of the work that we've done out of this committee over the last several years because I think it's important for the committee to remind itself of some of the work that we've been able to do with you.

Let me also thank you, Secretary Bodman, for your interest and your support of the National Renewable Energy Lab. I think the scientists who work there in Golden, Colorado really do hold the keys to our clean energy future. The support that you've shown with your physical presence there and your financial support is something that we very much appreciate. I know a number of my colleagues have been a part of tours that we've had there on the site.

I also want to just make a quick comment on the energy efficiency and renewable energy budget, the EERE. That is I appreciate what you're doing on geothermal. You know I think geothermal is one of those technologies, one of those realities. It's been around forever.

I remember our potato cellars essentially used to take advantage of geothermal in order for them to be able to keep the potatoes through the winter. So it's been around forever. I think it is one of the essential components of how we deal with our energy future. So I appreciate the mark up significantly that you have for geothermal technology in your budget request.

I would only note that I also think solar is a very important aspect of how we move forward with harnessing the power of the sun. You do have a 7.4 percent decline in that in your budget request. I'm hopeful as we work through the budget process we might be able to wrap up what we do with respect to solar. So I may have some more questions that I may ask of you later on if I get an opportunity on that part of the budget.

I want to take off on what Senator Corker was speaking about and that's the Clean Coal Power Initiative. I appreciate you funding up that aspect of our programs here. Senator Bingaman and I worked very closely on getting the carbon sequestration program

included in the last energy bill that was signed. So if you can take just a minute, minute and a half, and kind of describe for us as a committee where you see us going with respect to coal and carbon sequestration as we authorized in the 2007 bill.

Secretary BODMAN. If you will forgive me I've got a sheet here with the numbers on it. In terms of carbon sequestration and the Future Gen project we have requested 156 million dollars and that is going to be working on what they call pre-combustion carbon capture and sequestration. This is in after you gasify the coal you then can remove the carbon dioxide from the stream and that will help.

Second the CCPI which is the initiative that is intended for both pre and post combustion CCS in plants that already exist and so that that's 85 million dollars. The sequestration program is the partnerships. That's 149 million dollars.

Senator SALAZAR. Let me just ask you this question.

Secretary BODMAN. Yes.

Senator SALAZAR. With respect to all of those amounts relating to coal and carbon sequestration, do you think those are the amounts of money needed for us to be able to stand here a year from now saying that we're making some progress on carbon sequestration.

Secretary BODMAN. Yes, I think so. I do believe it, yes, because the total of all of this is 648 million dollars. That's a 25 percent increase. That's more money then it's been asked for and most of it, most of it, is headed toward carbon capture and sequestration one way or another.

Senator SALAZAR. At some point I think it would be important, Senator Bingaman, for us to have a hearing that just focused in on what's happening with carbon sequestration. Maybe that's something that we can do as a committee.

I have a question concerning the finance package that Senator Bingaman and I and others worked on this last year which didn't quite receive enough votes. The energy package that the President signed in December was a very good movement forward. But I think that one of the legs of that tripod that was missing was a finance committee component that would have moved forward with production tax credits and all the rest of the incentives that we need for the renewable energy economy.

Just without taking up a political point of view on that finance package, is that something that would help us ultimately achieve the missions that you have laid out for the Department of Energy if we could get that passed through the United States Congress?

Secretary BODMAN. I think so. I think we'd be happy to work with the Congress on that. As I've said to the chairman earlier in the day, I'd be happy to work with you on that question.

Senator SALAZAR. Thank you very much, Secretary Bodman.

Secretary BODMAN. Thank you.

The CHAIRMAN. Senator Murkowski.

Senator MURKOWSKI. Thank you, Mr. Chairman and thank you, Secretary. I'm sorry that I was not able to hear most of your testimony. We had other committee hearings this morning, but I have had a chance to look through the Department of Energy budget.

There are some good things, from my perspective, particularly the increases that we saw in funding for the applied sciences, the added funding for climate change research and for biofuels. I certainly support the proposals for nuclear energy development and the efforts to implement the Energy Loan Guarantee Program, some good things. The Senator from Colorado just mentioned the plus up, if you will in geothermal. That's something that as you know we have been pushing on and I am pleased to see that you have kind of backed out of zeroing out the Office of Geothermal and have proposed the increase.

I would like you to consider, however, funding some additional research and some development money for the technology to further the traditional service—surface hydrothermal technology. I know the direction that the Department is going on. We certainly have a host of different projects throughout the State of Alaska that are, I guess you'd describe them as just more traditional in nature, that could truly benefit from some assistance from the Department.

So I would hope that we would be able to have some discussions as to how we might consider some funding for these traditional technology advances. There's some exciting things that are happening out there, and we'd like to think that we could work with you on that.

Secretary BODMAN. Is this surface? Is this steam at the surface of the earth? Is that what it is?

Senator MURKOWSKI. Correct, as opposed to the hot rocks.

Secretary BODMAN. As opposed to below.

Senator MURKOWSKI. Below the surface, but not the hot rocks technology.

Secretary BODMAN. I see.

Senator MURKOWSKI. As you know we've got the project up in Chena Hot Springs.

Secretary BODMAN. Right.

Senator MURKOWSKI. That is utilizing the low temperature geothermal and we've seen great success there. We think we have potential for similar type projects out in Western Alaska, in South Central, but a different technology than perhaps you would see advancing in, for instance, the State of Colorado.

Secretary BODMAN. Ok.

Senator MURKOWSKI. I want to ask you about the Renewable Energy Deployment Fund. In the energy bill that we just passed we included a provision that would create the Renewable Energy Deployment Fund to provide for Federal grants to provide up to 50 percent aid for the construction projects for these renewable energy projects in Alaska. Things are tough right now in the State.

As you know, we've always had very high energy costs, but with the price of oil as it is we're seeing gas selling for seven bucks a gallon at Arctic Village. Home heating fuel is at about 4.99 a gallon in the village of Atka. We've had these conversations in my office, but electricity, as you know, ranges from anywhere from 40 cents a kilowatt hour to 91 cents per kilowatt hour in the community of Lime Village.

If we can figure out how we can get renewable energy technologies out in these villages, we can make an absolutely incredible

difference. So my question to you at this time is whether or not the Department is prepared to go to work in writing the regs so that we can breathe the life into this program that we authorized through the energy bill last year.

Secretary BODMAN. The question of grants from the Federal Government is an issue that I can't be very encouraging with you on. I'd be happy to talk to you about writing regulations and we'll get people to do that, but——

Senator MURKOWSKI. Right. We need to get that first step in place which is the regs written. We appreciate that we've got to get the appropriations on for the grants.

Secretary BODMAN. Yes.

Senator MURKOWSKI. But we need to know that in fact those regulations are in place so we can move forward with that step. We want to work with you on that.

Secretary BODMAN. We'd be happy to try to do that.

Senator MURKOWSKI. Then I understand that the issue of weatherization has been brought up by some of my other colleagues and the cut in the Department's budget on weatherization. But it goes back to my comments about what we're paying in whether it's Lime Village or Arctic Village or Atka. Those energy costs are incredibly high.

We can continue to try to give them a little bit of financial help. Whether it's through the LIHEAP Program or the PCE which is our in State funding assistance for high energy costs, but if we haven't done anything to help them get to the core of the problem which is weatherization. If we can continue to do more, I think that allows us a little more bang for the buck.

So I would just like to put in my two cents on that aspect of the budget, recognizing that it's not just an Alaska issue. It is certainly an issue throughout the entire country as we're trying to lower energy costs. Mr. Chairman, my time is out.

I look forward, Secretary to working with you on a whole host of these issues as we move through the budget process. Very important. Some good news in the budget, some not so good news in the budget so I guess that's the status quo. Thank you, Mr. Chairman.

Secretary BODMAN. Thank you.

The CHAIRMAN. Thank you very much.

Senator Menendez.

Senator MENENDEZ. Thank you, Mr. Chairman. Thank you, Mr. Secretary for your testimony. I want to pick up where Senator Murkowski just left off. I heard you in response to one of our colleagues questioning say well this was a challenging year and we're always faced with challenging years.

Secretary BODMAN. That's right.

Senator MENENDEZ. It's a question of priorities and values.

Secretary BODMAN. Right.

Senator MENENDEZ. I think the budget that is before the committee in the Senate on some issues lacks its priorities and its values. Weatherization is one. It's not just a cut. It eliminates the Federal Weatherization Program.

I'm not quite sure the time with oil is, you know, 90 something plus a barrel when we're talking about climate change, fears of the

economy. Why would we eliminate, eliminate, not cut, eliminate the Weatherization Program?

Secretary BODMAN. It's simply as I have stated before. It is simply looking at all of the things that are done in the Energy Efficiency and Renewable Energy Office, that's where the Weatherization Program resides. The returns that we get from the Weatherization Program do not compare with the returns that we get from building technologies or efforts on creating new kinds of building codes throughout the country as well as solar and wind and biofuel type technologies that they are also responsible.

Senator MENENDEZ. I'm glad you said that because first of all of those things are prospective. We're trying to deal with housing that exists and that obviously we're trying to maximize its energy efficiency. Your own Department in the study said that for every dollar spent by the Weatherization Program is a two dollar and seventy cents of lifetime energy and non-energy benefits.

In your Web site it's listed as cost effective. Your own Department describes it as cost effective. Then if I add that to what you just said, not only do you seek to eliminate the Weatherization Program, but the President's budget also seeks to cut the Low Income Home Energy Assistance Program by 22 percent.

According to the National Energy Association's Director's Association the impact on low income households would be severe. You could cut 1.2 million from the assistance. In my own home State of New Jersey, 150,000 families would have to forego 17 million dollars in home heating assistance.

We're going to be voting on an economic stimulus plan that includes a billion dollars for LIHEAP in order to jump start our economy. Another side benefit and very significant side benefit and why is that in there? Because studies show that LIHEAP is a proven dollar multiplier. Each LIHEAP dollar generates more than five dollars of economic activities and these funds have an effect quickly.

So at a time in which and you know we find people in these set of circumstances. We eliminate the Weatherization Program. We have a 22 percent cut in the LIHEAP Program and finally you mentioned that other, more efficient opportunities of investment, solar.

I'm all for solar. As a matter of fact, New Jersey happens to be second only to California in pursuit of that, but even under the solar aspect, the President I thought had recognized the importance of solar when he announced the establishment of The Solar American Initiative. Yet the President's 2009 budget proposal cuts 12 million dollars in funding for solar research programs at DOE. I have been informed by some sources that the cut is actually 21 million dollars because the Administration looks to siphon off nine million from the solar R and D program and use it at its National Renewable Energy Laboratory. So what gives?

Secretary BODMAN. First of all, on solar energy I think you'll find that the request that we made is greater than the request we made a year ago. What we have in the renewable energy situation is that Congress was very generous with adding additional funds and so there was more money appropriated last year than we asked for. So we are asking for, not all of that back, but some of it. So that

and I don't know where you would get the information that you got on the additional whatever you said.

Senator MENENDEZ. The nine million to ENREL. That is irrelevant.

Secretary BODMAN. That's where solar energy is done.

Senator MENENDEZ. Is that going to be done to support solar programs or do you find——

Secretary BODMAN. I don't know. Senator, I don't. I did what——

Senator MENENDEZ. Could you get back to me?

Secretary BODMAN. I would be happy to get back to you.

[The information referred to follows:]

The Administration continues to recognize the importance of solar energy, consistent with the goals of the President's Solar America Initiative (SAI). The $12 million reduction in the FY 2009 request compared to the FY 2008 appropriation is based on the following factors:

- The $10 million decrease in concentrating solar power research and development reflectsa down-selection of industry projects in trough manufacturing and thermal storagetechnologies, allowing only the most promising contracts representing the best use of thetaxpayer dollar to move into the second phase of funding in FY 2009.
- The remaining $2 million decrease in the Solar Heating and Cooling Systems is the resultof a transfer of this activity from the Solar Program to the Buildings Program. Under theBuildings Program, funding for this activity is actually increasing to $3.7 million.
- The actual funding decrease in the Solar Program FY 2009 request is only $12 million.The $9 million that was referenced as part of the $21 million was not funding for solarR&D, but rather for solar capital equipment purchases at NREL to complete the build-outof equipment for the Science and Technology Facility, which opened in July 2006. TheNational Research Council and the U.S. solar power industry identified the facility as acritical need for the nation, particularly to achieve the goals of the SAI.

Senator MENENDEZ. Because I hear it's for new copy machines. So if it's for new copy machines and the bottom line is and you're asking for less than the Congress obviously had a reason why it plused up solar because it believes it is an important renewable energy source. You chose to not to seek that again even though the Congress had a clear direction last year.

So in my mind you take that. You say that's where we want to go to renewable sources. That's where we get the better bang for our buck, yet you cut LIHEAP so significantly after you eliminate weatherization. So in my mind you leave people in the cold, those who are least capable of being able to be left out in the cold. I think you're wrong for——

Secretary BODMAN. LIHEAP is not my budget, sir. LIHEAP is in the Health and Human Services Department. It is not in the Energy Department.

Senator MENENDEZ. I'm putting it together because of all the facts at the same time.

Secretary BODMAN. I understand that, but I'm just pointing that out. I don't have any influence over or knowledge of LIHEAP.

Senator MENENDEZ. Thank you, Mr. Chair.

The CHAIRMAN. Thank you.

Senator Smith.

Senator SMITH. Thank you, Mr. Chairman. Secretary Bodman, welcome.

Secretary BODMAN. Thank you.

Senator SMITH. It's good to see you.

Secretary BODMAN. It's nice to see you as well.

Senator SMITH. It's my understanding that the reference in the budget documents to the proposal to have the Bonneville Power Administration use net secondary revenues in excess of 500 million dollars to repay its Treasury debt was mistakenly left in the budget. Is that correct?

Secretary BODMAN. That is correct.

Senator SMITH. Ok. I apologize if you already answered that.

Secretary BODMAN. No, I didn't answer it. I'm happy to.

Senator SMITH. We don't have to have that fight again. So I thank you, sir.

BPA, I'm told, is still on track to be able to sign new long-term contracts with all its customers, including investor-owned utilities that receive benefits under the Residential Exchange Program. I'm told this is to be done before the end of the year. Is that your understanding?

Secretary BODMAN. I don't know, sir. I'd be happy to respond for the record with you personally, but I don't know.

[The information referred to follows:]

Bonneville's Regional Dialogue policy, which grew out of discussions with the region's utilities and other stakeholders over the past five years, defines Bonneville's electrical power supply role in the Pacific Northwest after 2011, when its current power sales contracts expire. The policy will be mplemented through new, long term contracts that will give BPA's regional customers the certainty they need about their responsibilities for meeting load growth beyond 2011. Although it is on an ambitious schedule, Bonneville is on track to meet its goal of signed contracts by year end and is planning to conduct the formal rate processes and offer the actual contracts as part of that effort.

BPA also expects to offer interim payments to Northwest public and investor-owned utilities for FY 2008 while continuing to work with the region to reestablish a long-term Residential Exchange Program.

Senator SMITH. Senator Craig assures me that is correct.

Secretary BODMAN. Ok.

Senator SMITH. Mr. Secretary, I was one of the Senate sponsors of provisions in the Energy Independence and Security Act of the last year that directs the Department of Energy to establish at least one ocean energy research center at an institute of higher learning. Can you tell me the progress the Department's making on this directive? Where are we? Where will it be located?

Secretary BODMAN. First of all I don't have an answer on that. I can tell you that this is with respect to tidal energy. Is that right? That's the question?

Senator SMITH. Yes, basically it is about tidal and ocean renewable energy.

Secretary BODMAN. In addition, I think last year the Congress was generous and gave us ten million dollars which we got whenever the continuing resolution was finally enacted. We have then added three million dollars to that in the request this year. That's the budget that's before you.

I am hopeful that the results of that will be the evaluation of all the different programs. It may well lead to the establishment of a university center. I just don't know where and when, but that is work that is underway at this time.

Senator SMITH. If I'm wrong let me know, but I understand the budget does cut the appropriated amount or the requested amount from 9.9 million to 3 million.

Secretary BODMAN. That's correct. No, that's all true.

Senator SMITH. Ok.

Secretary BODMAN. But we haven't spent the 9.9 is my point.

Senator SMITH. Ok. Alright. I got it.

Secretary BODMAN. So that the 3 and the 10 are going to add up to 13 million dollars that we'll spend over the next 18 months working on this matter.

Senator SMITH. What do you see in terms of tidal energy? Do you like it? Does it have some prospect? Can it be commercialized?

Secretary BODMAN. I think it has some commercial aspects, sure. I know less about it frankly.

Senator SMITH. Who are the opponents?

Secretary BODMAN. I don't think anybody is an opponent. I think the question gets to be how serious are we about it? Is it—will the oceans, which are pretty hospitable places, or pretty inhospitable places for human beings to function. Will the oceans accommodate this kind of program? But I don't know of anybody or any organization that's against it of which I'm aware.

Senator SMITH. I've seen these devices, specifically at Oregon State University. I mean they've actually quite simple mechanisms that simply bob up and down and produce unending amounts of energy that emit no CO_{22}. It just seems to me to be a renewable source of energy that we ought to be putting the accelerator to. If we're going to meet the energy demands of the future, we're going to have to find some new sources. If all the old coal burning facilities are off limits, I just think there needs to be a real focus on ocean energy.

Secretary BODMAN. I would generally agree with you, sir.

Senator SMITH. Oregon is a State where about half the land is owned by the Federal Government. Now the developers of renewable energy, particularly wind and biomass, have ongoing frustration with the actions of the Forest Service. The Forest Service has been very slow to develop policies to provide the materials off forest lands that could supply biomass generation and reduce fire hazards on those lands.

I know this isn't your Department, but it does effect your Department.

Secretary BODMAN. Sure.

Senator SMITH. Now that the Forest Service seems poised to enact regulations that are going to discourage the development of wind facilities on Federal lands, can the Department of Energy work with the Forest Service to ensure that our national goals on the development of renewable energy can be met in an environmentally sound manner?

Secretary BODMAN. Sure.

Senator SMITH. That's the answer. I mean when it comes to siting energy sources, it's always not in my backyard and I understand that. But if we're serious about wind and the Federal land, which is half of Oregon, is taken off the map, then that is a problem. Maybe the Forest Service can work with your Department to get some of the biomass materials to clean up our forests and turn on some of these other types of facilities that provide a natural renewable source of energy.

Secretary BODMAN. We'd be happy to do that.

Senator SMITH. Thank you very much.

Secretary BODMAN. Thank you, sir.

The CHAIRMAN. Senator Sanders.

Senator SANDERS. Thank you very much, Mr. Chairman. Mr. Secretary, thanks very much for being with us. I apologize for not being here earlier. I couldn't be in three places at the same time.

I'm not going to say a whole lot about the budget or the elimination of the weatherization program. I'm a member of the budget committee. I happen to think that the overall budget is an absurd document that's not going to go anyplace.

Giving tax breaks to billionaires and cutting back on the needs of low and moderate income people is beyond my comprehension. So I'm not going to talk about it a whole lot other than to say it's going to be completely rewritten. In Vermont and cold weather states is going to be, I hope, increased and certainly not eliminated.

I wanted to ask you a question though. As you know in the energy bill that was recently passed, Senator Menendez and I and the chairman and many others worked on an Environmental Block Grant Program which authorizes two billion dollars a year to go to cities and towns and states in order to move us forward on energy efficiency and sustainable energy.

Secretary BODMAN. Right.

Senator SANDERS. Senator Menendez and I had written to you requesting strong, aggressive action on developing rules so that when that money is appropriated we can get that money out as quickly as possible. We have not yet gotten a response from your office. I would like very much the opportunity of perhaps sitting down with you and maybe lighting a fire on you right now to move forward on these rules. Is that ok?

Secretary BODMAN. I'd be happy to meet with you, sir.

Senator SANDERS. Ok. So the goal here is to have rules for the Environmental Block Grant Program so that when money gets appropriated we can be off and running. Is that—that will be the goal of the meeting. Is that all right?

Secretary BODMAN. That's—I understand what your goal is.

Senator SANDERS. Can I look forward to your cooperation of writing the rules that the U.S. Congress past and present have signed?

Secretary BODMAN. I don't have an answer to you, sir. I would be happy to meet with you. I would be happy to talk with you about that subject, but as to what position I will or won't take on it, I cannot respond.

Senator SANDERS. I look forward to meeting with you, but I hope that your agency will enforce the law of the land. I trust that it will.

Secretary BODMAN. We will certainly enforce the law of the land.

Senator SANDERS. That's legislation that's passed that needs rules.

Secretary BODMAN. But it has not been appropriated.

Senator SANDERS. That's right. It has not been appropriated and we want to make sure that the ground framework is there when it is.

I wanted to ask you, I understand this issue came up earlier and I apologize for not having been here. As you know some of us think that passing tax credits for wind and solar are enormously impor-

tant, not only to deal with global warming, but to create a whole lot of jobs, stimulate. How do you feel about that?

Secretary BODMAN. As I said before I'm happy to work with the chairman and other members of your committee if there is desire of multiple members toward that end. So——

Senator SANDERS. I'm sure that there is and we would like. You know we had, was it 57 votes last year? I think we're trying to get the 60 votes to do that.

I wanted to ask you another question.

Senator DOMENICI. What was that?

Senator SANDERS. That was for the tax credits for wind and solar.

Senator DOMENICI. That's right.

Senator SANDERS. I wanted to ask you. I happen to think and tell me what you think that there is enormous potential for solar-thermal plants. My understanding is that in a couple of years specific gas and electric is going to be breaking ground in the Mohave Desert for a plant which would provide over 500 megawatts of electricity. I am told that there is potential for large numbers of these plants which could provide up to 30 percent of the electricity in the United States at a very, very cost effective rate. What do you think about that?

Secretary BODMAN. I am told by venture capitalists that what you say is true.

Senator SANDERS. That they're prepared to invest.

Secretary BODMAN. They are invested.

Senator SANDERS. They are investing?

Secretary BODMAN. Yes.

Senator SANDERS. But, I am told by utility people that the potential in the southwest in this country, California, Nevada and elsewhere is just huge. It's just a very good area for sun. So do you see potential for solar-thermal?

Secretary BODMAN. I see potential for solar-thermal. Sure.

Senator SANDERS. Ok. Mr. Chairman, thank you.

The CHAIRMAN. Thank you very much. Now we have some questions on a second round. I'm informed Senator Domenici has some questions, go ahead.

Senator DOMENICI. Are you running—are we keeping you over time?

Secretary BODMAN. No, no. That's alright. Whatever.

Senator DOMENICI. Look, I lodged an informal complaint with the chairman about how he's treating me on my second round.

[Laughter.]

Senator DOMENICI. He has all these guys sneaking in, you know their staff tells them well you don't have to go right now and you won't waste any time like this fellow and this fellow.

[Laughter.]

Senator DOMENICI. I'm sitting here this whole time waiting for a second turn and I want to establish a rule that if they don't come for the whole hour and a half that they ought not get called on first. Those who've been here the hour and a half should get the second round. Mr. Chairman, I wanted to tell you I asked this guy, Smith and he said if you'd just suggested it, he'd have been glad to accept that as a working rule.

[Laughter.]

Senator DOMENICI. Then I would have been finished instead of having to stay around to listen to these guys who came 2 hours late.

[Laughter.]

Senator DOMENICI. As much as I like this Senator, this new Senator.

The CHAIRMAN. They all say they would have been glad to defer to you after the fact.

[Laughter.]

Senator DOMENICI. I know they defer to me for a lot of things, but it turns out that in this case I had a couple of questions and I'm going to just try real quick to ask them.

First there's a New Mexico problem that I want to put on the record and get you to understand it. In your clean up budget it appears that there's insufficient money to meet the agreed upon milestone that the Department negotiated with the states including New Mexico, Los Alamos. Can you tell me whether or not you believe you can have the 164 million in this budget request? Will it provide sufficient funding to meet the negotiated clean up milestones for 2009 and beyond?

Secretary BODMAN. We will miss a number of milestones.

Senator DOMENICI. Alright.

Secretary BODMAN. We will have some layoffs, two.

Senator DOMENICI. Alright.

Secretary BODMAN. It's as a general matter. I mean applied to all the States as to the specific. Specifically, Los Alamos, I simply don't know, but I——

Senator DOMENICI. Alright. Can you find out and submit it for the record?

Secretary BODMAN. Sure.

[The information referred to follows:]

There can be a number of reasons why compliance obligations are in jeopardy, including unanticipated or especially complex technical challenges. In addition, compliance agreements negotiated several years ago may in some cases contain near-term milestones that do not entirely reflect the highest environmental priorities. Consequently, some milestones may be at risk not simply because of a shortage of funding, but because theDepartment has decided to shift available funding to higher priority work that will contribute more to the protection of human health and environment. At Los Alamos, we currently anticipate that three milestones are at risk in Fiscal Year 2009 based on complex-wide priorities, however, Los Alamos is currently talking with its regulators to mutually resolve these potential issues.

Senator DOMENICI. Alright. You're going to have to explain them, the milestone misses. You know in our State they have a kind of a habitual cure to these problems by fining us you know. They have——

Secretary BODMAN. No, no. I know.

Senator DOMENICI. Somebody up there fines us all the time. I hope you'll be tough when they fine you a million dollars for little things. We have pretty tight budgets for them to be sticking you that way. So I hope you're tough with them. I've already told the Governor. Kind of unreasonable, some of the fines. But anyway the milestones will be something you'll have to work hard on.

Secretary BODMAN. That's right.

Senator DOMENICI. Now WIPP down there in Carlsbad. You know WIPP has a great history.

Secretary BODMAN. Yes, sir.

Senator DOMENICI. It's the committee—community has put together and performed as a support group for WIPP. They are recognized in the country as probably the best informed and prepared and active group that produces a support group that ends up getting the right facts to the right citizens. It turns out that reality is faced instead of what people throw around as things that are just untrue.

So we've got an underground storage facility, the only one in the world and it's in sand that will never move. You know the facts. It's something like 240 million years without moving. So it's probably the best place we could ever pick.

Now this year we've got a 23 million dollar cut on this project to these people that I just described in terms of what they do. I think they're going to be hard pushed and hard pressed and I don't know exactly why that cut is there. If you don't know, we'll just ask you to put it in the record and just note that I——

Secretary BODMAN. I'd be happy to get to respond for the record, sir. I don't know about that.

[The information referred to follows:]

The Department must achieve a balance that allows the Office of Environmental Management (EM) to continue to achieve risk reduction and pursue its cleanup goals.The Department's priorities for risk reduction and regulatory activities are stabilizing radioactive tank waste in preparation for treatment, and storing and stabilizing, and safeguarding nuclear materials and spent nuclear fuel, followed by disposing of transuranic waste.

Funding for WIPP will continue to support receipt of up to 21 contact-handled and 5 remote-handled transuranic waste shipments per week. The $23 M decrease reflects adeferral of some groundwater well drilling and plugging activities, and deferral of site equipment replacements and maintenance/reliability projects. While these activities are important, they are not needed for immediate risk reduction.

Let me assure you that disposal of contact- and remote-handled transuranic waste remains a high priority within the Department, and we appreciate the support we receive from the WIPP community and the elected leadership from New Mexico.

Senator DOMENICI. I want to know it and want you to know that I object and think that it isn't right. The problem is the, way we do the budgeting around here. If I'm deemed right by the appropriators I got to take it out of something else.

Secretary BODMAN. No, no. I understand.

Senator DOMENICI. Because nobody adds to the budget. They just say yes, yes, you won. Now you find the money.

This year I'm going to try to convince them that things we add they've got to increase the budget by that amount. I don't know that I'll succeed. But I used to do some increases when I was chairman, when I could get a feel that you couldn't expect them to do that much cutting. But we haven't been doing that of late.

Now I'm going to jump over to something that's been considered a little bit already and that's Future Gen. I want to tell you about Future Gen and restructuring that. DOE has gone for a single R and D facility to a larger number of cost share demonstrations. That's one thing.

I'm not questioning the propriety. I am suggesting that after waiting so long and working hard and getting a lot of promotional pluses, the concern that's generated when it's canceled is truly

powerful. All kinds of things begin to worry people about the Department and have they given up on this kind of ultimate accomplishments of this project. Are they really important?

A large portion of the fiscal year 2009 clean coal funding is derived from appropriated funds previously funded. 149 million of the 156 requested for restructuring Future Gen is not new money as you—well if you don't know I can tell you. That money is available because projects have faltered. Future Gen is another and more troubling example of this trend.

People wonder when are we going to get something done. So am I. So I want you to know that I really think there's a job of telling the people. Not you, but you've got a lot of people working for you, that what you're doing is going to accomplish the end you intended better than Future Gen when you stopped it. Is that not correct?

Secretary BODMAN. That's correct.

Senator DOMENICI. You think you're going to get better results?

Secretary BODMAN. We certainly intend to get better results.

Senator DOMENICI. You're not going to be so far off the mark?

Secretary BODMAN. That's correct.

Senator DOMENICI. What we really worry about when you have a big project is that the Departments never come in anywhere near the mark. This one was coming in 80 percent overruns. That's the kind of thing you hope you don't get when you piece it out.

Secretary BODMAN. What I was worried about was that this might become a sort of super collider type problem.

Senator DOMENICI. Right.

Secretary BODMAN. You know, that it might escalate so high in cost that Congress just would turn its back on it 3 years from now. That's my concern.

Senator DOMENICI. Ok. The renewable biomass. I'm going to jump to that fuel standard. I'm pleased that the biomass and the bio-refinery R and D is increased by 13 percent. Clearly this is important.

This is the follow on to ethanol and then the next one and we have this and we need it. So will the increased program allow the Department to expand work on alternative feedstocks available in different regions of the Nation? I'm particularly interested in knowing if greater research will be allocated to develop algae based biofuels. I've read about it recently. I'm sure you could not have missed your eye in your training.

Secretary BODMAN. Yes.

Senator DOMENICI. It's important stuff. It's got great, great potential. Would that be part of this research?

Secretary BODMAN. I don't know, but I'd be happy to get you the answer.

[The information referred to follows:]

DOE is committed to targeting its R&D as effectively as possible to develop cost effective, clean renewable fuels. To that end, we are investigating the potential of a wide range of feedstocks, including algae, to synthesize alternatives to petroleum-based fuels. The Department is preparing a report for Congress, as required under the Energy Independence and Security Act of 2007, to assess the use of algae as a renewable (biofuels) feedstock. In preparing the report, the Department has discussed ongoing algae research with other Federal Agencies, including the Environmental Protection Agency, and the Departments of Defense and Agriculture.

The objective would be to demonstrate that algae can be grown for their lipid (and therefore hydrocarbon) content and used in diesel engines. Oilseed crops such

assoybean are similar to algae in that they are also lipid producers that can be used in diesel fuel applications. Currently, biodiesel produced from oilseed crops such as soybeans is commercially produced on arable land, while algae is still in the research and development stage. Because of their potential high yields, small land requirements and their ability to utilize $CO_2$2 (in co-production with coal-fired plants, for example), algaemay warrant further investigation even though they will not contribute to our fuel mix in the short-term.

Senator DOMENICI. It's important and I suggest to you that we should. Now I want to tell you another one that has occurred in appropriations that—I'm not telling you how to do your work but I would really be upset if I were you, at the Interior Appropriation bill. Not your jurisdiction you would say, but they chose in that bill to put a 1-year moratorium on oil shale rule writing.

Now the oil shale, you know there are people that just don't want us to produce oil in this country. When we are being sucked dry by the money we have to pay to other countries to buy their oil. In fact we don't know how badly we are being hurt because there's no economic consequences model for how many times for how many years you can pay this much money and not be hurt.

It looks to me like we're getting poorer when we pay that many billions out for oil. That's at least one fact you can write down. We surely are not getting richer, right?

Secretary BODMAN. That is correct.

Senator DOMENICI. It looks to me like if you're not, you're getting poorer and I begin to think we're going to begin seeing the poor mess in America visibly if this goes on for 10 or 12 years at 80 or 90 dollars a barrel. I really do. That's why oil shale ought to be looked at.

It really does upset me that at the Appropriations Committee that nobody who understands is working on Interior, and puts a moratorium on oil shale when we worked very hard on the bill that Senator Bingaman and I put together. It was the first one in 17 years. It provided to move ahead, not quickly, but very slowly, but dedicated, with oil shale. Here's one major American company ready to spend four billion dollars on it set to experiment.

Secretary BODMAN. This is Shell.

Senator DOMENICI. Shell.

Secretary BODMAN. Yes.

Senator DOMENICI. Big project. How do you think their board feels? They get a report that they're in for 500 million into the project or whatever and along comes a subcommittee and puts a moratorium on regulation. Nobody knows what it means.

Secretary BODMAN. I didn't know it existed until I walked in here, so.

Senator DOMENICI. You didn't, so that's another one. Somebody should know that from your Department and give it to you. You should probably be telling somebody that this is truly your business. You know it is funded in that committee but it is your business. If ever we're going to get out of this we've got to act like Canada at least with reference to getting production that's totally appropriate within the law, if that's what we had.

Secretary BODMAN. Right.

Senator DOMENICI. I'm just dumbfounded that we would take a company that's willing to spend four billion dollars to show us how

they can do that and slow them up instead of doing whatever we can to give them an opportunity to proceed? Do you agree with me?

Secretary BODMAN. Yes.

Senator DOMENICI. Isn't it true that there is a chance that shale will work?

Secretary BODMAN. Yes.

Senator DOMENICI. A version of shale and its inset too or something like that.

Secretary BODMAN. That's why Shell is spending half a billion dollars on it.

Senator DOMENICI. Because they too——

Secretary BODMAN. They think that it's got a good shot. You know, it's far from clear that it's going to work, but it's——

Senator DOMENICI. They've got four billion committed.

Secretary BODMAN. Oh, I understand.

Senator DOMENICI. That's a pretty big commitment.

Secretary BODMAN. Yes, it is.

Senator DOMENICI. You know we can throw it around up here, but you don't have very many big companies doing that. My last observation and I'm sure my friend on my left knows a lot about it and he's probably going to add in, chime in. But I want to talk a minute for the record and to you about Mid Atlantic.

Senator CRAIG. Mid America.

Senator DOMENICI. Mid America, which we're in the early stages of developing a plan for a nuclear power plant. Indicated to the world that they the board had pulled back and said they weren't going to proceed. Some people thought that——

Secretary BODMAN. That who had? That the board had?

Senator DOMENICI. The Board of Directors said we're not going on with the project.

Secretary BODMAN. Right. Ok.

Senator DOMENICI. You should know that. That now I'm telling you if you don't.

Secretary BODMAN. I didn't know.

Senator DOMENICI. It's not one that was moving ahead rapidly. They were just starting. But I tell you what we get as the principle reason. They're looking around to see how they're going to get the material, the people and engineering services and the like that are needed to build and design a nuclear power plant.

They find there is total instability in that part of the market. You can't get bids. You can't get timely commitments. You can't find the workers. They're not going to expect to build within any limits that are reasonable so that they're not going to get in and play ball in that field. They're not poor. They wouldn't need your loan guarantee I wouldn't think.

You and I and Senator Bingaman and Senator Craig and others have been saying this is a mess and we don't know that there's going to be enough workers, enough commitments to build these plants, right?

Secretary BODMAN. Right. That's right.

Senator DOMENICI. Now we have one company that very early on says we can get out of this game. Now we still have some that are steeped in it and they're going ahead.

Secretary BODMAN. That's right.

Senator DOMENICI. From what we know there may be jitters, but that's because this is very, very long term, organized chaos to get one of these bills. Do you see us overcoming this problem and getting some of these major projects built?

Secretary BODMAN. I do. That's what we're about. That's, you know, whether it's the nuclear power 2010 where, on all fronts, there is a big push on getting all this done. I believe it. I don't know how much more I can say other than that.

Senator DOMENICI. Yes, sir.

Secretary BODMAN. That we've asked for a big increase in the GNEP funding which will spread this internationally. So I'm a believer in it.

Senator DOMENICI. I would say a number of people including these two Senators, the chairman and I have gone down to a little town, Eunice. That where it is? In New Mexico, near Hobbs, where they're building a two billion dollar modern uranium enrichment plant.

Secretary BODMAN. This is the LES?

Senator DOMENICI. LES.

Secretary BODMAN. LES, good.

Senator DOMENICI. Coming up out of the desert is this fantastic project. They are—be interesting for you at some point to sit down in your office and talk to you about how they go about finding the workers they need, the supplies they need.

Secretary BODMAN. That's a good idea.

Senator DOMENICI. I think you'd learn from them.

Secretary BODMAN. I'm sure I would.

Senator DOMENICI. It's very, very interesting. There—because they have committed to get it done. They spare nothing. They fly people in from far places and they put them down there and this is where you're going to live because we need you on this job for 6 years.

People are building houses and that's what's changing lifestyles. Things are happening. It's begun to think there might be a second one that might come to that area too. Could be good, that wouldn't be bad.

I thank you. Senator Bingaman, thank you.

The CHAIRMAN. Thank you very much. Senator Craig, how long did you want to go on here? I was wondering if we should take a short break and then come back for your questions.

Senator CRAIG. A couple of minutes at the most, probably, a couple of questions.

The CHAIRMAN. Ok. Why don't you go ahead and do your questions then.

Senator CRAIG. Mr. Secretary let me pick up where Senator Domenici has left off because in Idaho last week Mid America announced that it was terminating its effort to site and build a new nuclear reactor. They'd acquired the land. They'd acquired the water and they entered this looking at the future, looking at the stability of supply of fuel, of looking at the efficiency of operation, after build and all of those kinds of things.

As you know Mid America is 80 percent owned by Berkshire Hathaway so they've got very deep pockets.

Secretary BODMAN. Yes.

Senator CRAIG. They've just acquired Pacific Corp which has owned Utah Power and Light, Pacific Power and Light. So they have a footprint in our State and across the Midwest. So they were attempting to site a reactor that wouldn't just be a merchant reactor, but a supplier to their system.

They certainly did their due diligence. Their CEO came into to see me yesterday. I asked simply out of the curiosity of our involvement in this issue what went wrong there. Why did they pull back?

He gave me a long litany of very thoughtful reasons why they did. Senator Domenici has mentioned some of them. The market of talent, the market of supply, the market of engineering is saturated at this moment. They really did not believe that they could bring it to production on a timely basis with any guarantees for a much longer period of time than they thought when they entered it.

I will not speak for the environmental community but the environmental community was kind of standing back. As we know those who once were anti-nuclear are now at least, neutral and are recognizing the need to bring base load on line. They could not get a supplier to guarantee anything to speak of in any timeline that fit them or fit their needs. The costs were constantly escalating at a very, very rapid rate. So they withdrew.

They're going to hold the land. They're going to hold the water. Sometime in the future they may get there, but it was an interesting reality check for me, someone who's been deeply involved with these two Senators in crafting the policies within EPACT 2005 to get us to where we thought we were going to get.

Then we passed the America Competes Act. I offered an amendment that Senator Bingaman and Senator Domenici supported that allowed provisions for nuclear science at our universities. That's all part of what Mid America ran into, a lack of talent and a lack of supply and a lack of capability.

We understand that. That's why we put that language in there and I'm looking at it now. I'm looking at this budget hoping we would find some money in 2009 for it. It isn't there. It appears that those areas that the President liked he had a little funding for or you put some money in. But in the area of nuclear science and new technologies within that area, it appears to be dry.

I'm only saying that in passing. But that's a reality check for our country because we're now, as you know better than anybody else, Mr. Secretary. We're not competing with ourselves to build nuclear facilities. We're competing with the world market.

Secretary BODMAN. No, no. That's right.

Senator CRAIG. Our companies are in the world market, but Mr. Chairman, the CEO of Mid America also said something else that I think was very, very significant. He said there are about three models or about three designs of white water reactors currently being built in the market. He said we can't understand why it takes the NRC 5 to 6 years to license. He said why don't we license these models and have them ready on the shelf for utilities who want to come along and pick one off the shelf and build it?

Of course taking to diligence and siting and all that's necessary to do that outside the actual model itself because that 5-year window is phenomenally costly, we all know that. I thought, hmm, in-

teresting suggestion that we ought to be looking at. He said when we deal with FERC in siting anything else major, we don't have to wait 5 years.

I suggested that that might be a cautious legacy of the past. I don't know that to be the case, but I think it probably is. Foot dragging a decade ago on nuclear was the name of the game. If your foot drug long enough you cost them their business. They never came.

I don't know those things today because I don't think that mentality exists. But the legacy of the past just might in some of our bureaucratic processes around here. Anyway——

Secretary BODMAN. Could I just respond?

Senator CRAIG. Please do. I'm at the end of my dissertation. It's a bit frustrating.

Secretary BODMAN. Yes, yes, I'm sure.

Senator CRAIG. In a world that you and I and the chairman and others are attempting to advance.

Secretary BODMAN. Right.

Senator CRAIG. Yet we see these holes in it at which major developments might be falling through.

Secretary BODMAN. Yes. I don't have a quick answer for you, but I can tell you that the NRC is trying to license a unit that is going to be replicable and therefore it will be able to be certified. If the utilities buy that unit, the problem has been in the past, every utility has wanted their own thing. We've got 105 nuclear reactors in this country and they're all different.

Senator CRAIG. I know.

Secretary BODMAN. It's just absurd. As opposed to having one, why it takes them 5 years, I don't pretend to know. I mean that's not my——

Senator CRAIG. Question we'll all be asking.

Secretary BODMAN. It's a fair question I think.

Senator CRAIG. Yes.

Secretary BODMAN. But I do believe that they're going to speed it up. That is to say the second one will be a lot faster than the first one assuming that they are the same and that's the issue.

Senator CRAIG. Yes. Mr. Chairman, I'll stop here because you're obviously thinking about the time limit. We've got to get out of here.

I think that is the question and the thing that is important it probably needs to be more than one because if you're designing or licensing only one you're probably showing preference toward a certain company.

Secretary BODMAN. No, you'd need more than one.

Senator CRAIG. Yes, you do.

Secretary BODMAN. Each time that they're going to need three, probably three, if not four, but the idea is that they would be the same.

Senator CRAIG. Oh, no. I hear you each one would be the same. I thought it was important and I thought I might suggest to you that you had a similar conversation like I had. It was most enlightening.

Secretary BODMAN. Yes.

Senator CRAIG. Because these folks did their homework. They spent a lot of time and a lot of money trying to find a way into this market and finally backed away. Thank you.

Secretary BODMAN. Thank you, sir.

The CHAIRMAN. Mr. Secretary, thank you very much. You've been very generous with your time and we appreciate it.

Secretary BODMAN. Thank you very much, Mr. Chairman.

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

[The following statement was received for the record.]

DEPARTMENT OF ENERGY,
Washington, DC, February 4, 2008.

Hon. JEFF BINGAMAN,
Chairman, Committee on Energy and Natural Resources, United States Senate, Washington, DC.

DEAR MR. CHAIRMAN: Thank you for your December 20, 2007, letter regarding the fiscal year (FY) 2008 appropriations for the Department of Energy's (DOE) research and development missions. I am concerned about the funding levels provided to support DOE'S scientific research missions, and I am particularly concerned about the levels provided to the Office of Science. The cuts made to the Administration's FY 2007 and FY 2008 funding requests will have real consequences at many of our National Laboratories; some of those consequences are outlined in the points below. In addition, the diminished opportunity for research funding will be felt at more than 300 public and private research universities supported by the Office of Science across the country.

As you are aware, in 2006 President Bush proposed the American Competitiveness Initiative and in 2007 the Congress passed and the President signed into law the America COMPETES Act. The goal of both is to double funding for basic research in the physical sciences over the next decade, and both have enjoyed substantial bipartisan support. I would like to thank you for your active and effective partnership with the Department to help secure our country's scientific future.

To meet our national objectives for scientific leadership for energy, environment, and economic competitiveness, annual appropriations for basic research in the physical sciences would have to increase roughly an average of seven percent per year, with more substantial increases at the fiont-end and more modest increases in the later years. Both the House and Senate Appropriations Committees passed initial FY 2007 and FY 2008 funding measures that would have provided substantial funding increases; however, in both years those critical increases did not materialize in the final enacted appropriations.

Nearly flat appropriations levels mean that we must forego important new and upgraded facilities and hold back on promising avenues of research; appropriations growth below the rate of inflation will mean a reduction in the number of scientists and amount of basic research the Department can support. Science is a very competitive and dynamic enterprise—lost funding means lost opportunities for breakthroughs and discoveries that would give the U.S. a competitive advantage in the global economy and perhaps bring us greater energy security.

The current levels of funding will mean scaling back efforts across the spectrum of use-inspired basic energy sciences; ceding to Europe our global leadership in high energy physics; hindering the Department's ability to meet our international commitment to Japan, China, South Korea, India, Russia, and the European Union to cooperate in a large-scale fusion experiment known as the International Thermonuclear Experimental Reactor (ITER); directly eliminating hundreds of research jobs at National Laboratories in 2008; and reducing research opportunities for the best and brightest at universities across this Nation.

Below is a summary of the direct and immediate effects that we expect to see in basic research at the major laboratories.

OVERALL

The Department estimates that about 625 existing scientist, student, and technical staff positions will be negatively impacted in various labs and disciplines across the country. Approximately 100 reductions are planned to take place in FY 2008 with the remaining 525 as a result of the reduction to the FY 2008 enacted

appropriation. Layoffs will occur in areas funded by the Basic Energy Sciences, High Energy Physics, and Nuclear Physics programs in the Office of Science (SC). The total decrease in employment will be less than this, because there will be increases in employment in other areas, such as in those supported by the Office of Science's Biological and Environmental Research and Advanced Scientific Computing Research programs. SC-wide, the net impact to overall scientific employment levels under the FY 2008 appropriation is a reduction of about 224 positions. Please see the attached table for an overview of where the layoffs described below are projected to take place. The effect is most pronounced in the following programs, in which existing researchers will be laid off and planned opportunities for new researchers will be terminated:

- Fusion Energy Sciences.—Fusion occurs when forms of the lightest atom, hydrogen, combine to make helium in a very hot (100 million degree centigrade) ionized gas, or plasma. A small amount of matter involved in the reaction is converted to a large amount of energy. When developed, fusion will provide a virtually inexhaustible, safe, environmentally benign, and affordable energy source. In FY 2008:

  —No funding was provided for ITER construction; the U.S. will lose credibility as a partner in large-scale international research projects.
  —The U.S. ITER project has been forced into a survival mode, using existing prior year funds to maintain a minimal core team.

- Basic Energy Sciences.—Fundamental chemical and materials research may lead to methods to split water with sunlight for hydrogen production; technologies for harvesting solar energy with greater power efficiency and lower costs; super-strong lightweight materials to improve efficiency of vehicles; "smart materials" that respond dynamically to their environment; and low-cost fuel cells, batteries, supercapacitors, and thermoelectronics. In FY 2008:

  —Approximately 50 existing, permanent PhDs, 30 postdoctoral fellows, 20 students, and 10 operations, support and other personnel will be lost from ongoing research programs in basic energy sciences, whereas, at the FY 2008 request level funding in this program would have allowed substantial hiring, including about 400 new permanent PhDs, 120 additional postdoctoral fellows, and 240 more students.
  —Of the basic energy sciences facilities not terminated entirely, BES facilities will be operated at only 80 percent of maximum available hours. By comparison, these facilities were able to deliver 95 percent of their maximum available hours in FY 2007.
  —No funding was provided for any new basic energy sciences research initiatives in the use-inspired energy research areas such as advanced materials for solar power, hydrogen storage, carbon sequestration, or electrical energy storage underpinning the scalability of renewable sources of energy such as wind and solar. More than 700 proposals from laboratories and universities across the country, already peer reviewed, have been cancelled.

- High Energy Physics and Nuclear Physics.—The Department coordinates these programs that seek to develop the far-reaching physical theories that explain the behavior of matter and the nature of the universe. Deeper understanding of nuclear matter and its interactions will continue to be invaluable to research in energy, nuclear medicine, materials science, and national security. In FY 2008:

  —In High Energy Physics (HEP), cuts will result in the loss of existing support for 340 Engineering, Technical, and Administrative positions, 100 permanent PhDs, 10 postdoctoral fellows, and 10 graduate students for a total reduction of 460. Of this total, approximately 100 reductions were planned to take place in FY 2008, with the remaining 360 resulting from appropriations at a level 12 percent below the President's FY 2008 request.
  —In Nuclear Physics, loss of support across the program will result in reductions of 14 to 20 permanent PhDs and postdoctoral fellows; 10 to 12 students; and, approximately 30 operations, support, and other personnel.

The impacts listed above will likely have the following geographic distribution:

- Argonne National Laboratory (ANL), Argonne, Illinois

  —The Intense Pulsed Neutron Source at ANL will be closed immediately and permanently, resulting in approximately 50 layoffs.
  —The Building Electrical Services Upgrade project at ANL will be cancelled.

- Brookhaven National Laboratory (BNL), Upton, New York
  - —Construction funding for the National Synchrotron Light Source-I1 at BNL was cut by 33 percent, which will cause significant project delays and escalate total project cost, possibly exacerbating budget shortfalls in future years.
  - —Relativistic Heavy Ion Collider (RHIC) operations at BNL will be reduced from a planned 30 weeks to 19 weeks.
  - —Funding for the PHENIX Forward Vertex Detector and the PHENIX Nose Cone Calorimeter at RHIC will be reduced and the schedules will be delayed by one year.
- Fermi National Accelerator Laboratory (FNAL), Batavia, Illinois
  - —About 200 layoffs of existing science employees are expected at FNAL. Additionally, the laboratory will be forced to institute a "rolling furlough" of two days each month of leave without pay for all remaining FNAL employees.
  - —There will be major, indeterminate delays in construction of the NOVA research project at FNAL.
  - —The U.S. will lose its leadership role in the global design effort for the next major international HEP project, putting the selection of FNAL as a potential site for the International Linear Collider in jeopardy.
- Lawrence Berkeley National Laboratory (LBNL), Berkeley, California
  - —Delivery of the Advanced Light Source User Support Building at LBNL will be delayed by more than one year because funding was reduced by 70 percent below the President's FY 2008 Request.
  - —Funding for the Gamma Ray Energy Tracking In-Beam Nuclear Array Major Item(s) of Equipment (ME) is reduced in FY 2008, causing increases in project risks and delays in schedule; impacts to project cost are being evaluated.
- Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee
  - —Basic energy sciences instrument projects for the Spallation Neutron Source at ORNL will be reduced, delaying completions by at least one year.
  - —Funding for the joint DOENSF neutron Electric Dipole Moment Experiment MIE is reduced in FY 2008, causing increases in project risks and delays in schedule; impacts to project cost are being evaluated.
  - —The U.S. ITER Project Office will be reduced to a minimum level. Up to 40 staff may be reassigned.
- Stanford Linear Accelerator Center (SLAC), Menlo Park, California
  - —There will be about 225 layoffs and negotiated early retirements of existing employees at SLAC (100 were planned to take place in FY 2008 and 125 resulting from appropriations made at a level below the President's FY 2008 request).
  - —B-factory research operations at SLAC will be reduced by 75 percent compared to the 5,720 hours planned in the FY 2008 request.
  - —Instrument projects for the Linac Coherent Light Source Ultrafast Science at SLAC were reduced 40 percent below FY 2008 President's Request, delaying completions by at least one year.
- Thomas Jefferson National Accelerator Facility (TJNAF), Newport News, Virginia
  - —Operations of the Continuous Electron Beam Accelerator Facility at TJNAF will be reduced from a planned 34 weeks to 24 weeks.

As described above, most of the Department's basic research portfolio will qot receive the funding we believe that it needs in FY 2008. Nevertheless, I want to thank Congress for its strong support for Biological and Environmental Research and Advanced Scientific Computing Research at DOE. I look forward to working with Congress to ensure that we keep America competitive through strong support for science that will provide transformational solutions for our most pressing national needs.

Sincerely,

SAMUEL W. BODMAN,
Secretary.

Estimated Major Layoffs and Hires at National Laboratories and Universities
Result of FY 2008 Appropriations for the Department of Energy's Office of Science

	Anticipated Increases	Potential Reassignment	Planned Layoffs	Estimated Layoffs as a Result of FY 2008 Appropriations					
	Across Labs & Universities	ORNL	SLAC	SLAC	Fermi	ANL	Other Labs & Universities	Total	Grand Total
Advanced Scientific Computing Research	185	-	-	-	-	-	-	-	185
Biological & Environmental Research	210	-	-	-	-	-	-	-	210
Basic Energy Sciences	-	-	-	-	-	-50	-60	-110	-110
High Energy Physics	-	-	-100	-125	-200	-	-35	-360	-460
Nuclear Physics	-	-	-	-	-	-	-55	-55	-55
Fusion Energy	6	[40]	-	-	-	-	-	-	6
Total	401	[40]	-100	-125	-200	-50	-150	-525	-224

The personnel working in the ITER Project Office at Oak Ridge may have to be reassigned due to the reduced allowable expenditures in the ITER account. The chart represents the 40 people as a non-add because there is a potential of up to 40 people this may affect.

The information contained in this table has been updated slightly; and therefore, differs from that contained in the FY 2009 President's Budget Justification.

APPENDIX

RESPONSES TO ADDITIONAL QUESTIONS

QUESTIONS FROM SENATOR BINGAMAN

WEATHERIZATION

We hear a lot of talk about energy efficiency being the low hanging fruit for climate change mitigation. I have a graph that has been passed out to all the members and Secretary Bodman that illustrates the importance of programs like weatherization.

This chart shows a global cost curve for greenhouse gas abatement measures beyond "business as usual".

(The McKinsey Quarterly, 2007 Number 1, "A cost curve for greenhouse gas reduction", Per-Anders Enkvist, Tomas Naucler and Jerker Rosander, Exhibit 1).

The Consulting firm McKinsey & Co., released a report in December titled "Reducing US Greenhouse Gas Emissions: How much at what cost?" This report is based on a Greenhouse Gas Abatement Mapping Initiative undertaken by McKinsey in collaboration with leading U.S. companies and environmental NGOs.

McKinsey analyzed resource costs and abatement potential for more than 250 opportunities to reduce or prevent GHG emissions. They found that almost 40 percent of abatement could be achieved at "negative" marginal costs—meaning that investing in these options would generate positive economic returns over their life cycle. Building insulation is the first item on the chart—with a positive return of 150 Euros per ton of $CO_2$2 abated—lighting systems, air conditioning and water heating and standby power (all related to building energy use) also have significant positive returns. This analysis shows we can take cost effective measures to abate climate change, and that programs like weatherization are a part of the solution.

Your budget materials say that the Department is terminating the Weatherization program to focus EERE on its core R&D mission which is expected to provide "greater benefits". The committee has requested a copy of the analysis supporting this statement.

Question 1. Rather than eliminating the weatherization program, it seems to me that the DOE should be expanding and revitalizing the program?

Answer. The program is not completely aligned with DOE's core mission. Weatherization Assistance is an important goal, but is an anomaly because it addresses social welfare goals in addition to energy efficiency improvement. Prudent portfolio management requires DOE to focus available resources on its core areas of expertise and mission consistent with the DOE Strategic Plan.

Based on a study by the National Research Council, investments in some energy efficiency applied R&D between 1978 and 2000 resulted in returns 20 times greater than the cost of the investment.[1] In contrast, the energy savings from Weatherization Assistance Program grants result in a significantly lower benefit/cost ratio of

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[1] "Energy Research at DOE: Was It Worth It?" National Research Council (http://www.nap.edu/openbook.php?isbn=0309074487). This study, published in 2001, analyzed investments in 17 energy efficiency R&D activities between 1978 and 2000 costing a total of $1.566 billion (p.23) and representing about one fifth of energy efficiency program spending in that time frame. The NRC found overall net economic returns of about $30 billion (p.29). This is a public return 20 times greater than the cost of the investment within the time period considered. In addition, the NRC calculated net environmental benefits worth $3-20 billion for these activities. As is the case with many diverse R&D investment portfolios, most of the benefits were generated by few—in this case, three of 17—activities assessed (p. 29).

1.53 to 1. This ratio was calculated by Oak Ridge National Laboratory based on past evaluation efforts and Energy Information Administration projected energy prices.[2]

Question 2. According to Oak Ridge National Labs, the most recent national evaluation of the Weatherization program was conducted in the early 1990's. The DOE budget justification states that the Weatherization program has a benefit /cost ratio of 1.53.

What study is the basis of this benefit /cost ratio and how was it calculated?

Answer. The energy savings benefit/cost ratio for the Weatherization Assistance Program of 1.53 to 1 is from a 2007 assessment by Oak Ridge National Laboratory (ORNL). The calculation is based on five factors: average annual Mbtu energy savings per home, projected energy prices, average weatherization retrofit cost per home, a discount rate, and an estimate of the useful life of the weatherization measures. The methodology is described in "Estimating the National Effects of the U.S. Department of Energy's Weatherization Assistance Program with State-Level Data: A Metaevaluation Using Studies From 1993 to 2005," ORNL-493.

Question 3. The weatherization program is not an R&D program. What is the rationale for comparing the weatherization program to R&D?

Answer. The program is not completely aligned with DOE's core mission. Weatherization Assistance is an important goal, but is an anomaly because it addresses social welfare goals in addition to energy efficiency improvement. Prudent portfolio management requires DOE to focus available resources on its core areas of expertise and mission consistent with the DOE Strategic Plan.

Based on a study by the National Research Council, investments in some energy efficiency applied R&D between 1978 and 2000 resulted in returns 20 times greater than the cost of the investment.[3] In contrast, the energy savings from Weatherization Assistance Program grants result in a significantly lower benefit/cost ratio of 1.53 to 1. This ratio was calculated by Oak Ridge National Laboratory based on past evaluation efforts and Energy Information Administration projected energy prices.[4]

Question 4. It is our understanding that from FY2005 to FY2007 funds were requested and appropriated for a national evaluation of the Weatherization program and a contractor was selected. Why was the evaluation cancelled in 2007?

Answer. The Weatherization evaluation was not cancelled. At this time, it has been delayed pending the results of a more strategic analysis of ways of improving the delivery of the program to make it more cost-effective. Once the results of the analysis are obtained, it may inform a revised approach to evaluating the program.

APPLIANCE STANDARDS

EPAct 2005 required the Department to address a significant backlog in appliance efficiency standards and the issue is currently under the supervision of a federal court. EISA 2007 added some additional work in the area. However, your budget request is lower this year.

Question 5. Where do you stand on addressing the backlog of efficiency standards and do you have sufficient resources to meet your deadlines and new assignments? (Request DOE to provide for the record.)

Answer. The President's budget adequately funds DOE's commitment to existing appliance standards requirements. In January 2006, the Department released its plan to eliminate a 30-year backlog on appliance standards by issuing one new or amended standard for each of the 18 products in the backlog over the next five years. Since committing to this schedule for the standards program, the Department has met 100 percent of its targets, a new trend we intend to maintain. In less than two years, DOE has completed four energy efficiency standards, six test procedure rulemakings, and begun eight standard-setting rulemakings. Additionally, while ad-

[2] The ORNL analysis can be found on the web (http://weatherization.ornl.gov/pdf/CON-493FINAL10-10- 05.pdf). The benefit/cost ratio in the study is 1.34—the 1.53 ratio cited above uses the same calculations with energy cost data updated for 2006.

[3] "Energy Research at DOE: Was It Worth It?" National Research Council (http://www.nap.edu/openbook.php?isbn=0309074487). This study, published in 2001, analyzed investments in 17 energy efficiency R&D activities between 1978 and 2000 costing a total of $1.566 billion (p.23) and representing about one fifth of energy efficiency program spending in that time frame. The NRC found overall net economic returns of about $30 billion (p.29) . This is a public return 20 times greater than the cost of the investment within the time period considered. In addition, the NRC calculated net environmental benefits worth $3-20 billion for these activities. As is the case with many diverse R&D investment portfolios, most of the benefits were generated by few—in this case, three of 17—activities assessed (p. 29).

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dressing the products in the backlog, the Department's multi-year schedule addresses the first cycle of standards that DOE must develop to comply with EPACT 2005.

The Energy Independence and Security Act of 2007 (EISA 2007) amended the Energy Policy and Conservation Act of 1975 to give DOE authority to allow the Department to accelerate the rulemaking process where consensus among stakeholders and industry already exists; this would eliminate approximately ten months from the timeline for each consensus rule, usually a three-year process. In addition, EISA 2007 added new test procedure, standards and reporting requirements for certain appliances and equipment. DOE is currently evaluating the impacts of EISA 2007 to determine the additions and deletions from our list of required rulemakings, and DOE is developing plans for implementing the new requirements, all of which we expect to complete in a timely manner.

LIGHTING STANDARDS

I am particularly interested in the new efficiency standards for general service incandescent lamps. EISA authorized a $10 million national campaign to improve the labeling on the light bulbs and to educate consumers on the transition to more efficient bulbs in 2012.

Question 6. Is the Department requesting any funds to begin the implementation of this campaign? What does the Department plan to do to ensure a smooth transition for consumers in 2012 through 2014?

I look forward to an ongoing dialogue with your research teams to discern the technologies that will be commercially available when DOE conducts its rulemaking on second tier standards for lighting.

Answer. The Department regularly conducts and funds education and outreach campaigns for consumers that are expected to assist in the transition to more efficient bulbs. These activities are included in the FY 2009 budget request and are consistent with the goal of the EISA legislation. The Department will work closely with the Federal Trade Commission as they update labeling requirements for lighting products. The Department has already undertaken a variety of consumer education outreach efforts related to lighting, including partnerships with 18seconds.org and Disney's Ratatouille. In addition, the Department is currently working with the Ad Council on a national energy efficiency campaign, consistent with Energy Policy Act of 2005 (EPACT) and EISA direction. Section 134 of EPACT requires the Department to carry out a comprehensive national public information initiative, including advertising and media awareness, to inform consumers about practical, cost-effective measures that consumers can take to reduce consumption of electricity, including purchasing energy efficient products such as compact fluorescent lamps (CFLs). Likewise, Section 321 of the EISA requires DOE to carry out a proactive national program of consumer awareness, information, and education that broadly uses the media and other effective communication techniques to help consumers understand lamp labels and make energy-efficient lighting choices.

Activities beyond 2009 will be determined through annual budget development processes. If determined to be cost-effective, efficient, and in line with established goals and priorities, activities could include web campaigns; direct mail through utilities; work with major home improvement stores and homebuilders and remodelers; or the development of computer tools.

The determination to consider whether to amend the energy conservation standards for general service lighting is scheduled to begin by January 1, 2014, and be completed by January 1, 2017.

INCENTIVES FOR STATE ENERGY EFFICIENCY BUILDING CODES

EPAct 2005 authorized a grant program to help states adopt the latest energy efficiency building codes and to improve code compliance.

Question 7. Is that program funded in your budget? What are your plans in this area?

Answer. EPACT Section 128 authorized additional funding to States for implementation of a plan to achieve and document at least a 90 percent rate of compliance with residential and commercial building energy efficiency codes, based on energy performance. To date, Congress has not appropriated funding for implementation of this Section, but DOE is supporting States' building code efforts through its State Energy Program. The Department did not request FY 2009 funding for the implementation of EPACT 2005 Section 128. However, DOE operates successful programs that provide technical assistance to the States in the form of a variety of tools, materials, and training to support implementation and documentation of their code adoption and enforcement plans.

Question 8. I commend you for requesting increased funding for building energy codes programs this year.

Will DOE work with the voluntary codes organizations to meet the goal of increasing energy efficiency in the residential building code by 30% in 2008? If the voluntary codes organizations fail to adopt a 30% enhancement, will DOE develop a separate specification? What resources will you devote to providing technical assistance to the states for updating and implementing the model codes? Will the EPAct 2005 grant program be funded from this increase?

Answer. In FY 2009, DOE will complete analyses and support for the upgrading of ASHRAE 90.1-2010 that will have code stringency effects of approximately 30 percent compared to ASHRAE 90.1-2004. DOE will also conduct the R&D needed to support an increased code stringency of 30 percent in the next residential model building energy code (the 2010 International Energy Conservation Code (IECC)). This year, DOE is actively involved in developing and supporting code proposals for consideration by the International Code Council.

DOE will continue to provide technical assistance to the States in the form of a variety of tools, materials, and training to support updating and implementation of model codes. States have the discretion to apply State Energy Program formula and special project grants to implement their plans to achieve and document at least a 90 percent rate of compliance with residential and commercial building energy efficiency codes, based on energy performance.

INCENTIVES FOR ENERGY STAR APPLIANCES

Another EPAct program that you have not funded is a rebate program for consumers who purchase Energy Star appliances. Like weatherization—this program would improve the efficiency of existing (and new) buildings. Page 312 of your budget justification (regarding strategic goals for the building technologies program) states "in the near term, widespread areas of energy use—space heating, lighting, water heating and air conditioning." On page 324, the budget justification goes on to say that DOE might not meet its strategic goals for buildings due to "external factors" i.e., that consumers are typically reluctant to pay for higher cost equipment, even when they will save money in the long run.

Congress included a rebate program in EPAct 2005 to specifically address this "external factor". The program is modeled on a successful initiative in New York state.

Question 9. How does DOE plan to incent consumers to upgrade their inefficient appliances?

Answer. Through the joint DOE-EPA ENERGY STAR Program, significant utility and State-based rebate programs have been and will be made available to consumers. The ENERGY STAR Program has a significant and productive partnership with the Consortium for Energy Efficiency (CEE), whose members are major utilities across the nation. CEE relies upon ENERGY STAR specifications and criteria to help establish performance thresholds for utility efficiency rebate programs for major appliances, residential lighting fixtures, and many more products. NonCEE member utilities also have provided rebates to consumers for various Energy Star products.

Based on preliminary reports by utilities, utility residential efficiency spending for 2006 is estimated at over $560 million.[5] The Department believes the established infrastructure of utility rebate programs, while providing individual consumer benefits, are paid for through system-wide benefits accruing to utilities and all ratepayers; and represent an economically efficient and effective means for providing incentives for both utilities and consumers. This balance allows DOE to properly prioritize investments into technology research, development, and deployment that brings down the cost and increases the availability of energy efficient technologies, benefiting all consumers.

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Question 11. What is your timeline for establishing the Commercial Green Buildings office, as required by the Energy Independence and Security Act (EISA)?

Answer. The Department's Office of Energy Efficiency and Renewable Energy, through the existing Building Technologies Program, is accountable for the functions described in Sections 421 and 422 of EISA.

Activities in the FY 2009 budget request consistent with these sections of EISA include research and development of cost-effective technologies, integrated design strategies, and operating procedures for commercial buildings such that they produce as much energy as they use on an annual basis; as well as public-private partnership work with the retail, office, and school building segments of the commercial building market.

COMMERCIAL BUILDINGS INITIATIVE

EISA authorized funding for a Zero Net Energy Commercial Building Initiative (CBI) within the Department and also authorized the establishment of a private sector consortium to work with the Department on the Commercial Buildings Initiative and other related buildings programs.

Question 12. When will the CBI be established and what funding will be allocated to the CBI in FY2009? When will the Consortium be selected?

Answer. The Department has made significant progress in FY 2008 in establishing the procedures for competitively selecting a Consortium. For example, in FY 2008, the DOE Commercial Buildings Integration sub-program has initiated plans to create three new Commercial Building Alliances that are designed to minimize the energy consumption and environmental impacts of commercial buildings. The Alliances focus on the following sectors: retail; commercial properties (leased space, office, shopping malls and hospitality); and institutions (including colleges and universities, hospitals and health care facilities). On February 21, 2008, DOE held an executive roundtable discussion as a first step in forming the Retailer Energy Alliance (REA), which promotes the use of energy-efficient technologies and management practices for retail operations. DOE provides technical support to help meet the goals of the different Alliances. The REA is the first of several initiatives and DOE's Building Technologies Program plans to launch similar initiatives for the other sectors identified above. Additionally, a majority of the $13 million requested in FY 2009 for the Commercial Buildings Integration sub-program will be focused on activities consistent with Section 422 of EISA.

Question 13. In December 2006, Congress passed a pipeline safety reauthorization bill (Pub.L no. 109-468), a few months after BP had been forced to shut down some of its oil pipelines in the Prudhoe Bay area due to leaks.

The Energy Committee held hearings on the BP pipeline issues. Many of us were concerned that a vital part of our oil transportation system had not been adequately regulated.

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[6] This is from a 2006 Report by the Consortium for Energy Efficiency called "U.S. Energy Efficiency Programs: a $2.6 Billion Industry," p. 6. (www.cee1.org/ee-pe/cee—budget—report.pdf).

We worked with the Senate Commerce Committee to mandate DOT and DOE to conduct periodic analyses of the adequacy of the nation's pipeline infrastructure and determine if the current level or regulation is sufficient to minimize the potential for unplanned losses of pipeline capacity.

The report is due in June of this year. Are you on track to get this report to us?

Answer. Yes, the referenced study is the "Petroleum Transportation Capacity and Regulatory Adequacy Study," which is mandated in section 8 of the Pipeline Safety Improvement Act of 2006 (P.L. 109-468). The Department of Energy's Office of Fossil Energy has a subordinate role in the preparation of this report by providing technical assistance and support to the Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA is the Federal government entity responsible for the oversight of safety for pipelines that transport gas or hazardous liquids and provides grants to states for programs to ensure pipeline safety. PHMSA currently is in ongoing discussions with the Transportation Security Administration (TSA) about funding a comprehensive study. Meanwhile, PHMSA is conducting an in-house analysis to provide a responsive scoping document. We anticipate that PHMSA will soon be sharing the scoping document with DOE and TSA for comment and concurrence with the intent to finalize it this spring.

BIOFUELS

Question 1. While cellulosic ethanol is being pursued aggressively by DOE and private industry, what are you doing to develop biobutanol and algal biocrude, either of which can be shipped in our existing pipeline infrastructure?

Answer. There are a number of other advanced biofuels that have promising potential as gasoline and diesel substitutes. In recent years, DOE's Office of Energy Efficiency and Renewable Energy has focused almost exclusively on cellulosic ethanol primarily due to the relative volumetric substitution available and the fact that cellulosic ethanol demonstrates the greatest potential for significant near-term commercialization.

However, DOE is increasing and broadening its efforts on next-generation biofuels using a variety of feedstocks and conversion technologies. For instance, on January 29, 2008, DOE announced $114 million in awards for small scale biorefineries that use next generation technologies.

DOE is reviewing a wide range of potential alternative fuels beyond cellulosic ethanol, including algae and biobutanol.

Biobutanol is a liquid alcohol fuel that can be used in today's gasoline-powered internal combustion engines. The properties of biobutanol make it highly amenable to blending with gasoline. For example, recently, DuPont and British Petroleum, among others, have begun investing in R&D to develop more cost-effective biobutanol production processes.

Question 2. Does the Department plan to establish more Bioenergy Research Centers? The Department currently has three centers, and EISA requires at least four additional centers.

Answer. The Department's Office of Science does not currently plan to issue a funding opportunity announcement requesting applications for additional Bioenergy Research Centers. As reflected in the GTL Bioenergy Research Center white paper (http://genomicsgtl.energy.gov/centers/smGTLBRCWhitepaper.pdf, on page 17)), future GTL centers would be anticipated to address DOE environmental missions in environmental remediation and carbon cycling and sequestration. The Department does, however, intend to continue supporting fundamental and applied bioenergy research through standard merit-reviewed procurement processes. For example, the Department's Office of Science has issued a joint USDA-DOE program solicitation for research on plant feedstock genomics for bioenergy and is strongly encouraging proposals not only from individual investigators but also from interdisciplinary teams comprising a range of expertise. Pending the outcome of the merit review process, awards are expected to be made in FY 2008.

Question 3. How does the Department plan to support localized production of biofuels in regions not currently associated with large volumes of biofuel production, such as the Northeast and Southwest?

Answer. Biomass resources are distributed throughout the country and their variety necessitates research and collaboration in all parts of the nation. To take advantage of this geographically diverse resource, the Department of Energy (DOE), over the last two years, has co-funded with industry six commercial-scale biorefinery plants, seven 10 percent-scale biorefinery plants, three Office of Science Bioenergy Research Centers, five university-based regional feedstock partnerships under the Sun Grant Initiative, and thirteen applied science projects. These projects span

across twenty-one states and are focusing on multiple feedstocks and technologies that once proven will provide information useful to all regions of the nation. The five regional feedstock partnerships were established through the Sun Grant Initiative land-grant universities and involve other key stakeholders to identify the biomass resource potential in every region of the U.S., including the Northeast and Southwest. Last August, Oregon State University, the Western Sun Grant Center, in partnership with DOE, hosted a workshop to identify the best biomass resources for that region to produce liquid transportation fuels. Last November, a similar workshop was hosted by Cornell University, the Northeast Sun Grant Center, with comparable goals for that region. Workshop participants anticipate that agricultural and forest residues will be significant biomass resources in the Southwest and that forest resources will be dominant in the Northeast. In terms of potential energy crops, sorghum may be pursued under irrigated conditions in the Southwest and hybrid willow, a short rotation woody crop, will likely be developed in the Northeast.

Question 4. How do you see the Energy Frontier Research Centers contributing to biofuels research and commercialization? What portion of the grants made through this program will be focused on biofuels?

Answer. The Energy Frontier Research Centers (EFRCs) will cover a wide range of research areas, and may include biofuels research. EFRC proposals will be solicited through open, competitive Funding Opportunity Announcements (FOA), with the goal of reaching the broadest range of researchers and attracting the very best ideas to pursue the scientific breakthroughs needed to create truly transformational new energy technologies. No specific amounts of funding are set aside in the ERFC competition for biofuels or any other research area. Funding will go to the highest quality proposals, as determined by peer review. The EFRCs will not contribute directly to commercialization, but they could provide new understanding critical to commercial success—for example, advances in our understanding of how biological feedstocks are converted into portable fuels could one day lead to economic cellulosic biofuel production.

COAL/FUTUREGEN

Question 1. As I understand it, one of the chief benefits of the FutureGen approach was that it would demonstrate an integrated design, optimized to maximize $CO_2$2 capture overall plant efficiency. How are you going to insure we receive this same benefit from a substantially smaller federal investment in a commercial facility?

Answer. The FutureGen program remains a vital component of the Administration's plan to make coal part of a cleaner, more secure energy future for America. The Administration is restructuring the FutureGen program to accelerate commercial use of carbon capture and storage technology and expand the program from one project to multiple demonstration projects.

Rather than investing in the total cost of an experimental facility integrated with carbon capture and storage, the restructured FutureGen approach will invest in the carbon capture and storage portion of commercial power projects, capturing and sequestering at least double the amount compared to the FutureGen concept announced in 2003. This will also limit taxpayers' financial exposure to only a portion of the cost of the carbon capture and storage portion of the plant. Furthermore, this new approach will allow us to accelerate nearer-term technology deployment in the marketplace faster than the timetable for the previous approach. In order to be successful in competitive power markets (not to mention in the Department's competitive proposal evaluation process), the underlying power plant projects will still need to be efficient, competitive, and environmentally sound.

Question 2. I have heard estimates that including large-scale carbon capture and sequestration on a typical power plant will increase costs by roughly a third. What assurance do you have that the amounts you propose to distribute under this program will be sufficient incentives to lead to commercial-scale demonstration of the technology? Will other federal incentives be available to the applicants, and are more necessary?

Answer. Approximately thirty commercial integrated gasification combined cycle (IGCC) projects are in various stages of planning, permitting, and design across the Nation, which is evidence that a commercially viable basis for IGCC technology already exists. Some are stalled because of uncertainty regarding $CO_2$2 emissions requirements. Federal funding under the restructured FutureGen program may help fund the carbon capture and storage part of some of these projects. Federal incentives, such as loan guarantees and tax credits, may also be available to some of these projects. This provides additional incentives for such projects. We have consid-

ered the need for further incentives, but believe that none are necessary at this time.

Question 3. In recent months we have seen proposed commercial IGCC plants significantly delayed or cancelled. What assurance do you have that there will be sufficient commercial interest in building these plants to give us the demonstrations we need?

Answer. At the present time, over 30 integrated gasification combined cycle (IGCC) power plants are in various proposal stages and major barriers to their deployment include the uncertainties regarding future $CO_2$2 emissions regulations and the actual costs of constructing and operating IGCC-carbon capture and storage (CCS) power plants. The restructured FutureGen program is designed to help understand, address, and solve technical, siting, permitting, regulatory, and financial aspects of CCS deployment. Through its Request for Information, DOE expects to identify power producers who would consider participating in the restructured FutureGen initiative.

Question 4. The 4 phase-3 large-scale $CO_2$2 sequestration tests that have been awarded thus far are all expected to inject less than 1 million tons (approx 500,000) of $CO_2$2 per year—will there be an effort to increase those amounts so that we can have information more in line with that FutureGen would have produced?

Answer. In addition to the four large-scale tests awarded to three of the Regional Carbon Sequestration Partnerships (RCSP) in October 2007, a fifth test was awarded in December 2007 to a fourth RCSP. Three of the tests (in the Alberta Basin, Lower Tuscaloosa Formation, and Entrada Formation) individually are expected to inject at least 1 million tons of $CO_2$2 per year for at least one year. Two other tests (in the Williston Basin and Mount Simon Sandstone Formation) will inject greater than 1 million tons in total, though at a rate of less than 1 million tons of $CO_2$2 per year. The injection rates will be at a scale that demonstrates the ability to inject and sequester several million metric tons for a large number of years. This operation at commercial-scale may be as significant as that of higher injections of 1 million metric tons per year. DOE is developing a peer-reviewed plan to be completed this spring that will identify the scientific and engineering test parameters to guide design and selection of large-scale tests. It is our intention to confirm the soundness of the design of these injections, including the applicability of the injection scale proposed for the demonstrations to operations at commercial scale, as well as the duration of injections, and number and phasing of injections.

Question 5. The competition for FutureGen between Texas and Illinois led both states to examine the policy framework that would be necessary for $CO_2$2 sequestration. How will the new program create similar incentives for states in which the projects will be located? What can we do here to accelerate this deployment?

Answer. There are major technical and regulatory hurdles to overcome before coal with carbon capture and storage (CCS) can be commercially deployed; however, it is in the best interest of states to adopt a posture that would help enable ultra-low criteria pollutant emissions integrated gasification combined cycle (IGCC) plants with CCS, like FutureGen, to provide stable power supplies at affordable prices.

FutureGen will provide early CCS demonstration experience in a commercial setting, which is aimed at accelerating deployment and advancing carbon capture policy. The restructured approach will sequester at least double the amount of $CO_2$2 of the previous approach and have the potential of demonstrating CCS in multiple states. FutureGen will help to establish commercial feasibility and a model that industry could use to deploy commercial-scale plants that each sequester at least one million metric tons of carbon dioxide annually.

Question 6. Could you comment on whether you believe that future disruptions will be more about price spikes than physical shortage in the United States?

Answer. Regarding crude oil, in the long-term, world oil prices are driven by market fundamentals, principally the balance between world oil supply and demand. In the next several months, EIA expects world oil markets to remain tight due to rising world oil demand and low surplus oil production capacity. EIA expects this situation to improve in the later part of this year, when growth in oil production from outside OPEC should exceed world oil demand growth, leading to world oil prices that are lower than current levels. At the same time, disruptions in oil markets, which often result in price spikes, can be triggered by a range of factors including political unrest and weather. Future disruptions in oil markets are very difficult to predict but can result in both physical shortages and price increases.

Question 7. Could you clarify the Administration's policy on when the SPR will be used?

Answer. The Administration is committed to complying with the requirements of the Energy Policy and Conservation Act (EPCA), the authorizing legislation for the SPR. Section 161 of EPCA requires that, before crude oil from the SPR can be

drawn down and sold, the President must find that "drawdown and sale are required by a severe energy supply interruption or by obligations of the United States under the international energy program."

EPCA defines "severe energy supply interruption" as a national energy supply shortage that: "(A) is, or is likely to be, of significant scope and duration, and of an emergency nature; (B) may cause major adverse impact on national safety or the national economy; and (C) results, or is likely to result, from (i) an interruption in the supply of imported petroleum products, (ii) an interruption in the supply of domestic petroleum products, or (iii) sabotage or an act of God."

The Administration's policy is that the U.S. will only sell oil from the Reserve in the event of an emergency caused by a severe supply disruption. The Department of Energy monitors daily United States petroleum inventories, refinery utilization rates, and domestic and international production. We also follow very closely geopolitical events that may impact petroleum supplies and, if there is a disruption that causes, or is likely to cause, a significant supply disruption, the SPR stands ready to be used to help mitigate the impacts.

The SPR can act quickly to fortify efforts by producers to offset any severe disruption in supplies of crude oil and, upon consultation with our International Energy Agency (IEA) partners, would coordinate the United States' response with actions taken by the IEA.

NUCLEAR

In the President's FY 09 budget request, the Nuclear Power 2010 program has received $241.6 million, this is consistent with the recommendations of the National Academies from reviewing the Office of Nuclear Energy. This is just one aspect of the nuclear fuel cycle—reactors.

Question 1. Do you think it's important the department work to address the needs of enrichers and convertors?

Answer. Several commercial enrichers have indicated that their decisions to build new plant construction are supported by current market conditions. The Department of Energy encourages the efforts by the private sector to build new uranium enrichment capacity to help maintain a viable, competitive, domestic nuclear fuel industry. DOE is working with all private enrichers to assist companies in understanding and complying with U.S. laws and regulations regarding the protection of proliferation-sensitive enrichment technology.

HEU PURCHASE AGREEMENT

Question 2. In 1992 [correction: Agreement was signed in 1993] the U.S Government signed The Highly Enriched Uranium Purchase Agreement, or "HEU deal," with Russia to blend down 500 tons of highly enriched uranium (HEU) to low enriched uranium (LEU). The Russian Federation has signaled that they have no interest in continuing this program post 2013 when it is set to end. Do you consider it in the national security interests of the United States to continue blending down HEU to LEU for feedstock for commercial nuclear power plants beyond the 2013 time period?

Answer. The 1993 HEU Purchase Agreement has been an extremely important and successful effort in our bilateral nonproliferation partnership with Russia. This joint effort prevents large amounts of weapons material from being at risk for theft or diversion. This Agreement ensures that 500 metric tons of HEU from dismantled Russian nuclear weapons (the material equivalent of 20,000 nuclear weapons) will be eliminated by the end of the Agreement. To date, the U.S. has monitored the elimination of 325 metric tons of Russian HEU (approximately 13,000 nuclear weapons-worth of material).

Certainly it is in the U.S. national security interest that excess weapons material continue to be dispositioned in a transparent manner consistent with U.S. nonproliferation goals. The U.S. raised the possibility of extending the HEU Agreement for additional downblending on several occasions. However, Russia has been clear during these discussions that its intention is to transition to normal commercial activity, and therefore it has no interest in extending the Governmentto-Government HEU Agreement beyond 2013.

OFFICE OF SCIENCE

Question 1. I commend you for initiating a program in the Office of Science on energy storage to support the applied hybrid vehicles program, I understand the request is $33M.

I was told 3 years ago you were initiating a similar Office of Science program in lighting to support the applied solid state lighting program—where is it?

Answer. In the Spring of 2006, we held a workshop on basic research needs for solid state lighting. Had the FY 2008 appropriation supported the requested level, we would have been able to initiate solid state lighting research during FY 2008; however, it did not. The FY 2009 budget request proposed Energy Frontier Research Centers which will bring together teams of investigators to address the grand challenges in basic research, as identified in several grand challenges workshops, and could include both solid state lighting and electrical energy storage. These new activities will complement the core research programs in semiconductor physics, nanostructured materials synthesis and design, and fundamental light-matter interactions, which provide the underpinning knowledge base for a broad range of energy utilization and conversion applications.

OFFICE OF SCIENCE

At the start of this administration, the Department initiated three large billion dollar "game changing R&D programs", hydrogen, FutureGen, and reprocessing with milestones in many cases out to 2020. Here we are at the last year and where as best as I can see all three programs will be left up to the next administration to sort out.

Question 2. I'd like your opinion if you had to do it over again knowing what you do today—would you have initiated these programs?

Answer. I am proud of our accomplishments during this administration and the many advances in research and development that we have funded. The Department's research and development programs have been managed in a manner that is fiscally sound, and accomplishes what we need to achieve on behalf of the Nation and, indeed, the world. In the case of FutureGen, the restructured approach to the program will offer an opportunity to focus on accelerating near-term technology deploying multiple projects integrated with carbon capture and storage technologies.

Hydrogen has the potential to significantly reduce oil use, criteria pollutants, and greenhouse gas emissions. Through the Hydrogen Fuel Initiative, major progress has been made. Based on modeling, DOE estimates that projected high-volume cost of automotive fuel cells has been reduced from $275/kW to $94/kW. Similarly, DOE estimates that the cost of producing 5,000 psi hydrogen from natural gas has been reduced from $5.00 per gallon of gasoline equivalent (gge) to a projected $3.00 per gge (untaxed) today, and progress has been made in reducing the cost of renewable hydrogen production pathways. Many new materials have been identified with the potential to achieve the hydrogen storage capacities required onboard a vehicle in order to have an acceptable driving range. Over 90 fuel cell vehicles and 15 hydrogen stations are operating in real-world environments and providing performance data to validate the technology. The Department has requested $266 million in the FY 2009 budget for its Hydrogen Fuel Initiative programs. This funding continues the R&D needed to reduce fuel cell cost to $30/kW to help enable fuel cell vehicles to compete with conventional vehicles, to reduce the cost of other domestic pathways for hydrogen production, including hydrogen from coal (with carbon sequestration), biomass, renewable and nuclear energy sources and to achieve the hydrogen storage technology targets.

The nuclear fuel recycling program is part of the Global Nuclear Energy Partnership (GNEP)/Advanced Fuel Cycle Initiative. GNEP is an international effort to increase the use of nuclear energy throughout the world in support of economic development without increasing greenhouse gas emission or nuclear proliferation. Twenty countries have joined the U.S. in this important endeavor, including all fuel cycle nations who are participants in the Nuclear Non-Proliferation Treaty (NNPT). Under GNEP, fuel cycle nations would assist other countries through the provision of smaller, grid appropriate nuclear power reactors and fresh fuel and waste management services. The U. S. pioneered both fast reactors and reprocessing as critical features of advanced nuclear fuel cycles, and the Department seeks to maintain and build on this expertise in the United States in partnership with industry.

QUESTIONS FROM SENATOR DOMENICI

COMPETES PROGRAMS

Question 1. The Office of Science budget (on page 454) refers to "implementation of several new initiatives in the outyears consistent with recommendations WDTS stakeholders and the ACI." It seems significant that the America COMPETES Act was not specifically referenced here as well. Does this signal the Administration is less committed to the DOE provisions of the COMPETES Act?

Answer. The Department certainly supports many of the underlying goals of the America COMPETES Act. The Administration's view of the DOE provisions of the

COMPETES Act was addressed in full in Office of Science and Technology Director Dr. Jack Marburger's statement prepared for his February 14, 2008, hearing before the House Committee on Science and Technology:

Consistent with the Administration's approach to support the focused priorities of the ACI the DOE Office of Science analyzed the provisions of the COMPETES Act and determined that the Office is already supporting several programs which are consistent with the intent of the COMPETES Act. These include the DOE Academies for Creating Teacher Scientists (DOE ACTS) program which is comparable to the summer institutes authorized in the COMPETES Act; the Outstanding Junior Investigator award programs and the Office of Science Early Career Programs which are consistent with the early career award programs authorized; the Faculty and Students Teams Program which is consistent with the programs for minority students authorized; and such research centers as the DOE Bioenergy Research Centers and SciDAC Centers for Enabling Technologies at national laboratories which are consistent with the discover research centers authorized. These ongoing DOE programs are all supported in the FY 2009 budget request.

In addition to the programs identified above, the Office of Science Office of Workforce Development for Teachers and Scientists, working with the other Office of Science Program Offices and the national laboratories, continues to build the Office of Science's efforts in increasing participation of historically underrepresented populations, and improving the laboratories' capacity to bring experiential learning opportunities to the educational institutions in their respective regions.

Question 2. Do the ACTS and FaST programs encompass any of the specific programs authorized in COMPETES? If so, which ones, and how will the funding by allocated between these efforts?

Answer. The Faculty and Student Teams (FaST) Program is consistent with the intent of Section 5003(d) of America COMPETES Act to provide experiential-based learning programs for minority students.

The FaST program pairs college/university faculty and undergraduate students in teams with mentoring scientists at the DOE national laboratories for research intensive experiential-based learning opportunities. To qualify for the FaST program, an applicant's college/university must be below the 50th percentile in receipt of federal research funding. The majority of participants in the FaST program come from under-represented colleges/universities. This is one of the key programs in the Department of Energy/National Science Foundation partnership and encourages underrepresented minority students to pursue careers in science, engineering, and mathematics. The Office of Workforce Development for Teachers and Scientists (WDTS) is currently developing a tracking and evaluation process for all of its programs, including the FaST program.

The DOE Academies Creating Teacher Scientists (DOE ACTS) program, carried out at the DOE national laboratories, is consistent with the summer institutes authorized in Section 5003(d) of the COMPETES Act, which calls for the establishment or expansion of programs of summer institutes at each of the DOE national laboratories to provide additional training to strengthen the science, technology, engineering, and mathematics (STEM) teaching skills of teachers employed in public schools for K-12 students. FY 2008 is the fourth year the DOE ACTS program will bring K-12 teachers into the national laboratories for research intensive experiential-based opportunities to build their content knowledge in STEM fields—knowledge which they then bring back to their classrooms. The teachers selected for the program participate in research at the DOE national laboratories for three consecutive summers.

Funding allocated to the FaST and DOE ACTS programs is summarized in the following table:

(dollars in thousands)

	FY 2007	FY 2008	FY 2009 Request
FaST	243	250	300
DOE ACTS	2,320	2,184	6,398

STRATEGIC PETROLEUM RESERVE (SPR)

Question 1. The Department's FY 2009 budget requests $344 million, an 84.2% increase for SPR expansion. Please explain the current SPR status and purpose, and the reasons for an expansion of 727 million barrels to 1.5 billion barrels.

Answer. The SPR currently holds approximately 701 million barrels of crude oil to carry out its mission to provide the United States energy security and to help meet the country's obligations under the International Energy Program (IEP). While the U.S. meets its IEP stockholding obligation through a combination of government-owned SPR oil and privately-held commercial stocks, the current SPR inventory alone provides about 58 days of net import protection. The SPR plans to increase its inventory to 727 million barrels in 2008 to provide about 60 days of protection. The proposed expansion to 1.0 billion barrels will increase the import protection to 90 days in 10 years (i.e. 2019). The proposed expansion to 1.5 billion barrels will increase the import protection to 124 days.

Question 2. What is the current vulnerability of the United States to petroleum supply disruptions? Is the current SPR inventory and import protection enough to sustain a major supply disruption? Please compare our import protection today with past decades.

Answer. The current SPR inventory of 701 million barrels provides about 58 days of net import protection. However, it is unlikely that a supply disruption would result in a 100% cutoff of imports due to the continued supplies from historically stable sources in the Western hemisphere. In addition, through our membership in the International Energy Agency, we participate in coordinated response measures to severe global supply disruptions.

The current sustained SPR drawdown capability rate of 4.4 million barrels per day would replace approximately 45% of crude oil imports for a 90-day period, and the entire Reserve can be drawn down in 180 days in response to a very severe supply disruption. The drawdown can be sustained at lower rates for a much longer period.

As the Nation's import volumes have increased, the days of the SPR's net import protection have ranged from a high of 118 days in 1985 to a low of 52 days in 2000. The days of import protection provided by SPR oil will increase to 60 days when the SPR is filled to the current 727 million barrel capacity, to 90 days with 1 billion barrels in storage, and to 124 days with expansion to 1.5 billion barrels.

Question 3. What are the Department's current drawdown capabilities and what will be the drawdown capabilities as a result of the expansion?

Answer. The Department has current drawdown capability of 4.4 million barrels/day and expansion to 1 billion barrels will increase SPR drawdown capability to 5.9 million barrels/day.

Distribution System	Storage Facility	CURRENT 700 MILLION		EXPANSION TO 1 BILLION	
		Storage (MMB)	Drawdown (MB/D)	Storage (MMB)	Drawdown (MB/D)
Seaway	Bryan Mound	254	1,500	254	1,500
Texoma	West Hackberry	227	1,300	227	1,300
	Big Hill	170	1,100	250	1,500
Capline	Bayou Choctaw	76	515	109	600
	Richton (New)	--	--	160	1,000
Total Program		727	4,415	1,000	5,900

Question 4. Will the United States' import protection increase as a result of the expansion? Or will our import protection decrease if we do not expand or stop filling the SPR?

Answer. The SPR has been increasing its inventory in a moderate and transparent manner. During Spring 2008, its level of about 701 million barrels will provide 58 days of import protection. The SPR plans to increase its inventory to 727 million barrels, providing 63 days of protection in 2009.

However, the proposed expansion to 1.0 billion barrels will increase the import protection to 90 days in 10 years (i.e. 2019). The proposed expansion to 1.5 billion barrels will increase the import protection to 124 days.

Question 5. What are the Administration's acquisition procedures for the SPR and does the Administration evaluate the potential market impact of filling the SPR?

Answer. The Energy Policy Act of 2005 (EPAct 2005) requires acquisition of petroleum to fill the Strategic Petroleum Reserve to its authorized one billion barrel capacity "as expeditiously as practical without incurring excessive costs or appreciably affecting the price of petroleum products to consumers"; and directs the Secretary of Energy to promulgate procedures for the acquisition of petroleum for the Reserve.

Section 301(c) of EPAct 2005 directs that the acquisition procedures:

1. Maximize overall domestic supply of crude oil;
2. Avoid incurring excessive cost or appreciably affecting the price of petroleum products to consumers;
3. Minimize the costs to the Department of the Interior and the Department of Energy in acquiring such petroleum products;
4. Protect national security;
5. Avoid adversely affecting current and futures prices, supplies, and inventories of oil; and,
6. Address other factors the Secretary determines to be appropriate.

After consideration of public comments, the Department of Energy promulgated *Procedures for the Acquisition of Petroleum for the Strategic Petroleum Reserve* (10 CFR 626), effective December 8, 2006.

The *Procedures* establish the rules and procedures for acquisition of SPR crude oil by direct purchase or royalty-in-kind (RIK) transfer. The *Procedures* also specifically address deferrals of contractually scheduled deliveries. Since their publication, the *Procedures* have been closely followed in all crude oil acquisition activities.

The *Procedures* require a complete market analysis be performed prior to any oil fill activities to ensure that Strategic Petroleum Reserve acquisition activities will not unduly affect current market conditions adversely. Since the beginning of 2007, three separate market assessments have been performed prior to initiating activities to attempt acquisition by direct purchase and for the two RIK exchange cycles.

Question 6. What is the United States' obligation as a Member Country of the International Energy Program? Is the United States currently meeting those obligations?

Answer. Under the International Energy Program (IEP), the United States is obligated to hold emergency oil stocks equivalent to at least 90 days of net oil imports and to release stocks, restrain demand, switch to other fuels, increase domestic production or share available oil, if necessary, in the event of a major supply disruption.

The United States meets its IEP obligations through a combination of SPR and non-compulsory industry stocks. The SPR provides 58 days of import protection; the remaining portion is satisfied through industry stocks.

Question 7. Please explain how filling the SPR at a rate of 45,000 barrels day (.05% of world supply), or 15,000 barrels per day of light sweet crude (.075—.10% of world light sweet supply) would impact crude oil market prices when world oil consumption is reaching approximately 90 million barrels per day.

Answer. Oil received by the SPR represents a very small fractional amount of global demand. The Office of Petroleum Reserves conducted an analysis before the present round of Royalty-in-Kind acquisition activity commenced. This analysis found that market conditions were such that the acquisition of this small amount of oil would not appreciably impact oil market prices.

WATER POWER

For the past three years, the Administration has requested zero funding for hydropower R&D as it sought to eliminate its conventional hydropower program. Due to promising ocean and tidal technology, DOE seeks $3 million in FY 2009. In FY 2008, Congress appropriated about $10 million for the water power program.

Question 1. While $3 million is a start after three years of zero funding, it is still significantly less than the FY08 level of $10 million. How does the Department propose to reestablish the hydro program? Along with new initiatives for ocean, tidal and in-stream hydrokinetic technologies, as authorized by last year's Energy bill, will R&D for conventional hydropower be continued?

Answer. The Department no longer has a research and development program exclusively devoted to hydropower. However, the Office of Energy Efficiency and Renewable Energy has established a new Water Power Program, in accordance with the FY 2008 omnibus appropriations bill, to begin research on a variety of hydrokinetic technologies. Although conventional hydropower is not entirely ex-

cluded in FY 2008, the new Program's focus will be on new, innovative, and advanced hydrokinetic technologies.

The FY 2009 Water Power program will initially focus on (1) resource assessments in order to identify the prime domestic resource areas and based on these results, (2) technology characterizations of the various water power energy conversion technologies, with the goal of determining cost, performance and reliability characteristics, and (3) industry partnerships to take advantage of early industry demonstration projects to assess the performance and cost of real projects in the ocean.

Question 2. In the recently enacted Energy bill, Congress authorized the establishment of National Marine Renewable Energy Research, Development, and Demonstration Centers for the purposes of advancing commercial application of marine renewable energy.

How does the Department intend to proceed with the establishment of these Centers? How many Centers do you anticipate and what timetable are you envisioning?

Answer. With authority provided in the Energy Independence and Security Act of 2007 and earlier energy legislation, the Department of Energy has requested proposals for water power projects in three areas:

- Topic Area 1: Advanced Water Power Renewable Energy In-Water Testing and Development Projects
- Topic Area 2: Marine and Hydrokinetic Renewable Energy Market Acceleration Projects
- Topic Area 3: National Marine Renewable Energy Centers

The National Marine Renewable Energy Research, Development, and Demonstration Centers would perform research on emerging marine and hydrokinetic technologies. The solicitation is seeking proposals for Centers that will be established and operated by university-led consortia, with an initial focus that includes characterizing water power technologies. DOE would provide up to $500,000 annually up to three years (with optional two year extension), subject to appropriations, with at least a 50 percent cost share from the chosen Center(s). The awards may be used for research and major equipment purchases, but not for infrastructure development (buildings, wave simulation facilities, etc.). DOE reserves the right to make one award, multiple awards, or no awards in any given topic area.

SMART GRID

Question 1. Do you anticipate any problems or delays in your agency meeting its responsibilities in the area of encouraging infrastructure build out of smart grid?

Answer. No. Our Fiscal Year 2009 budget contains a $5 million request for Smart Grid Development and Implementation activities. This will enable the Department to carry out its responsibilities without major problems or delays.

Question 2. Have you made final decisions on the Smart Grid Advisory Committee and/or the task force?

Answer. Establishment of the Smart Grid Task Force is another effort that OE is leading on the Department's behalf. Assistant Secretary Kolevar has appointed a Director for the Smart Grid Task Force and has invited participation from Department of Energy's Office of Energy Efficiency and Renewable Energy, as well as other Federal agencies, including, the Federal Energy Regulatory Commission, the National Institute of Standards and Technology, the U.S. Departments of Agriculture (Rural Utility Services), Homeland Security, and Defense, and the Environmental Protection Agency. The initial meeting of the Task Force is planned for March 2008.

POWER MARKETING ADMINISTRATIONS—WAPA

The FY 2009 budget request for the Western Area Power Administration assumes an unprecedented increase in advanced customer funding—over $116 million. In particular, the budget assumes $72.6 million in advanced customer funding for WAPA's construction fund, while the Administration would fund only $1.8 million for construction.

While Western's customers can and do provide some advanced funding, there is a limit to the amount they can fund. If customers cannot advance the funds, WAPA must curtail its construction program which, in turn, could impair the reliability of its power and transmission systems.

Question 1. Why is the Administration assuming WAPA's customers can advance the necessary funding? What kind of analysis did OMB conduct to reach this conclusion?

Answer. Based on our longstanding working relationships with our customers, the Western Area Power Administration believes that advance funding from our customers for construction and rehabilitation projects will allow for additional transmission system improvements to proceed, ultimately improving system reliability. In fact, many of Western's customers continue to be supportive of the advance funding concept for construction and rehabilitation (C&R) projects. Such funding allows the distribution of responsibility for project funding to those customers who directly benefit from Western's activities. Although Western's customers have not previously provided advanced funding at the levels assumed in the FY 2009 C&R budget, Western will continue to work with its customers during the year to achieve the level assumed in the budget request. Western will of course also continue to identify those C&R projects most critical to system reliability to allow for their completion on a priority and timely basis within the available amount of appropriations and customer advanced funding.

Question 2. The FY 2009 budget request for the Western Area Power Administration assumes an unprecedented increase in advanced customer funding—over $116 million. In particular, the budget assumes $72.6 million in advanced customer funding for WAPA's construction fund, while the Administration would fund only $1.8 million for construction.

While Western's customers can and do provide some advanced funding, there is a limit to the amount they can fund. If customers cannot advance the funds, WAPA must curtail its construction program which, in turn, could impair the reliability of its power and transmission systems.

Does Western need to have generic authority to borrow funds from either the Treasury, like BPA, or from private parties?

Answer. Western does not have general authority to borrow from either the Treasury or private parties, and such borrowing authority is not needed. As discussed in the answer to the previous question, Western will continue to work with its customers to achieve $116 million of customer advances assumed in the FY 2009 Budget request for its construction program and operating costs. However, the Administration supports an alternative approach to financing Western's operating costs that would reduce the need for a portion of customer advances. Included in the $116 million of assumed customer advances for FY 2009 are $44 million of customer advances for operating costs, including $12 million for purchase power and wheeling costs. The Budget also includes an appropriation request of $132 million for operating costs. However, A 'net zero' appropriation for these annual operating costs would allow Western to meet its program requirements within its appropriation targets, with less reliance on customer advances for this purpose. Specifically, net zero appropriations would provide funding for Western's annual expenses and would be offset on a dollar-for-dollar basis by receipts to result in an annual net appropriation of $0 for Western's operating expenses. Western's other expenses, such as capital investments and the purchase power and wheeling program, would continue to be financed using current financing methods rather than net zero appropriations. Although the FY 2009 budget does not include a 'net zero' proposal, the Administration continues to support this approach through the reclassification of receipts from mandatory to discretionary for Western's annual operating expenses—a necessary step to adopting net zero appropriations without adverse scoring implications for the appropriations bill. Reducing the need for customer advances for operating costs would provide customers with additional financial flexibility that could be helpful in funding customer advances for Western's construction costs.

ENERGY SAVINGS PERFORMANCE CONTRACTING (ESPC)

Question 1. Has the Administration taken advantage of the permanent ESPC reauthorization in the Energy bill?

Answer. Yes. DOE is promoting the use of ESPCs to implement energy management projects in Federal facilities government-wide as one way to help agencies meet energy efficiency goals set out in Executive Order and statute. The use of ESPCs, a form of performance-based contracting, is being tracked and encouraged by the Federal Energy Management Program (FEMP).

FEMP's FY 2008 budget of $19.8 million includes $8.6 million to support Project Financing, which includes the following key ESPC-related activities:

- ESPC Federal Financing Specialists and Federal Project Facilitators to provide individual facility management and procurement teams with ESPC, UESC, and other project implementation guidance.
- Outreach and marketing programs to educate Federal agencies on the costs and benefits of ESPCs and other third-party financing tools.

- DOE's TEAM (Transformational Energy Action Management) Initiative to ensure that all DOE facilities meet or exceed EPACT, E.O. 13423, and EISA Federal energy management goals and comply with EISA training requirements.
- DOE's efforts to franchise the TEAM initiative as a model for other Federal agencies.

In addition, DOE and DOD jointly chair the Interagency ESPC Steering Committee to identify and resolve issues inhibiting the implementation of ESPC-financed projects government wide.

Question 2. What are your plans for engaging those agencies that are not currently using ESPCs to improve their energy performance?

Answer. DOE's Federal Energy Management Program (FEMP) supports activities designed to encourage agencies to use ESPCs and Utility Energy Service Contracts (UESCs) to finance facility energy management projects to help achieve Executive Order and statutory energy efficiency goals.

The Transformational Energy Action Management (TEAM) Initiative, established to implement the provisions of the Executive Order 13423 on an accelerated basis, is foremost among these efforts. DOE has formalized the TEAM Initiative planning, implementation, data collection, and analysis process within a Departmental order (Order 430.2B) to institutionalize this effort. The Department is documenting an implementation model that can be adopted by other agencies and tailored to meet their facility and mission needs.

Another important effort is the DOE Super ESPC contract, which promotes region and technology-specific energy service company (ESCO) contracts and is available for use by all Federal agencies. Agencies can take advantage of Super ESPC training provided by FEMP. Super ESPC workshops are taught in various DOE regions each year for agency acquisition teams embarking on energy improvement projects. Telecourses and FEMP-sponsored symposia are other ways that the Department informs Federal agencies about Super ESPCs.

DOE is also using staff to assist other agencies. FEMP maintains a staff of four Federal Financing Specialists, and each is assigned to a region of the country to provide individual facilities and agency sites with guidance on the most appropriate financing tool to fund their energy management projects. FEMP also contracts Federal Project Facilitators who are experts in the field and guide agencies through the ESPC process. Project facilitators and others on FEMP's team provide consultation to agency customers on contracting and financing issues, measurement and verification, and technology and engineering issues.

Question 3. As DOE moves forward with its ESPC solicitation, does the Department share the Defense Department's goal to include one or more small businesses as a prime contractors [sic]?

Answer. DOE is very interested in small business participation in the Energy Savings Performance Contracting (ESPC) program and all of its other programs as well. The ESPC solicitation, issued on October 11, 2007, contains language to promote small business plans and did not restrict any business from competing for an award of a contract. DOE will ensure that contractors are selected based upon the merits of their proposals (a process that is required by law and DOE policy). DOE's approach to this procurement is consistent with, and has been reviewed by, the United States Small Business Administration.

FUTUREGEN REQUEST FOR INFORMATION

In restructuring FutureGen, DOE has issued a Request for Information with draft project guidance, some of which appear to have not been very carefully developed. At the end of the 109th Congress and during the 110th, the President has signed into law two pieces of legislation to amend Section 1307 of EPACT 05 and Section 402 of EPACT 05 so that sulfur removal criteria are based on a pounds per BTU measurement rather than a percentage.

Question 4. Why does your Request for Information not account for this important change?

Answer. The FutureGen Funding Opportunity Announcement, which will be released after comments to the RFI are addressed, will include a pounds per BTU measurement for the sulfur removal criteria.

CARBON CAPTURE AND STORAGE

In attempting to expedite demonstration of carbon sequestration's viability, DOE is poised to drill for and release naturally occurring CO_2 in one place only to reinject it at another location. We want to reduce man-made CO_2 emissions, but our ability to do so hinges upon whether or not CO_2 can in fact be economically captured at industrial facilities in the first place.

Question 5. Why does the Department not wait until plants capable of capturing CO_2 are successfully demonstrated before devoting resources to the injection of CO_2?

Answer. The Department has efforts underway to successfully demonstrate CO_2 capture and to reduce its cost while simultaneously working to demonstrate storage of CO_2 in deep geologic formations. Waiting for plants capable of economically capturing CO_2 to be successfully demonstrated and not simultaneously focusing on CO_2 storage will significantly delay the entire carbon capture and storage effort. Plants that can capture large volumes of CO_2 will not be demonstrated for several years, which will delay critical near-term advancements in CCS to prove successful. Studies are being done to determine the extent to which CO_2 moves within the geologic formation, and what physical and chemical changes occur to such formations when CO_2 is injected. This information is key to developing technologies and processes that could ensure that sequestration will not impair the geologic integrity of an underground formation and that CO_2 storage is secure and environmentally acceptable. Demonstrating that geologic storage of CO_2 can be done safely and effectively will advance public acceptance of CCS technology for mitigating greenhouse gas emissions. Waiting for large volumes of CO_2 to be available from commercial plants before working on the remaining research, development, and demonstration of storage technology will cause significant delays in the commercial deployment of CCS.

Successfully demonstrating capture of CO_2 without having the ability to store the significant volumes of CO_2 that will be captured will not help in reducing CO_2 emissions. Parallel paths of research and demonstration of CO_2 capture along with that of research in geologic formations to understand the behavior of CO_2, is the best course to advance CCS technologies.

BIOMASS/RENEWABLE FUELS STANDARD

I am pleased that Biomass and Biorefinery R&D is increased by 13.5 percent ($26.8 million) to $225 million. The program includes feedstock resource assessment and infrastructure development, conversion R&D, commercial scale biorefinery demonstration projects, and addressing barriers to biofuels distribution and end use.

Question 1. Will the increased program allow the department to expand work on alternative feedstocks available in different regions of the nation? I am particularly interested to know if greater research will be allocated to develop algae-based biofuels.

Answer. DOE is committed to targeting its R&D as effectively as possible to develop cost effective, clean renewable fuels. To that end, we are investigating the potential of a wide range of feedstocks, including algae, to produce alternatives to petroleum-based fuels. The Department has discussed ongoing algae research with other Federal Agencies, including the Environmental Protection Agency, and the Departments of Defense and Agriculture.

Currently, biodiesel produced from oilseed crops such as soybeans is commercially produced on arable land while algae are still in the research and development stage. Due to their potential high yields, small land requirements, and their ability to absorb vast amounts of CO_2 (in co-production with coal-fired plants, for example, algae may warrant further investigation even though they will not contribute to our fuel mix in the short-term.

Question 2. Will this increased funding support the establishment of additional bioenergy centers, as authorized in the Energy Policy Act of 2007?

Answer. The increased funding for EERE's Biomass and Biorefinery R&D will not support the establishment of additional Bioenergy Research Centers in the Office of Science.

Congress appropriated $75 million ($25 million per BRC) for the Office of Science in FY 2008 to operate these three Centers, and the President's FY 2009 Budget Request includes $75 million to support their continued operation. The Department's Office of Science does not plan to issue a FOA requesting applications for additional Bioenergy Research Centers, but the Department does intend to continue supporting fundamental and applied bioenergy research through standard merit-reviewed procurement processes. For example, the Department's Office of Science has issued a joint USDA-DOE program solicitation for research on plant feedstock genomics for bioenergy and is strongly encouraging proposals not only from individual investigators but also from interdisciplinary teams comprising a range of expertise. Pending the outcome of the merit review process, awards are expected to be made in FY 2008.

The additional funds requested for EERE's Biomass Program will be directed to the already announced pilot and commercial-scale biorefineries.

MOX FACILITY

Question 1. Can you tell me how the program will be impacted as a result of the deep cuts imposed by the FY'08 bill and how this will impact the cost and schedule?

Answer. The total project cost to design, construct, and complete cold start-up activities for the MOX Fuel Fabrication Facility is $4.8 billion, including contingency and escalation. This estimate assumed Congressional appropriation of the President's FY2008 and outyear budget requests without significant reduction or restriction. The Department currently is evaluating the potential effects of the Consolidated Appropriations Act 2008, on the cost and schedule for the MOX facility, while continuing to explore ways to reduce delays. However, due to the funding reductions contained in the Consolidated Appropriations Act, 2008, we are revising the cost and schedule baseline for the MOX Fuel Fabrication Facility. Although DOE is committed to constructing and operating the MOX facility as expeditiously as possible and will use best efforts to mitigate any potential delays, we expect that the revised baseline, when completed and independently validated, may extend the MOX construction schedule and increase the total project cost.

Question 2. Can you please explain the challenges and costs the Department is facing in transferring this activity from the Office of Nuclear Nonproliferation to the Office of Nuclear Energy?

Answer. As a threshold matter, it does not appear that the Consolidated Appropriations Act, 2008, actually transferred the MOX program from NNSA to the Office of Nuclear Energy, and there is a significant question as to whether the Secretary has the legal ability to effectuate the transfer contemplated by the accompanying committee report. This circumstance is described more completely in the attached memorandum by the General Counsel dated February 22, 2008.

Furthermore, dividing the responsibilities for and the funding of three inter-related projects (the MOX Fuel Fabrication Facility, the Pit Disassembly and Conversion Facility, and the Waste Solidification Building) complicates effective project management, and increases program risks, including cost and schedule risks. We believe that it is not an optimum way to fund or manage these projects.

Department of Energy
Washington, DC 20585

February 22, 2008

MEMORANDUM FOR THE SECRETARY

FROM: DAVID R. HILL
GENERAL COUNSEL

SUBJECT: Treatment of the MOX Project by the Consolidated Appropriations Act, 2008

The Energy and Water Development and Related Agencies Appropriations Act, 2008, which was enacted as part of the Consolidated Appropriations Act, 2008 (Public Law 110-161), did the following:

1. appropriated $970.5 million to the statutory appropriations account for Nuclear Energy activities:

2. authorized appropriations of $233.8 million for the Mixed Oxide (MOX) Fuel Fabrication Facility in the same statutory appropriations account provision;

3. required in that provision that the Department "adhere strictly" to DOE Order 413.3A (regarding project management) in conducting the MOX project; and

4. in the statutory appropriations account for Defense Nuclear Nonproliferation, rescinded $115 million of prior year appropriations for the MOX project, as well as additional amounts previously appropriated for Russian surplus fissile materials disposition.

The legal effects of the statutory provisions are relatively straightforward. The MOX project now is funded from the Nuclear Energy activities account, not the Defense Nuclear Nonproliferation account, and is to be funded up to the authorized level of $233.8 million. In addition, the Department must "adhere strictly" to the existing DOE Order regarding project management, and significant amounts previously appropriated for nuclear nonproliferation activities are rescinded.

The statute does not in any explicit way speak to the question of which Departmental entity is to manage the MOX project, because statutory appropriations accounts for most DOE activities, including those at issue here, do not contain language that addresses organizational or management responsibility. They do not make appropriations "to" identified components within the Department, but rather make appropriations for the

"purpose" of carrying out certain broadly-described activities as are authorized by the Department of Energy Organization Act or another cited law.

While the statutory text of the 2008 Consolidated Appropriations Act does not address the organizational responsibility issue, the committee report accompanying the Act does address that issue. The narrative in the committee report, under the head "Fissile Materials Disposition," explains: "Program activities and functions for the Mixed Oxide (MOX) Fuel Fabrication Facility construction project are transferred to the Office of Nuclear Energy[.]" Thus, the committee report clearly sets forth a desire about which DOE organization and office should manage the MOX project. Nevertheless, because there is no statutory text that effects the described transfer and because the committee report text itself is not law, accomplishing the transfer can occur only by use of the Secretary's internal management authorities contained in the Department of Energy Organization Act.

The Secretary has broad authority under the DOE Organization Act to move functions between different DOE offices, but this authority is severely constrained with respect to National Nuclear Security Administration (NNSA) functions and activities. Under the NNSA Act enacted in 1999, transfers of functions out of NNSA are prohibited, with essentially the only exception to this prohibition being a category of activities that does not appear to be relevant to the MOX program – namely, Environmental Management responsibilities associated with sites and facilities that were transferred to NNSA by the NNSA Act. For any other NNSA program or activity, the only way for it to be transferred out of NNSA and to another DOE office is for Congress to pass a law that either legislatively accomplishes the transfer, or gives the Secretary transfer authority overriding the NNSA Act's prohibition. Congress recently effected such a reorganization in section 3117 of the John Warner National Defense Authorization Act for Fiscal Year 2007, when it abolished the NNSA counterintelligence office, and transferred the functions and personnel of that office to the Secretary of Energy, for administration by DOE's Office of Counterintelligence.

Therefore, if responsibility for the MOX program, including construction of the MOX Fuel Fabrication Facility, was transferred to NNSA by the 1999 NNSA Act, the Secretary would not have the legal ability, even as a matter of comity, to take the reorganization actions necessary to make the transfer of programmatic responsibility called for by the committee report. Our initial review indicates that responsibility for this program was in fact transferred to NNSA by the NNSA Act. Nevertheless, we are conducting the substantial additional legal research and analysis necessary before coming to any final conclusion that the Secretary is legally prohibited from making the desired transfer.

Both the 2008 Consolidated Appropriations Act and its accompanying committee report indicate clearly that Congress wanted the MOX program, including construction of the MOX Fuel Fabrication Facility, to continue. Nonetheless, and as explained above, the manner in which this objective was addressed presents a significant question as to whether the Secretary has the legal ability to effect the transfer contemplated by the committee report. In order best to harmonize the evident congressional policy that the

MOX Fuel Fabrication Facility should continue with the need to complete the legal research and analysis that is required to resolve legal questions related to the desired transfer of organizational responsibility, the Office of the General Counsel has recommended that the Office of Nuclear Energy and the Office of the Deputy Administrator for Defense Nuclear Nonproliferation enter into an Economy Act agreement whereby, for the time being, management of the MOX program may continue without disruption, but with the funds Congress has appropriated in the Nuclear Energy activities account. Under Secretary Albright, Administrator D'Agostino and Chief Financial Officer Isakowitz have concurred in this approach.

NUCLEAR WASTE/YUCCA MOUNTAIN

The 2009 Budget Request indicates that, despite a funding cut in 2008, the Nuclear Waste program still plans to file a license application for the Yucca Mountain repository this summer. DOE estimates that between $1.5 and $2 billion per year will be required to open the repository by 2017.

Question 3. However, if the funding for the program continues at the current level, what is the projected opening date for the repository?

Answer. The Department is unable to project an opening date for the repository if the funding for the Program were to continue at the 2008 funding level. The Administration has proposed funding reform legislation for the Program to facilitate more direct access to Nuclear Waste Fund annual receipts. Until funding reform is enacted, the Department will not be able to project a credible opening date for the repository.

Question 1. The Federal Government is on the hook for paying for on-site storage costs for nuclear plants as a result of its failure to meet its contractual commitment to begin moving spent fuel in 1998. Previously, DOE estimated that the government's liability would be $7 billion IF Yucca Mountain were to open in 2017 and $11 billion if it were to open in 2020. So, at that point, the liability is growing at $1.3 billion per year. This is money that is paid out directly from the judgment fund.

Has DOE calculated the cost to the taxpayer if the Government doesn't move spent fuel by 2030, 2040, 2050, etc?

Answer. No. The Department has not calculated these costs. The Department notes, however, that calculation of potential costs is a complex matter and that it cannot be assumed that liability will grow at $1.3 billion or more per year in the period after 2020. On average, the liability will grow by $500 million annually.

Question 2. In the past, DOE has estimated that, if it starts moving spent fuel in 2020, it would take 20 years to work off the "backlog" of spent fuel that it is contractually obligated to take. Have you done the calculations on how long it would take if spent fuel begins to move in 2030, 2040, 2050 etc. Is it possible that, if the government starts taking fuel late enough, that it may be virtually impossible to ever catch up?

Answer. The Department is contractually obligated to accept all the spent nuclear fuel generated by the commercial nuclear power reactors covered by Standard Contracts for disposal of spent nuclear fuel. As of the end of 2007, the Department estimates that the inventory of spent nuclear fuel discharged from these reactors was approximately 58,000 MTHM. The current fleet of reactors will continue to discharge about 2,000 MTHM of spent nuclear fuel each year. If all the 104 operating reactors receive and utilize a 20 year license extension, the Department estimates that, at the end of operations, the current nuclear power reactor fleet will have discharged about 130,000 MTHM of spent nuclear fuel. When fully operational, the Yucca Mountain repository is expected to be able to receive about 3,000 MTHM annually. Accordingly, assuming the statutory limit of 70,000 MTHM is lifted, it would take about 40 years from the time it begins operation for the Yucca Mountain repository to receive the approximately 130,000 MTHM of spent nuclear fuel that will have been generated by the nuclear power reactors covered by the Standard Contract.

Question 1. Current law imposes a 70,000 metric ton limit on spent fuel that can be placed in Yucca Mountain. Even if Yucca Mountain were to open, by 2010, there will be enough spent fuel in the U.S. to fill Yucca to its statutory capacity. Current law also requires DOE to start thinking about a second repository.

Are you doing this, and are you considering the uses of recycling technologies to reduce the need for a second repository?

Answer. The Department by statute (P.L. 102-486) is preparing the Second Repository Report that will assess the need for a second repository and make recommendations for action. The Department expects to issue this report to Congress this summer. The Department has stated that if the 70,000 MTHM statutory limit were lifted legislatively, a second repository would not be needed for a significant amount of time. The Department also supports the exploration of the recycling technologies which could reduce the volume and radiotoxicity of the amount of spent nuclear fuel destined for permanent disposal.

Question 2. If Yucca Mountain doesn't open, what happens to the defense waste currently stored at Hanford, Savannah River and other DOE sites?

Answer. If Yucca Mountain does not open, the defense waste currently stored at Hanford, Savannah River and other Department of Energy sites will remain at those sites until a final disposition path is determined.

Question 3. Please explain your plan for deploying the $38.5 billion in loan guarantees and how this can change our energy markets.

Answer. The Department's authority for loan guarantees to be issued under Title XVII of the Energy Policy Act of 2005 (EPAct 2005) in FY2008 is established in the Consolidated Appropriations Act, 2008 (Act). The Act itself does not set a dollar limit on the authority of DOE to issue loan guarantees. However, the Committee Report accompanying the Act indicated that a total of $38.5 billion of loan guarantees could be extended on or before the end of FY2009.

The Act requires that before executing a new solicitation, DOE must submit to the Committees on Appropriations an implementation plan that defines the proposed award levels and eligible technologies, and wait at least 45 days. The Department plans to submit an implementation plan, pursuant to this requirement, as soon as possible.

Consistent with the statutory purposes of Title XVII of EPAct 2005, the loan guarantees to be issued there under are intended to help change our energy markets by encouraging early commercialization in the United States of new or significantly improved technologies that avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases. The Department is moving forward in this regard with each of 16 projects invited to submit full loan guarantee applications in October 2007 in response to DOE's initial solicitation in 2006. The Department is working to ensure that the first loan guarantee agreements will be executed before the end of 2008.

ENERGY STORAGE DEVICE R&D

I was pleased to see the request for the vehicle technologies program increases to $221.06 million for vehicle technologies R&D, an increase of $8.04 million from the FY 2008. The budget summary indicates this will focus core R&D activities to support accelerated development of plug-in hybrids, including development of lithium ion batteries.

I am concerned that the Department is focusing so narrowly on lithium ion batteries. Recent advances in lead acid battery technology, for example, may make this chemistry a viable candidate for vehicle applications.

Question 4. Does the Department have any plans to review progress in other battery chemistries, and possibly expand its research portfolio if appropriate?

Answer. DOE routinely benchmarks state-of-the-art battery technology to gauge performance and maturity, and guide R&D planning. Benchmark testing of emerging technologies is important for remaining abreast of the latest industry developments. DOE regularly purchases advanced battery hardware (cells and modules) and independently tests these battery systems against the most applicable advanced vehicle battery performance targets. In addition, DOE provides funding support (through the Advanced Lead Acid Battery Consortium, ALABC) for support of advanced lead acid batteries technology development.

METHANE HYDRATES

Question 5. Could you please clarify the remarks you made during the hearing regarding the Department's support for methane hydrate research?

Answer. The Administration does not support spending Department of Energy funds for research and development (R&D) on safety or production of methane hydrates, given the economic incentives industry has to pursue this R&D on its own. This is consistent with its position that oil and gas are mature industries and both have every incentive, particularly at today's prices, to enhance production and continue research and development of technologies on their own. There is no need for taxpayers to subsidize oil and gas companies in these efforts. However, several other government agencies support methane hydrate research where it fits their missions,

including the U.S. Geological Survey (USGS), the Bureau of Land Management (BLM), and Minerals Management Service (MMS) within the Department of Interior; the National Oceanic and Atmospheric Administration (NOAA); the National Science Foundation; and the Naval Research Laboratory.

POWER PLANTS—COOLING TOWERS

There has been concern about how the federal government may deal with the potential retrofit of cooling towers at power plants that are currently equipped with once-through cooling technologies. As you may know, EPA is currently engaged in a rulemaking evaluating appropriate standards associated with cooling water intake structures at power plants.

Question 6. Please provide an assessment of the reliability and cost impacts that could likely result from a requirement to install cooling towers or similar systems at all power plants.

Answer. There are very significant potential impacts associated with retrofitting the 500-plus existing plants using once-through cooling facilities ranging from the capital cost of the retrofit to the lost power during the conversion to the permanent energy capacity reductions ("penalties"). The Department of Energy has not performed recent detailed studies on this issue; The estimates for capacity reductions (or "penalties") range from around 3 percent to 13 percent depending on site conditions and the cooling tower technology selected. Closed-cycle cooling tower technology can result in an energy penalty of 8.8 to 13.1 percent over once-through cooling since the cooling water is warmer, and pumps and fans associated with cooling towers require energy to operate. For wet cooling towers, the peak summer energy penalty ranges from 2.4% to 4.0% and wet cooling towers are not practical where water consumption is a concern.

Older, less economical facilities, especially those used for supplying peak power demand, would likely not be able to bear the cost of retrofits and be forced to retire. There are also some facilities that it will not be possible to retrofit. These include facilities that simply do not have adequate space to install closed-cycle cooling systems or may not be able to obtain permits for such systems due to local laws and regulations.

QUESTIONS FROM SENATOR AKAKA

DNN BUDGET CUTS

I see that a number of important nuclear security programs have had their budgets cut. For example, The Defense Nuclear Nonproliferation appropriation has been reduced by $88.9 million as compared to FY 2008. However, many experts agree that the threat of nuclear and radiological terrorism continues to increase, not decrease. In fact, the Director of National Intelligence, Michael McConnell, stated earlier this week that "al-Qaida and other terrorist groups are attempting to acquire chemical, biological, radiological, and nuclear weapons and materials.

Question 1. Given this looming threat, why are these programs being cut? Many of these programs have been funded for nearly seven years or more.

Answer. The Department remains committed to deterring, detecting, and preventing the spread weapons of mass destruction (WMD) material and technology around the globe. The appearance of a large reduction in this program in 2009 results from two actions taken by the Congress in FY2008: the appropriation transferred funding of about $600 million in construction activities (the MOX project and the Pit Disassembly and Conversion Facility) out of Defense Nuclear Nonproliferation to other DOE programs, and the Congress added over $480 million in additional FY 2008 funding to the remaining programs in the Defense Nuclear Nonproliferation account.

The FY 2008 and FY 2009 programs will continue the Administration's acceleration of nonproliferation efforts as noted in four specific exampled. 1) We have accelerated our nuclear materials security work in Russia by two years, completing 85% of the Bratislava work with the balance of sites to be complete in calendar year 2008. 2) We have signed an agreement with Russia to accelerate the completion of all land border crossings by 6 years. 3) We are hopeful that we will be able to accelerate our Elimination of Weapons Grade Plutonium Producing Reactors work in Russia by one year. 4) We have accelerated our work to convert or shutdown research reactors using Highly Enriched Uranium. Moreover, our strong commitment to nonproliferation leads us to seek other ways to continue acceleration in these programs.

Question 2. What kinds of benchmarks do you use to measure success in them? Can you do more with less, and, if so how?

Answer. We use different benchmarks for each of our programs, because their missions vary widely. Our mission is to detect, secure and dispose of dangerous nuclear and radiological materials around the globe. Recognizing the global and evolving nature of the nonproliferation threat, we have expanded our work to over 100 countries. This includes work to secure nuclear materials, such as in Russia, where we have secured 85% of nuclear weapons sites and concern, and across the globe where we have repatriated over 1,730 kgs of highly enriched uranium (enough for nearly 70 nuclear weapons). We have secured over 600 vulnerable radiological sites overseas. We worked to dismantle Libya's program, and are continuing to oversee the disablement of North Korea's nuclear program. We have trained over 5,600 domestic and nearly 8,000 international officials on export controls and WMD identification, and trained over 1,000 foreign nuclear facility operators on nuclear safeguards. We have also worked to accelerate the shutdown of 3 Russian plutonium production reactors, which will prevent the production of about a ton and a half of weapons grade plutonium annually.

To answer the second question, we also measure our success by how quickly and smartly we undertake our global mission to reduce and eliminate these dangerous nuclear and radiological materials. To that end, we will continue to accelerate our nonproliferation efforts, emphasize cost-sharing and sustainability of these efforts with international partners, and strengthen our project management.

QUESTIONS FROM SENATOR BARRASSO

The Cooperative Research and Development program within the Office of Fossil Energy supports activities of federal, industry, and research institute endeavors. It is a joint program with the Western Research Institute and the University of North Dakota. Your budget explanation suggests this program can compete for other grants. I, too, am confident that this program can, will, and has successfully competed for other grants. That fact does not take away from its core mission historically supported by Congress for many years. By all accounts, this is a success story in terms of research, in terms of leveraging private funds, and in terms of obtaining commercial patents and technologies.

Question 1a. What Department metrics of success did DOE use to judge this program?

Answer. Based on past successful performance, the Department anticipates that these centers would compete successfully for Fossil Energy funding through the competitive solicitation process.

Question 1b. The Cooperative Research and Development program within the Office of Fossil Energy supports activities of federal, industry, and research institute endeavors. It is a joint program with the Western Research Institute and the University of North Dakota. Your budget explanation suggests this program can compete for other grants. I, too, am confident that this program can, will, and has successfully competed for other grants. That fact does not take away from its core mission historically supported by Congress for many years. By all accounts, this is a success story in terms of research, in terms of leveraging private funds, and in terms of obtaining commercial patents and technologies.

On what assessment areas did the Cooperative Research and Development program fail to perform adequately against other Department of Energy funding priorities?

Answer. The Cooperative R&D program did not fail to perform adequately against any DOE funding priorities. However, since this program does not compete for funding, it is not considered the best way to approach DOE's funding priorities.

Question 1c. The Cooperative Research and Development program within the Office of Fossil Energy supports activities of federal, industry, and research institute endeavors. It is a joint program with the Western Research Institute and the University of North Dakota. Your budget explanation suggests this program can compete for other grants. I, too, am confident that this program can, will, and has successfully competed for other grants. That fact does not take away from its core mission historically supported by Congress for many years. By all accounts, this is a success story in terms of research, in terms of leveraging private funds, and in terms of obtaining commercial patents and technologies.

What is the rationale for discontinuing this longstanding program?

Answer. DOE has not requested funding for several years and this is strictly a matter of requiring these institutions to compete for any funding they receive in order to ensure that the best performers are selected. The Western Research Institute (WRI) and University of North Dakota Energy and Environment Research Center (UNDEERC) organizations are welcome to bid on all solicitations issued by DOE. Title 10 Section 600.6 of the Code of Federal Regulations states that DOE shall use

competition to the maximum amount feasible in its solicitations for financial assistance projects.

Question 1d. The Cooperative Research and Development program within the Office of Fossil Energy supports activities of federal, industry, and research institute endeavors. It is a joint program with the Western Research Institute and the University of North Dakota. Your budget explanation suggests this program can compete for other grants. I, too, am confident that this program can, will, and has successfully competed for other grants. That fact does not take away from its core mission historically supported by Congress for many years. By all accounts, this is a success story in terms of research, in terms of leveraging private funds, and in terms of obtaining commercial patents and technologies.

What program or programs did DOE select to fund in lieu of the Cooperative Research and Development program?

Answer. DOE did not select to fund any programs in lieu of the Cooperative R&D program. All funding requested in our FY 2009 budget was based on programmatic priorities. The performers in these programs will be selected on a competitive basis. Should the Western Research Institute (WRI) and the University of North Dakota Energy and Environmental Research Center (UNDEERC) elect to submit proposals on any activities, then they will be judged fairly with all other performers.

Question 2. Will DOE be submitting a reprogramming request to Congress for your restructured FutureGen Program?

Answer. On June 9, 2008, the President forwarded to Congress a language amendment that would revise appropriation language to the Fossil Energy Research & Development appropriation, allowing the Department to revise the approach used to fund the restructured FutureGen program. Under this revised approach, the amendment would eliminate the requirement that projects funded in the FutureGen program have the Federal share of project funding appropriated in full at the time of selection. This provision would provide the Secretary of Energy with the discretion to fully fund FutureGen projects or to fund them incrementally. If the Department of Energy decides to fund them incrementally, the Department's program regulations and contracts will ensure that the Department does not incur obligations in excess of the appropriated amounts that are available to cover those obligations. In light of the budget amendment there would be no need to reprogram funds.

Question 3. What is the content and timing of any and all pending DOE plans to support carbon sequestration research or demonstration projects in Montana or Wyoming? a. What is the time line for any plans identified in the above question?

Answer. The Department of Energy has seven Regional Partnerships that are undertaking field tests for CO_2 storage across the country. One of the Regional Partnerships, Big Sky, is managed by the Montana State University. The Big Sky Regional Partnership includes the states of Montana, Wyoming, Idaho, Washington, Oregon, and South Dakota and has over 60 partners. Big Sky has proposed an effort for a large-scale sequestration test in its Partnership area.

The Zero Emission Research and Technology Center, managed by the Montana State University and funded by the Department of Energy, is also conducting collaborative research in carbon sequestration. This research is focused on understanding the basic science of underground (geologic) carbon dioxide storage to mitigate greenhouse gasses from fossil fuel use and to develop technologies that can ensure the safety and reliability of that storage.

Large-scale sequestration tests may be awarded in FY 2008, depending on the results of a scientific needs assessment being conducted in a March 2008 technical peer review and the ability of the project proposal to meet those needs.

Question 4. The DOE budget proposal asks for an increase of funding for Yucca Mountain and an indication that DOE will be submitting a license to the Nuclear Regulatory Commission to construct a repository. What level of federal funds has been expended to date on this effort?

Answer. Approximately $10 billion has been expended on the Program since its inception in 1983; $7 billion of the total was funded by the Nuclear Waste Fund and $3 billion by appropriations in the Defense Nuclear Waste Disposal account.

Question 4a. The budget also indicates that given funding levels, a "development of a credible schedule for the program is not possible." Using the best available data, how long are Americans, consumers, and industry going to have to wait to obtain a resolution to the storage of nuclear waste?

Answer. The Nuclear Waste Policy Act, as amended, authorizes the Department of Energy to develop a permanent repository for the disposal of the Nation's spent nuclear fuel and high-level radioactive waste. Last year the Department provided a schedule and supporting funding profile that would have had the repository at Yucca Mountain commence operations in 2017. Due to Congressional reductions in the funding for the Program in 2008, however, that schedule is no longer viable.

Once Congressional action is taken on funding reform proposed by the Administration, which would provide consistent and sufficient funding for the Program, the Department would be able to provide a credible schedule to begin operations at Yucca Mountain.

Question 5. What is DOE's long-term plan to extend the operation and production of the Rocky Mountain Oilfield Testing Center and ensure its continued success as a resource to small, independent oil and gas companies that cannot afford to conduct research larger companies can, particularly if its production budget continues to decline?

Answer. DOE retains the Naval Petroleum Reserve No. 3 (NPR-3) in Wyoming (Teapot Dome field). The NPR-3 Program's primary focus has been to apply conventional oil field management and operations to produce the stripper field to its economic limit. The President must authorize continued production every three years, with production currently authorized through April 2009. Co-located with NPR-3, the Rocky Mountain Oilfield Testing Center (RMOTC) provides opportunities for field-testing and demonstration of upstream oil and gas technologies, environmental products, and energy efficient, geothermal, and other renewable technologies as they relate to oil and gas operations. Funding of the overall program has been relatively flat for the past three fiscal years and the FY 2009 request is in line with past appropriations.

QUESTIONS FROM SENATOR CANTWELL

SMART GRID

Question 1. Mr. Secretary, as you know, our nation's electricity grid is vital to our economy and way of life. However, it currently uses outmoded technology which cannot record and communicate valuable information on conditions of supply, consumer loads, or system performance. This means our grid is less reliable than it could be and requires greater generation resources than it should. Modern technology is available that could provide significant efficiency savings, reduce peak power demands, and save tens to hundreds of billions in outage costs and avoided generation investments. For example, new technologies could allow appliances to automatically avoid costly demand periods and consumers to schedule their power consumption around periods when the grid is stressed. In order to help facilitate the national transition toward development and use of smart grid technologies, I championed provisions in the Energy Independence and Security Act of 2007 that provide DOE authority and guidance for moving ahead in creating a more flexible, more reliable and responsive U.S. electricity grid. These included research, development and demonstration programs; studies and reports on implementation; and a grant program for smart grid technology investment.

Although it appears the Office of Electricity Delivery and Energy Reliability has established goals to lead national efforts to modernize the electric grid, enhance security and reliability of the energy infrastructure, and facilitate recovery from disruptions to the energy supply, I am concerned that this FY09 budget request may hinder the DOE from accomplishing necessary work toward these important goals.

Mr. Secretary, after review of the Fiscal Year 2009 budget it is not apparent which program will be managing the DOE's Smart Grid obligations under the Energy Independence and Security Act of 2007. It is also noted that the budget of the Office of Electricity Delivery and Energy Reliability (OE) has been reduced $4.6 million due mainly to zero funds requested to support congressionally directed activities. Can you please tell me how much it will cost OE to implement the smart grid provisions of the Energy Independence and Security Act of 2007, which program will have management oversight, and why this information was not included in the Department's FY09 budget request?

Mr. Secretary, the President has only requested $5 million for Smart Grid projects in the FY 2009 budget to complete several smart grid initiatives such as implementation at the utility and state levels, development of a smart grid architecture and framework, and better integration of the smart grid and plug-in hybrid electric vehicles (PHEVs). Can you please discuss why the funding requests in this area have continued to decrease over past years? Has the Department completed and achieved its goals in this area? If not, what are the future priorities?

Answer. The Office of Electricity Delivery and Energy Reliability (OE), under the leadership of Assistant Secretary Kolevar, has the responsibility to carry out the Smart Grid provisions (Title XIII) of the Energy Independence and Security Act of 2007.

Our Fiscal Year 2008 appropriation and our Fiscal Year 2009 request do contain a variety of activities that are related to the development of Smart Grid systems

which include sensors, control systems, and communications strategies that provide real-time information to grid operators. Therefore, OE provides far more funding in our Fiscal Year 2009 request devoted to smart-grid related activities than is immediately apparent. For example, the Visualization and Controls subprogram contains several Smart Grid-related activities, including those aimed at wide area measurement, real-time data and analysis, and applications software for automatic grid protection and control.

In addition, our Energy Storage and Power Electronics subprogram also contains Smart Grid-related technologies such as development and testing of power electronics devices, which are crucial for faster response times, and greater precision and control, which are essential for Smart Grid systems.

Finally, there are other activities in our Renewable and Distributed Systems Integration subprogram that are relevant for the advancement of Smart Grid systems. For example, work to advance the integration of renewable electric systems, energy storage, energy efficiency, and demand response is planned to address issues in interoperability and the optimization of distributed systems, topics which are vital in advancing Smart Grid technologies, practices, and services.

Question 2. Mr. Secretary, Section 1303 of the Energy Independence and Security Act of 2007, requires that the Department establish a Smart Grid Advisory Committee. Given the 90-day time frame stipulated in the energy bill, what progress has your office made in establishing both the Smart Grid Advisory Committee and the Smart Grid Task Force?

Answer. The Energy Independence and Security Act of 2007 contains two provisions which call for the creation of advisory committees to guide our activities in electric power. As you point out, Section 1303 calls for the creation of a Smart Grid Advisory Committee. In addition, Section 641 calls for the creation of an Energy Storage Advisory Council. Both are to operate under the provisions of the Federal Advisory Committee Act. The Office of Electricity Delivery and Energy Reliability (OE) is moving swiftly to meet both the Section 1303 and 641 requirements. We have decided to combine the groups under an Electricity Advisory Committee (EAC), which will tackle the legislated duties of the Section 641 and 1303 groups, as well as take on other matters for which the Department needs advice from outside experts. The formal announcement of the EAC was made on February 20, 2008.

Question 3. Mr. Secretary, how much communication has your office had with the Federal Energy Regulation Commission (FERC) regarding the establishment of the Smart Grid Regional Demonstration Initiative? Have there been any discussions, either internally or with other government/industry entities as to where these demonstration projects would occur?

Answer. Our communication with FERC to date has focused on assembling the Smart Grid Task Force. The 2009 Budget request doesn't include funds for this initiative, nor were any appropriated in the Fiscal Year 2008 budget, which we are currently in the process of carrying out.

Nevertheless, the Office of Electricity Delivery and Energy Reliability has been actively engaged in the development of Smart Grid and related technologies, practices, and services for many years. The Department has supported the development of in-house expertise in Smart Grid systems, and also at the national laboratories, universities, and consulting firms. Informal discussions about strategies for advancing Smart Grid technologies, through research, development, demonstration, analytical, and technology transfer activities, have been occurring for several years.

Question 4. Mr. Secretary, is your office aware of the National Institute of Standards and Technology (NIST) efforts to coordinate the development of a framework that includes protocols and model standards for information management to achieve interoperability of smart grid devices and systems?

Answer. Yes, and the Office of Electricity Delivery and Energy Reliability has recently held several meetings with appropriate personnel at NIST to discuss how to coordinate our efforts. Section 1303 of the Energy Independence and Security Act of 2007 calls for the establishment of a Federal Smart Grid Task Force. Assistant Secretary Kevin Kolevar has formally invited NIST and several other Federal Departments and agencies to participate on this task force. One of the top priorities of the task force is to coordinate activities across the Federal Government to assist NIST in the development of a framework that includes protocols and model standards for information management to achieve interoperability of Smart Grid devices and systems. The initial meeting of the Smart Grid Task Force is scheduled for March 2008.

Question 5. Mr. Secretary, would you please describe any progress made (or reasons why there has been no progress made) in establishing the Smart Grid Investment Matching Grant Program?

Answer. Defining both the scope and the procedures necessary to implement the Smart Grid Investment Matching Grant Program will be one of the primary tasks that the Smart Grid Task Force will be charged with completing over the next several months. The Office of Electricity Delivery and Energy Reliability is moving swiftly to assemble this Task Force. Assistant Secretary Kolevar has appointed a Director for the Smart Grid Task Force, and the task force includes participation from DOE's Office of Energy Efficiency and Renewable Energy, as well as other Federal agencies, including the Federal Energy Regulatory Commission, the National Institute of Standards and Technology, the U.S. Departments of Agriculture (Rural Utility Services), Homeland Security, and Department of Defense, and the Environmental Protection Agency. The initial meeting of the Task Force is planned for March 2008.

No funds were requested in the 2009 Budget for the Smart Grid Investment Matching Grant Program. However the budget does include $5 million for Smart Grid Development and Implementation which will focus on several activities, such as projects for Smart Grid Advancement, the development of Enabling Functions and Services, the development of Smart Grid Architecture and Standards, and System Simulation and Analysis efforts.

Question 6. Mr. Secretary, DOE and the Pacific Northwest National Laboratory recently published results of a year-long study in the Seattle area regarding the benefits of smart grid technology. The study showed that consumers saved nearly 10% on their electricity bills by using internet-connected thermostats and other smart appliances. Are there any plans to build upon the success and the findings of this study? What kinds of funding and/or programs would be helpful to do this?

Answer. We are very encouraged by the results of the Pacific Northwest National Laboratory study and will continue activities in this fiscal year. Additionally, in our Fiscal Year 2009 budget request, the Department included $5 million for Smart Grid Development and Implementation which will focus on several activities. One involves projects for Smart Grid Advancement, including development of a technology roadmap, and definition of performance metrics. A second involves Enabling Functions and Services which focuses on the Smart Grid needs of building the electric infrastructure to support plug-in hybrid electric vehicles. A third is furthering the development of Smart Grid Architecture and Standards, which will involve a variety of stakeholder outreach activities including an "interoperability forum," which will provide an opportunity for developers to meet and share lessons learned about the relative merits of alternative smart grid technologies, practices, and services. And fourth is System Simulation and Analysis which includes analysis of life-cycle system costs and benefits and the development of simulation tools for modeling Smart Grid applications at the transmission, substation, and distribution feeder levels.

Question 7. Mr. Secretary, in discussing the challenges posed by the implementation of a national "Smart Grid," would you say that a critical first-order need is the development of new algorithms for grid management to replace the nearly 40-year old ones that are now the backbone of grid management and control? And would you concur that a modern grid physical infrastructure will be seriously handicapped in it's functioning without first designing and incorporating the software necessary to manage modern grid system capabilities and demands? And finally, does the Department have as a priority task the development of such software and control algorithms?

Answer. As you may know, the Office of Electricity Delivery and Energy Reliability (OE) has been actively engaged in the development of Smart Grid and related technologies, practices, and services for many years. The Department has supported the development of in-house expertise in Smart Grid systems, and also at the National laboratories, universities, and consulting firms. In addition, the Department conducted technology development, analysis, and technology transfer activities related to smart grid systems. As a result of the preliminary work that we have conducted so far, we have determined that there are a number of "first order" needs involved in addressing the challenges posed by the implementation of a national "Smart Grid." We agree with you that new algorithms for grid management is one of the top priority needs.

Smart Grid systems can be applied to both electric transmission and distribution. Our Fiscal Year 2009 budget submission contains a $25.3 million request for Visualization and Controls, which is a subprogram of the Office of Electricity Delivery and Energy Reliability, and is focused on the development of tools and algorithms to improve the response time of the transmission system to disturbances to reduce the number and spread of outages, reduce the operating margins by allowing the system to operate closer to its loading limits, and to harden the transmission system's digital control, communications, and computing systems. For the distribution system,

our $5 million request under the Renewable and Distributed System Integration subprogram includes Smart Grid efforts focused on advanced simulation and modeling techniques. One of the primary objectives of this research is to explore advanced operational control strategies for more effective grid operations resulting in increased reliability and efficiency.

All of these efforts aim to equip grid operators with better and more real time information to improve the reliability of electricity supply. Software, algorithms, tools, and techniques are among the products and services which the Visualization and Controls and the Renewable and Distributed Systems Integration subprograms will address.

Question 8. Mr. Secretary, there is a great deal of support and appreciation in Congress for the need and promise of making our electricity grid more intelligent and we look forward to continuing to collaborate with the Department on this issue. Are there specific ways you believe that Congress can continue to be helpful to achieve these priorities?

Answer. We appreciate the opportunity to ask Congress for further assistance. The helpful step that Congress can take to assist the Department in pursing Smart Grid technologies, practices, and services is to fully fund the Fiscal Year 2009 funding request for the Office of Electricity Delivery and Energy Reliability.

HANFORD

Question 1. Mr. Secretary, I am pleased that the proposed Hanford cleanup budget adds funding for the adoption of a 'risk-based' approach to cleanup priorities and groundwater contamination to better protect the Columbia River. With that said, this budget still falls far short. Your Department specifically acknowledges that this underfunded budget is non-compliant with the Tri-Party Agreement milestones.

This non-compliant budget could logically result in legal action by any of the parties, and I urge DOE to take every possible step to reduce this risk. Completing the work at Hanford in a timely manner is extremely important. Hanford is the most contaminated site in the Western hemisphere and retrieval of buried waste is critical to protecting the groundwater that flows into the Columbia River and reducing the footprint of contamination at Hanford.

In your budget request, the Department acknowledges that at least eight milestones will be missed due to budget reasons, including milestones for Single Shell Tank waste retrieval and ground waste retrieval. The budget for the Richland Operations Office, which oversees groundwater contamination and buried waste retrieval, faces $45 million in proposed cuts. The DOE has routinely acknowledged that its fiscal year 2009 budget request is not enough to meet previously agreed upon milestones associated with the Hanford Cleanup.

Mr. Secretary, why is the Department proposing a budget that will delay milestones and risk further litigation?

Answer. The Administration recognizes that EM's FY 2009 budget request is based on, and would implement, an environmental management approach under which the Department would not meet some of the milestones and obligations contained in the Tri-Party Agreement and other environmental agreements that have been negotiated over many years with regulators. It is also important to recognize that some upcoming milestones will be missed regardless of the approach that is chosen and its associated level of funding. Moreover, some of the relevant agreements were negotiated many years ago, with incomplete knowledge by any of the parties of the technical complexity and magnitude of costs that would be involved in attempting to meet the requirements. This incomplete knowledge, coupled with other issues including contractor performance, overly optimistic planning assumptions, and emerging technical barriers, also have impeded the Department in meeting all milestones and obligations contained in the Tri-Party Agreement and environmental compliance agreements at other sites.

To achieve a balance that allowed EM to continue to achieve risk reduction and pursue its cleanup goals, the Department prioritized its risk reduction and regulatory activities. Environmental compliance activities have been given high priority, but cannot in all cases be fully implemented without jeopardizing other highly critical activities necessary to avoid unreasonable risk to human health and/or national security.

Question 2. Mr. Secretary, I am pleased that the proposed Hanford cleanup budget adds funding for the adoption of a 'risk-based' approach to cleanup priorities and groundwater contamination to better protect the Columbia River. With that said, this budget still falls far short. Your Department specifically acknowledges that this underfunded budget is non-compliant with the Tri-Party Agreement milestones.

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Mr. Secretary, what is the DOE's plan for solving the technical hurdles that are causing the routine slippage of milestone dates?

Answer. The Department's fiscal year (FY) 2009 budget increases the amount spent on Technology Development and Deployment (TDD). The overall goals of this program are to eliminate technical barriers to cleanup by reducing technical uncertainty, improving safety performance by applying improved or new technologies, increasing confidence in achieving long-term cleanup goals, addressing emerging issues, among other goals. Efforts with a particular focus on Hanford cleanup include work on several supplemental waste treatment options, improved glass waste loading, advanced melter designs and improved waste retrieval options-funded both through the TDD program and Office of River Protection.

There is an increased emphasis on soil and groundwater remediation activities in the Department's Hanford FY 2009 budget, which will focus on technical solutions to cleanup problems. The increased activities in the Soil and Groundwater Remediation Project (increase of $65 million) are for installation and operation of several new innovative groundwater treatment systems, expansion of the monitoring well network, performance of in situ remediation activities, and characterization of soil contaminants. This additional funding increases the focus on improving groundwater remediation systems for key plumes adjacent to the Columbia River.

These funding increases will support, in the long-term, compliance with Tri-Party Agreement milestones at the Hanford site.

Question 3. I am very concerned about the continued clean-up of America's nuclear legacy at Hanford in my State. I believe the federal government has a moral and legal obligation to cleanup the site. I am disappointed that the Hanford budget proposed no increase for addressing waste remaining in single shelled tanks, and deeply concerned that your Department's budget acknowledges that tank waste retrieval milestones will be missed.

This budget only supports retrieval of one tank per year. This is simply unacceptable. The Inspector General has found that the Department is missing deadlines because the Department relied on unrealistic cost and schedule assumptions. The reality is Single shelled tanks are beyond their design life, and double shelled tanks are nearly full.

Given these facts, what is the Department's plan to advance single-tank waste retrieval and build capacity for and treat that waste?

Answer. The safe storage, retrieval and treatment of tank waste at Hanford continue to be one of the Department's highest priorities. The Department has removed the pumpable liquids from the single-shell tanks (SSTs), as confirmed by State of Washingtion regulators, and transferred the liquids to double-shell tanks (DSTs), significantly reducing the risk of waste leakage. The Department monitors the tanks for leaks on an ongoing basis and is evaluating SST structural integrity to ensure the safety of ongoing storage. To date, the Department has also completed the retrieval of waste from seven SSTs using a variety of technologies specifically developed and suited for the Hanford tanks.

The rate at which waste can be removed from the SSTs will continue to be limited by DST space until the Waste Treatment and Immobilization Plant (WTP) begins operations. Design and construction of the WTP continues; by the end of fiscal year (FY) 2009, the plant will be more than 50 percent complete overall. At the same time, the Department continues to evaluate options for the potential early treatment of low-activity waste retrieved from the tanks.

The Department is continuing efforts to make additional space available in the existing DSTs through ongoing space savings initiatives, and to retrieve waste from SSTs in the most efficient manner.

Question 4. Many of the aging, single shell tanks holding radioactive waste at Hanford are located a mere 7 to 10 miles from the Columbia River. The emptying of 149 leak-prone single shell tanks holding radioactive waste at a rate of about one

a year is unacceptable and puts the groundwater that flows into the Columbia River unnecessarily at risk.

When can we expect the Department to come clean, no pun intended, with the State of Washington on a tank cleanup deadline?

Answer. The Tri-Party Agreement (TPA) establishes tank farm cleanup milestones at the Hanford Site. The Department has already met a number of milestones including the completion of interim stabilization of the single-shell tanks (SST), i.e., removing pumpable liquids from the SSTs and transferring those liquids to double-shell tanks (DSTs). The Department has also completed the retrieval of seven SSTs, and is currently retrieving waste from an additional three tanks.

Question 5. Many of the aging, single shell tanks holding radioactive waste at Hanford are located a mere 7 to 10 miles from the Columbia River. The emptying of 149 leak-prone single shell tanks holding radioactive waste at a rate of about one a year is unacceptable and puts the groundwater that flows into the Columbia River unnecessarily at risk.

What does your budget request do to continue, and accelerate, efforts to fund new technologies to mitigate groundwater contamination at Hanford?

Answer. There is an increased emphasis on soil and groundwater remediation activities in the Department's Hanford Fiscal Year 2009 budget. The increased activities in the Soil and Groundwater Remediation Project (increase of $65 million) are for installation and operation of several new innovative groundwater treatment systems, expansion of the monitoring well network, performance of in-situ remediation activities, and characterization of soil contaminants. This additional funding increases the focus on improving groundwater remediation systems for key plumes adjacent to the Columbia River. In addition, the budget request includes an increase of more than 50 percent for the Technology Development and Deployment Program. This increase includes additional funding for advanced groundwater remediation research, development, and deployment.

Question 6. For the third year in a row, there is no funding for bulk vitrification or any other supplemental technology in the budget. With the waste treatment plant not ready to start until 2019, there must be some type of supplemental technology used in order to continue moving waste out of the tanks. Otherwise, liquids will be left in tanks that are far past their lives and susceptible to failure and leakage.

What are the Department's plans for proceeding with supplemental treatment technology to avoid the higher cost options, such as installing a second low-level waste melter?

Answer. The Environmental Management's (EM) budget request for fiscal year (FY) 2009 supports the continued development of the demonstration bulk vitrification system as a candidate supplemental treatment. This will allow the Department to continue cold system testing to demonstrate readiness for deployment. In addition, the budget request includes funding for conceptual planning and technology development to evaluate an interim pre-treatment system that could supply low-activity waste to a supplemental treatment immobilization system or an "early" Waste Treatment Plant Low Activity Waste (LAW) Facility operation. In addition, EM continues to study the feasibility of adding a 3rd melter to the two melters to be installed in the LAW Facility which is under construction. All of these tests, studies, and planning efforts will allow the Department to finalize its business case on if, how, and when to proceed with pre-treatment and immobilization capability in addition to the Waste Treatment Plant. EM has recently initiated an independent study that will lead to identification of an optimized path forward in the June 2008 timeframe.

Question 7. Three major contract procurements are currently underway at Hanford. The first in sequence to be awarded, the Mission Support contract, is behind schedule, and the other two, Tanks and Central Plateau, will presumably follow thereafter. With these delays, it appears that DOE may be pushing right up at against the fiscal year, which will cause transition problems at the site.

What are DOE's plans to ensure a smooth process for the award of these contracts and transition to new contracting teams?

Answer. The three awards were planned in an integrated manner to ensure smooth transition of services as current contracts end. As a result, there was early attention to avoiding transition problems. The Request for Proposals for each of the three procurements required that each of the offers being submitted include a transition strategy as part of the proposals for evaluation by the Government. The Government also is requiring that the two incumbent contractors submit detailed "phase out" transition plans, and will require that each of the three contract awardees submit a detailed transition plan at the start of the 90-day transition period between the old and new contracts. The contractor-prepared plans will be compared to the Government's Integrated Transition Plan for the three procurements to en-

sure that all the Government's transition requirements have been met. This detailed transition process and the 90-day transition process between the old and new contracts should ensure minimum disruption to the existing workforce and the work activities at the site.

Each of these contracts is being pursued aggressively for award this fiscal year (4th quarter FY2008 as noted on DOE's public acquisition forecast website). Our internal schedules indicate a timely award for each of the Mission Support Contract, Plateau Remediation, and Tank Operations Contracts. Every major acquisition presents challenges. We have added resources where needed and the Assistant Secretary for Environmental Management personally reviews the progress of these procurement actions. The awards or post-award transition may occur near or at the end of this fiscal year, but each action is planned for orderly transition from the projected award date.

Question 8. The budget request suggests a possible early start of the Low Activity Waste (LAW) Treatment facility at Hanford.

What is the impact of the early start of LAW to construction costs of the Waste Treatment Plant as a whole?

Answer. No increase to the total project costs for the Waste Treatment Plant is expected as a result of an early start-up of LAW.

Question 9. This budget request points to reducing the size of Hanford from 586 square miles to some 75 square miles by 2015. This is a substantial amount of land to be transferred to a government agency or regional entity in the not too distant future.

What are the planned steps/milestones for this land transfer?

Answer. Completing cleanup of the Columbia River Corridor would enable us to shrink the active Hanford cleanup operations to the 75-square-mile area near the center of the Hanford Site and to reduce overall site "mortgage" costs associated with infrastructure services (water, power, roads). There are no current plans for transferring the land to another government agency or regional entity at this time. However, about 235 square miles of the Hanford Site not affected by plutonium production operations, including the Arid Lands Ecology Reserve and the North Slope, are being managed in consultation with the U.S. Fish and Wildlife Service as part of the Hanford Reach National Monument.

WEATHERIZATION ASSISTANCE

Mr. Secretary, I am deeply concerned that your FY09 budget terminates the Weatherization Assistance program. Not only is the DOE's weatherization assistance program essential to some of society's neediest citizens, but it also benefits our nation by reducing our energy dependency, improves the environment, and stimulates economic development in low-income communities. Providing weatherization services free of charge to approximately 100,000 low-income households every year, the Weatherization Assistance program is this country's longest running, largest and perhaps the most successful energy efficiency program, and is one of the few government activities that saves more money than it costs.

During the last 30 years, the weatherization program has provided energy savings to more than 5.5 million low-income homes, reducing heating bills by 31% and overall energy bills by up to $358 per year. My own state of Washington will receive enough weatherization funds this year to assist 1,300 households. These energy savings have spurred low-income communities toward job growth and economic development, and these weatherization projects have created an energy efficiency industry for residential housing. Nationwide, weatherization supports 8,000 technical jobs in low-income communities, which represents about 52 jobs for every $1 million of DOE investment. In his FY2002 budget, President Bush proposed to increase DOE's Weatherization Assistance Program (WAP) funding by $1.4 billion over the next 10 years.

Question 10. Why then have we seen flat and mostly decreasing weatherization requests since 2003, culminating in the program being zeroed out in the President's FY09 request?

Answer. The program is not completely aligned with DOE's core mission. Weatherization Assistance is an important goal, but is an anomaly because it addresses social welfare goals in addition to energy efficiency improvement. Prudent portfolio management requires DOE to focus available resources on its core areas of expertise and mission consistent with the DOE Strategic Plan.

Based on a study by the National Research Council, investments in some energy efficiency applied R&D between 1978 and 2000 resulted in returns 20 times greater

than the cost of the investment.[7] In contrast, the energy savings from Weatherization Assistance Program grants result in a significantly lower benefit/cost ratio of 1.53 to 1. This ratio was calculated by Oak Ridge National Laboratory based on past evaluation efforts and Energy Information Administration projected energy prices.[8]

Question 11. Given that the DOE reports the Weatherization Assistance Program returns $3.71 for every dollar invested by tax payers, is there any other program managed by the DOE that has such positive investment returns for tax payers?

Answer. The program is not completely aligned with DOE's core mission. Weatherization Assistance is an important goal, but is an anomaly because it addresses social welfare goals in addition to energy efficiency improvement. Prudent portfolio management requires DOE to focus available resources on its core areas of expertise and mission consistent with the DOE Strategic Plan.

Based on a study by the National Research Council, investments in some energy efficiency applied R&D between 1978 and 2000 resulted in returns 20 times greater than the cost of the investment.[9] In contrast, the energy savings from Weatherization Assistance Program grants result in a significantly lower benefit/cost ratio of 1.53 to 1. This ratio was calculated by Oak Ridge National Laboratory based on past evaluation efforts and Energy Information Administration projected energy prices.[10]

RELIABLE REPLACEMENT WARHEAD

Question 12. In the FY 2009 Budget Highlights, the DOE reports that work continues of the Reliable Replacement Warhead (RRW) in three areas: Directed Stockpile Work, Science Campaign and Enhanced Surety.

Although $10 million is called out under the Directed Stockpile Work, how much money is specifically tied to RRW under the Science Campaign and Enhanced Surety?

Answer. NNSA has requested $10 million for RRW Phase 2A study in FY 2009. The funding in the Science Campaign/Advanced Certification and Enhanced Surety is not limited to the RRW application, but addresses issues concerning warhead certification without underground nuclear tests and the technology development for improved surety systems of the existing nuclear weapon systems as well.

The RRW funding in Directed Stockpile Work is to advance the RRW Phase 2A design study definition so that questions on RRW certification raised by the JASON review can be answered. Specific activities will include: 1) refinement of the enhanced surety features within the design and identification and assessment of certification issues; 2) definition of potential fabrication and material selection effects on certification; and 3) more in-depth analysis to strengthen and refine the design definition through inter-laboratory peer review.

To continue to address the issues associated with certification of warheads without underground nuclear tests, NNSA has requested funding for the Advanced Certification activity, created consistent by the Consolidated Appropriations Act , 2008. The goal is to provide the tools and methodology to support the certification and assessment of significant changes to the stockpile beyond "as tested." Each weapon repair or refurbishment introduces change because legacy materials and some processes no longer exist. These changes require careful examination and analysis to en-

[7] "Energy Research at DOE: Was It Worth It?" National Research Council (http://www.nap.edu/openbook.php?isbn=0309074487). This study, published in 2001, analyzed investments in 17 energy efficiency R&D activities between 1978 and 2000 costing a total of $1.566 billion (p.23) and representing about one fifth of energy efficiency program spending in that time frame. The NRC found overall net economic returns of about $30 billion (p.29) . This is a public return 20 times greater than the cost of the investment within the time period considered. In addition, the NRC calculated net environmental benefits worth $3-20 billion for these activities. As is the case with many diverse R&D investment portfolios, most of the benefits were generated by few—in this case, three of 17—activities assessed (p. 29).

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sure they do not degrade weapon performance. These changes could include component re-use, life extension programs, and future systems, especially where surety or safety features are added to the weapon design.

Additionally, NNSA will continue to incorporate enhanced surety into warheads, a key aspect of the RRW program. The Enhanced Surety activity will develop multiple technologies as options for improved surety systems for future use in existing warheads through evolutionary modifications or for use in future systems.

BROWNFIELDS TO BRIGHTFIELDS

I understand that former Secretary Bill Richardson established a "Brownfields to Brightfields" program that funded the establishment of solar power systems on Brownfields. Despite a successful application of this program in the Chicago area, it appears that the department did not continue this program and it may have been folded into the broader Brownfields program at the Environmental Protection Agency.

Question 13. Since the Department of Energy has substantial surplus property, much of which qualifies as Brownfields, and the Department has a mission to promote solar power, I believe it may be time to consider reinvigorating the Brownfields to Brightfields program. What can the Department do to accomplish this, and what steps might be required by Congress?

Answer. Under Executive Order 13423, released by President Bush in January 2007, Federal agencies must obtain at least half of their required renewable energy levels (7.5 percent by 2013) from new renewable sources. Reflective of the environmental leadership required by this Executive Order, DOE established the Transformational Energy Action Management (TEAM) Initiative in August 2007. The TEAM Initiative calls for all DOE facilities to examine their potential for use of onsite renewable energy, including solar technologies. Through the TEAM initiative, and bound by the President's Executive Order, DOE will thoroughly examine the "substantial surplus property" that you mention as potential areas of clean, renewable power production.

QUESTIONS FROM SENATOR DORGAN

Question 1. The Energy Policy Act of 2005 provides guidance to expand the Strategic Petroleum Reserve (SPR) to the level of 1 billion barrels but only "without incurring excessive cost or appreciably affecting the price of petroleum products to consumers." Do you believe that removing oil from the market in today's environment, when prices are high and global supplies tightening, is not causing oil prices to increase? Can you provide a copy of your economic analysis that demonstrates how this is not having an impact on price or supply?

Answer. As required by the SPR acquisition procedures, the Office of Petroleum Reserves conducts an economic analysis of the crude oil market before engaging in acquisition activity. Since the beginning of 2007, two separate market assessments have been completed prior to initiating activities for the two RIK exchange cycles. These analyses found that market conditions were such that the small amount of oil being acquired (less than one-tenth of one percent of global demand) would not appreciably impact the price of oil.

Question 2. You stated to me in a letter dated Jan. 8, 2008, that one of the reasons to increase the capacity of the SPR is that it only contains 57 days of import protection. However, this is only part of the story. The requirement to meet U.S. treaty obligations with other OECD countries is for 90 days, and your web site said that the U.S. has 118 days of public and private strategic stocks for import protection. How does this square with the Bush Administration's rationale for continuing to fill the SPR through royalty-in-kind contracts or any other means?

Answer. During the mid-1980s, the SPR inventory was sufficient to provide the required 90 days of import protection and more. However, since 1988, the U.S. has satisfied its IEA stockholding obligation through its reliance on a combination of SPR and commercial industry stocks. Congress discontinued funding for SPR oil acquisition in the early 1990s; however, U.S. petroleum consumption and corresponding import dependence have increased substantially since that time. Today the SPR's import protection level stands at approximately 58 days. U.S. industry stocks make up a significant portion (one-third) of the U.S.'s IEA emergency reserve stockholding obligation.

The Administration's objectives for the SPR oil fill and energy security are to achieve an inventory of 727 million barrels in 2008—providing approximately 60 days of import protection; expansion of the Reserve to 1.0 billion barrels in 2019—providing approximately 90 days of import protection; and additional expansion of

the Reserve to 1.5 billion barrels by 2029—providing approximately 124 days of import protection.

Question 3. On December 11, 2007, in a joint Energy / Homeland-Government Affairs Subcommittee hearing, we heard testimony from Dr. Philip Verleger that the Department of Energy has taken as much as 2.9 million barrels highly valuable light sweet crude off the market in the last six months. He stated that removing even small supplies of this highly valuable crude oil could have raised the overall price of oil as much as $10 per barrel. As you know, refiners prefer this higher quality light sweet crude. Do you think that it's a good policy to for the U.S. Government to be competing with private industry for limited supplies of light sweet crude that if left on the market could increase supply and help lower prices?

Answer. In January 2008, the Office of Petroleum Reserves presented its analysis of Dr. Verleger's claims to the staff of the Senate Energy and Natural Resource Committee. Dr. Verleger's assertion that DOE's recipt of such a small amount of oil (less than one-tenth of one percent of global demand) could increase the price of crude oil by as much as $10 is not supported by widely accepted market theories or transparent economic analysis.

The Department of Energy strongly disagrees with these statements and finds fault with the analysis used to support them. There are many factors in oil markets that affect supply and demand balances by a much greater proportion than the SPR's RIK oil acquisition program. Dr. Verleger's testimony disregards these factors as inconsequential. The Office of Petroleum Reserves conducted an oil market analysis before initiating the RIK fill program and found that the small amount of oil being received in the reserves would not appreciably affect the price of oil.

Question 4. Why is it that the Department is recommending zeroing out the Oil and Natural Gas R&D programs for the third year in a row? The Congress provided $24.7 million for these programs in FY 2008. Small and independent producers and academic institutions benefit from these programs, not the five largest integrated oil companies. Last year, I asked the GAO to look into this issue and they showed that there was value to these programs.

Shouldn't the Department be supporting efforts to develop next generation oil and gas recovery technologies and programs that benefit our independent, domestic producers and thus reduce our dependence on imported energy?

Answer. Oil and gas are mature industries and both have every incentive, particularly at today's prices, to enhance production and continue research and development of technologies on their own. There is no need for taxpayers to subsidize oil companies in these efforts. Although independent operators may not have the resources to fund technology development directly, the service industry that supplies them with equipment funds significant development of applicable technologies. The Department expects the service industry to continue to provide technological innovations for use by major and independent producers.

The November 6, 2007 GAO report entitled, "Oil and Natural Gas Research and Development Activities" found: "Some industry economists and experts argue that a federal government role is needed because industry may underinvest in oil and natural gas R&D. However, the extent to which industry is underinvesting in this area is unclear because comparable data are not readily available and much of these data are proprietary." It also recommended certain factors to be considered in evaluating the federal role in oil and natural gas R&D. The Administration's proposal to make the R&D investment tax credit permanent and its environmental regulations address potential market failures identified in the GAO report.

INTEGRATION OF COAL AND CARBON CAPTURE AND STORAGE PROGRAMS

Question 5. The Department has a number of important clean coal and carbon capture and storage programs under way. This includes requests for FutureGen ($156 M), the Clean Coal Power Initiative ($85 M), and the Carbon Sequestration Regional Partnership program $149 M) for FY 09. Also in FY 2008, the Appropriations Committee included $6 billion in budget authority for the DOE Loan Guarantee program for coal-based projects that included carbon capture and storage. With all of this money directed toward clean coal and carbon capture and storage activities, I want to know that it is well coordinated, and there is an integrated government/private sector plan in place to take these efforts from the laboratory to the commercial market.

Can the Department explain what it is doing to develop and implement an integrated action plan?

Answer. There are several elements of DOE's Sequestration Program for carbon capture and storage (CCS). They include the core research and development (R&D) programs, which fund applied and basic research for CCS technologies. The projects

funded through these R&D programs are bench-top-scale research and represent innovative approaches that can significantly reduce the cost and demonstrate the safety and effectiveness of CCS. The second part of the program consists of large-scale CO_2 injection projects, which are designed to take the technologies developed in the core R&D programs and deploy them in the field through programs like the Regional Carbon Sequestration Partnerships. This part of the program is also responsible for developing the infrastructure technologies and information, such as CCS best practices that could help form a basis for regulations, for CCS deployment through the involvement of representatives from industry, non-governmental organizations (NGOs), universities, and Federal and state partners. The final piece of the DOE CCS Program will be implemented through the Clean Coal Demonstration Program (such as the Clean Coal Power Initiative and FutureGen), which will take the technologies developed from the core R&D and large-scale injection projects and implement them in full-scale power plants that include CCS. Early commercial deployment of plants with CCS can benefit from FutureGen and other deployment incentives. The Sequestration Program, which is managed by the Office of Fossil Energy, also coordinates with DOE's Office of Science to enhance the scientific learning and understanding in the field demonstration projects. The Regional Partnerships have over 350 distinct organizations as part of the effort thus making efficient technology transfer from the laboratory to the commercial market.

All of the projects awarded through these DOE programs are based on cooperative agreements with industry and/or research institutions. Therefore, the success of these programs depends upon the success of our partners and DOE's continued efforts to promote technology transfer.

DOE is also supporting working groups through other Federal agencies, NGOs, and industry that are working to develop regulations and liability frameworks, and to educate stakeholders about the benefits of CCS.

Question 6. Despite extending a five-year contractual cooperative agreement with the Energy and Environmental Research Center in North Dakota and the Western Research Institute in Wyoming, the Department is not supporting funding for the cooperative agreement program.

Can you explain why this program was not funded even though the Department signed an extension of the agreement last year?

Answer. The Department has not requested funding for this program for several years. The Department signed an extension to the current cooperative agreement so that FY 2008 funding provided in the Consolidated Appropriations Act 2008 could be sent to WRI and UNDEERC. The Department believes that the competitive process for awarding competitive agreements provides better projects and better research results.

ENVIRONMENTAL CLEANUP

Question 1. In FY 2005, the Environmental Cleanup programs had a budget of $7.9 billion. Only four fiscal years later we get a fiscal year 2009 budget request of only $5.9 billion for the same programs. That is a $2 billion reduction in a very short time frame. Over the last four years, the Department has completed cleanup at Rocky Flats, which could explain a reduction of $650 million from the budget, but not the entire $2 billion.

Please explain the reason you are requesting so little funding for the Cleanup program in FY 2009, especially in light of the budget's admission that the request is insufficient to meet " ...milestones and obligations contained in all of the environmental agreements ... " made with regulators?

Answer. The Environmental Cleanup program is one of many important national priorities to which the Administration must allocate resources. In planning its environmental cleanup efforts and developing the budget for those activities, the Department seeks to focus on work that will produce the greatest environmental benefit and the largest amount of risk reduction. The Department strongly believes that setting priorities and establishing work plans in this way is the most effective use of taxpayer funds and will have the greatest benefit, at the earliest possible time, to the largest number of people. In determining these priorities, the Department works closely with federal and state regulators, and will seek the cooperation of those entities in helping evaluate needs and focus work on the highest environmental priorities based on current knowledge, particularly where doing so necessitates modification of cleanup milestones embodied in prior agreements with DOE.

Question 2. We all understand that some cleanup projects are behind due to technical issues that funding cannot solve, but a reduction in funding also contributes to delay. In October 2007, four short months ago, the Weapons Complex Monitor reported a statement made by an Environmental Cleanup program budget officer

that the cleanup programs required nearly $8 billion to maintain regulatory compliance and cleanup schedules. Do you disagree that the environmental cleanup programs would need $8 billion per year to be in compliance?

If so, what it is the basis for your disagreement?

Answer. As you noted, there can be a number of reasons why compliance obligations are in jeopardy, including unanticipated or especially complex technical challenges. Until those challenges are solved, no amount of funding would guarantee that the Department can maintain compliance with all of its regulatory commitments. To achieve a balance that allowed EM to continue to achieve risk reduction and pursue its cleanup goals, the Department prioritized its risk reduction and regulatory activities. Environmental compliance activities have been given high priority, but cannot in all cases be fully implemented without jeopardizing other highly critical activities necessary to avoid unreasonable risk to human health and/or national security. Site managers will engage their regulators to discuss compliance issues and the available alternatives for achieving shared goals.

Question 3. The Department's FY 2009 request for the National Nuclear Security Administration proposes new funding of $77 million to begin tearing down uncontaminated excess facilities across the weapons complex. At the same time, your budget proposes to reduce the Environmental Management's decontamination and decommissioning program, which tears down radioactively contaminated excess facilities that pose a threat to human health, safety, and the environment, by $184 million. Can you please explain why you have chosen to fund lower-risk cleanup activities under the NNSA while ignoring regulatory agreement to fund similar, but higher-risk cleanup activities within the Environmental Cleanup program?

Answer. The National Nuclear Security Administration's (NNSA) Transformation Disposition (TD) program proposes to fund the TD Program from within the target request to eliminate a total of five million gross square feet of excess facilities across the weapons complex from FY2009—FY 2017. TD Program proposes to fund the disposition (demolition, sale, or transfer) of 430,000 gross square feet across the NNSA complex with the $77M request. The TD program directly supports NNSA's vision of a smaller, safer, more efficient, and more secure enterprise and NNSA's commitment to reduce the footprint from greater than 35 million to less than 26 million square feet by FY 2018. The TD program will follow the successful management construct of the Facility Disposition subprogram (from within the Facilities and Infrastructure Recapitalization Program) which will conclude in FY 2008 after eliminating three million gross square feet of excess facilities.

The EM budget request funds ongoing environmental management activities focused on balancing risk reduction and regulatory requirements within the fiscal constraints, whereas, the proposed TD program budget will focus on aggressive and cost-effective footprint consolidation for a finite period of time in support of NNSA transformation. Both of these programs address projects selected on the basis of integrated priority lists to ensure that the highest priority projects are identified for funding across the DOE complex.

Question 4. Over the past few years, the Environmental Cleanup program has made great strides in improving its project management. According to the FY 2009 Budget, most of the cleanup projects are now baselined under your Department's Project Management Qrder. This means that Cleanup projects have established firm scope, schedule and cost data to support the program's funding request. In spite of this good news, you have chosen to reduce the program $167 million from the FY 2008 enacted level. Can you explain why you have reduced a program that appears ahead of other programs in the Department in terms of project management?

Answer. The Environmental Cleanup program is one of many important national priorities to which the Administration must allocate resources. The goal is to fund those cleanup activities that present the greatest risks to the workers, the communities and the environment while maximizing compliance with regulatory agreements. The project management system established within the EM program assists in making decisions in consultation with its regulators and other stakeholders, that can then be effectively and efficiently implemented.

QUESTIONS FROM MENENDEZ

WEATHERIZATION

Question 1. Secretary Bodman, this budget proposal would eliminate federal weatherization programs. In a time when oil is at $90 a barrel, when action on climate change is urgently needed, and there are growing fears about the health of the economy, why would you propose to eliminate this program?

Answer. The program is not completely aligned with DOE's core mission. Weatherization Assistance is an important goal, but is an anomaly because it addresses social welfare goals in addition to energy efficiency improvement. Prudent portfolio management requires DOE to focus available resources on its core areas of expertise and mission consistent with the DOE Strategic Plan.

Based on a study by the National Research Council, investments in some energy efficiency applied R&D between 1978 and 2000 resulted in returns 20 times greater than the cost of the investment.[11] In contrast, the energy savings from Weatherization Assistance Program grants result in a significantly lower benefit/cost ratio of 1.53 to 1. This ratio was calculated by Oak Ridge National Laboratory based on past evaluation efforts and Energy Information Administration projected energy prices.[12]

Question 2. In my home state, the New Jersey Department of Community Affairs estimates that federal weatherization programs allow for the weatherization of about 1400 units per year. Low income families, seniors, and those with disabilities depend on these funds to lower their energy payments. So please explain why this Administration wants to take money out of the pockets of low-income families, harm the environment and possibly further jeopardize our shaky economy by cutting this essential program.

Answer. The program is not completely aligned with DOE's core mission. Weatherization Assistance is an important goal, but is an anomaly because it addresses social welfare goals in addition to energy efficiency improvement. Prudent portfolio management requires DOE to focus available resources on its core areas of expertise and mission consistent with the DOE Strategic Plan.

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Question 3. In your response to questions at the hearing you indicated that it was being cut because it is less cost-effective than other programs in the Office of Energy Efficiency and Renewable Energy. But according to a comprehensive study commissioned by the Department of Energy in 2003, for every dollar spent by a weatherization program there are $2.70 of lifetime energy and non-energy benefits. (See Linda Berry & Martin Schweitzer, Metaevaluation of National Weatherization Assistance Program Based on State Studies, 1993-2002. February 2003. Prepared by Oak Ridge National Laboratory for the U.S. Department of Energy).

In fact if you go to the DOE's website and look at how your department describes the Weatherization Assistance Program it states:

> In the Weatherization Assistance Program, weatherization services are cost-effective energy efficiency measures for existing residential and multi-family housing with low-income residents.
>
> (See http://www.eere.energy.gov/weatherization/what—is.html)

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[11] 11 "Energy Research at DOE: Was It Worth It?" National Research Council (http://www.nap.edu/openbook.php?isbn=0309074487). This study, published in 2001, analyzed investments in 17 energy efficiency R&D activities between 1978 and 2000 costing a total of $1.566 billion (p.23) and representing about one fifth of energy efficiency program spending in that time frame. The NRC found overall net economic returns of about $30 billion (p.29) . This is a public return 20 times greater than the cost of the investment within the time period considered. In addition, the NRC calculated net environmental benefits worth $3-20 billion for these activities. As is the case with many diverse R&D investment portfolios, most of the benefits were generated by few—in this case, three of 17—activities assessed (p. 29).

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Your own department touts the program as cost effective, but you now say the program should be cut because it is not cost effective. How do you explain these discrepancies?

Answer. The program is not completely aligned with DOE's core mission. Weatherization Assistance is an important goal, but is an anomaly because it addresses social welfare goals in addition to energy efficiency improvement. Prudent portfolio management requires DOE to focus available resources on its core areas of expertise and mission consistent with the DOE Strategic Plan.

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SOLAR RESEARCH AND DEVELOPMENT

Support for research and development is crucial for achieving cost-effective solar power, job creation, and, more broadly, increased renewable power production. Solar power aids our national energy security and reduces greenhouse gas emissions. Many are surprised to learn that my home state of New Jersey is a leader in solar energy second only to the state of California in the number of solar installations.

In his 2006 State of the Union address, the President seemed to recognize the importance of solar when he announced the establishment of the Solar America Initiative and set forth the ambitious goal of making solar power cost competitive with other renewable fuels by 2015. Yet the President's FY09 budget proposes a $12 million cut in funding for solar research programs at DOE. I have been informed by sources within the DOE that the cut is actually $21 million because the Administration plans to siphon off $9 million from the solar R and D program and use it at the National Renewable Energy Laboratory (NREL).

Question 4. My first question on solar energy research is whether this $9 million going to NREL is actually going to be used to support the solar program or whether it is just going to be used to [sic] in the lab's general account?

Answer. Yes, the $9 million is for capital equipment purchases at NREL that fully support the goal of the Solar America Initiative. A list of the equipment to be purchased by the laboratory is presented below:

Dynamic Secondary Ion Mass Spectroscopy (SIMS) System, $919,000; High-Resolution Electron Microscopy Sample Preparation Sputtering System, $154,000; Spectro-Radiometer for Pulsed Light Sources (covering 300-2000 nm range), $80,000; Humidity Calibration System, $68,000; Precision Cell Area Measurement System, $84,000; 6-Source Component and Deposition System with In-Situ Diagnostics, $688,000; Combination PLD/PED System with In-Situ Diagnostics, $606,000; Excimer Work Station for Laser Processing, $289,000; Single Crystal Diffractometer, $585,000; PV Materials Lamination/Water Vapor Permeation Test System $249,000; 3D Semiconductor Device Simulation Package, $135,000; Proximal Probe Workstation, $350,000; Electron Probe Microanalysis System (EPMA), $853,000; Far-Infrared FTIR Spectrometer $209,000; X-ray Photoelectron Spectrometer/Inverse Photoemission System $1,511,000; Silicon Wafer Wet Chemistry Station, $510,000; Surface Science Cluster Tool Component Replacements, $297,000; Semilab Scanning 6-inch Wafer Analyzer $423,000; Microwave Reflection Based Lifetime Scanner, $323,000; Tunable Pulsed Laser $208,000; FT-Raman Mapper $303,000; Large Area Mask Aligner; $156,000.

Question 5. Given the President's personal commitment to the Solar America Initiative, how can you justify cutting more than $21 million in solar R&D funding this year? Are you concerned about the macro effects this funding cut may have on the economy? A study published this week by Navigant Consulting shows the value of

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solar-related jobs in manufacturing and construction—two industries hit hard in the current recession/economic slowdown. Is now really the time to be decreasing federal support for solar R&D programs?

Answer. The Administration continues to recognize the importance of solar energy, consistent with the goals of the President's Solar America Initiative (SAI). The $12 million reduction in the FY 2009 request compared to the FY 2008 appropriation is based on the following factors:

The $10 million decrease in concentrating solar power research and development reflects a down-selection of industry projects in trough manufacturing and thermal storage technologies, allowing only the most promising contracts representing the best use of the taxpayer dollar to move into the second phase of funding in FY 2009.

The remaining $2 million decrease in the Solar Heating and Cooling Systems is the result of a transfer of this activity from the Solar Program to the Buildings Program. Under the Buildings Program, funding for this activity is actually increasing to $3.7 million. The Solar Decathlon activity is also transferred to the Buildings Program, where it is more aligned with the mission of the Zero Energy Buildings effort within the program. Transferring the Solar Decathlon to the Buildings Program allows more funding to be dedicated to the Solar America Cities, Solar America Showcases, and Government Solar Installation Program activities within the Solar Program budget.

The actual funding decrease in the Solar Program FY 2009 request is only $12 million. The $9 million that was referenced as part of the $21 million was not funding for solar R&D, but rather for solar capital equipment purchases at NREL to replace aging equipment.

Question 6. Why is the solar heating and cooling budget zeroed out? Will that level of funding continue as part of the Building Technologies Program? Given the extensive use of solar heating and cooling technologies on homes and businesses in Europe and elsewhere, is the Department planning to support the increased use of solar heating and cooling in the US?

Answer. The Solar Heating and Cooling (SH&C) budget continues to be funded within the Department's Office of Energy Efficiency and Renewable Energy (EERE) under the Buildings Technologies Program at a request level of $3.7 million. Since SH&C technology has primary applications in residential and commercial buildings, management of this sub-program will be transferred from the Solar Technologies Program to the Building Technologies Program within EERE, beginning in FY 2009. This realignment is intended to provide a more direct and efficient coordination of RD&D activities by combining SH&C energy supply and energy efficiency load reduction technology options for building applications.

DOE recognizes that the SH&C technology is an important contributor to the development of successful integrated pathways to Zero Energy Homes (ZEHs). In collaboration with the Building America (BA) Program partnerships, the goal is to achieve technically feasible and economically viable ZEHs by 2020. This goal cannot be accomplished without renewable energy supply technologies like SH&C.

Question 7. Is the development and deployment of cost-effective solar water heating products a near-term goal for the Department?

Answer. Yes. In collaboration with the building industry and stakeholders, DOE is supporting the research and development (R&D) of cost-effective Solar Heating and Cooling (SH&C) energy supply and energy efficient load reduction technology options for building applications, which includes R&D on cost-effective solar heating, solar cooling, and solar water heating (SWH) products for residential and commercial applications. SH&C is also expected to contribute to achieving technically feasible and economically viable Zero Energy Homes (ZEHs) by 2020. Successful pathways towards the ZEH goal cannot be accomplished without renewable energy supply technologies, including cost effective solar water heating products.

Question 8. Will solar heating and cooling product rating and personnel certification be a priority for the Department?

Answer. The Department's Solar Heating and Cooling Technology (SH&C) provides technical and financial support to the Solar Rating and Certification Corporation (SRCC) and the North American Board for Energy Practitioners (NABCEP). SRCC and NABCEP certification of the solar products and practitioners are considered critical to the widespread utilization and mainstreaming of these important renewable energy supply technologies. The successful development and implementation of effective certification procedures provide enhanced consumer confidence and assurances leading to an expanded market demand for residential and commercial building applications. These certifications are being adopted as requirements by Federal, State and local incentive programs and utility initiatives for solar heating and cooling technologies.

GIPP AND BUSHEHR

Question 9. Are these press reports [regarding GIPP and the Bushehr nuclear reactor] accurate? If so, why would the Department of Energy subsidize the building of a nuclear power plant I and many of my colleagues have worked so hard to prevent from being built? Why would the Department take these actions that run completely contrary to our nonproliferation goals? Finally, why now when our relations with Iran have been greatly strained would we be funding a program such as this?

Answer. The Global Initiatives for Proliferation Prevention (GIPP) program funds individuals in an attempt to direct those with weapons of mass destruction expertise to approved projects for peaceful purposes. These individuals tend to work at Russian institutes that undertake a wide variety of work by the Russian nuclear complex.

To ensure consistency with U.S. policy and regulations, GIPP vets each project proposal with U.S. agencies and the intelligence community. The purpose of this review is to eliminate from consideration institutes that are under U.S. sanctions or investigation for proliferation-related activities. Because the United States does not sanction Russian institutes that also support Bushehr, no U.S. agency raised an objection to GIPP projects involving such Russian institutes. Final decisions on these few projects will be made following consultation with U.S. agencies and others, a process we expect to complete in the near future. Consultations with Congress and other stakeholders are also anticipated before the Department implements more significant changes to GIPP.

We have no information suggesting that Russian scientists receiving funds through GIPP were also working on nuclear projects in Iran. To reconfirm this, we have undertaken an exhaustive check of GIPP project records and intelligence information covering the program's 14 years of existence.

QUESTIONS FROM SENATOR WYDEN

The Administration has announced that it intends to expand the capacity of the Strategic Petroleum Reserve to 1.5 billion barrels, apparently with an increase to 1 billion barrels—project 09-FE-100, "SPR One Billion Barrel Expansion." Please provide the following and describe the method used for each calculation:

Question 1a. Total estimated construction cost for the "SPR One Billion Barrel Expansion."

Answer. The total estimated construction cost for the expansion of the SPR from its current capacity of 727 million barrels to one billion barrels, is estimated at $5.1 billion. This is based on conceptual design estimates which were prepared in 2006.

Question 1b. The Administration has announced that it intends to expand the capacity of the Strategic Petroleum Reserve to 1.5 billion barrels, apparently with an increase to 1 billion barrels—project 09-FE-100, "SPR One Billion Barrel Expansion." Please provide the following and describe the method used for each calculation:

Total estimated cost to the Federal Government of the additional oil which would be added in the "SPR One Billion Barrel Expansion."

Answer. DOE anticipates the continuation of the current DOE/DOI program to use Federal Royalty oil from the Outer Continental Shelf for the fill of the SPR to one billion barrels. As such, there is no acquisition cost for this oil as the Federal Royalty oil is owned by the Government, although it does reduce receipts to the U.S. Treasury, thereby increasing the deficit. This oil would be transferred to DOE for SPR storage directly or exchanged for oil of equivalent value meeting SPR specifications prior to SPR storage. However, assuming a maximum Royalty oil fill rate of 100,000 barrels per day and 2009 budget price projections for imported oil, the value of the oil that would be added to increase the SPR inventory from 700 million barrels to one billion barrels, is estimated at about $23 billion.

Question 1c. The Administration has announced that it intends to expand the capacity of the Strategic Petroleum Reserve to 1.5 billion barrels, apparently with an increase to 1 billion barrels—project 09-FE-100, "SPR One Billion Barrel Expansion." Please provide the following and describe the method used for each calculation:

The estimated additional annual maintenance and operations cost associated with the "SPR One Billion Barrel Expansion" (1) during the period the expansion is taking place, and (2) once it is complete.

Answer. There would be no additional maintenance and operations cost associated with expansion during the period the site expansions are taking place. The expan-

sion costs for each of the three sites include all maintenance and operations costs associated with the expansion efforts until the site's expansion has been completed. Once expansion has been completed, we project an increase of approximately $40 million per year based on costs at current sites. The increase includes $30 million associated with the maintenance and operations of the new 160 million barrel site and an incremental increase in costs of $5 million for each of the two existing site expansions.

Question 1d. The Administration has announced that it intends to expand the capacity of the Strategic Petroleum Reserve to 1.5 billion barrels, apparently with an increase to 1 billion barrels—project 09-FE-100, "SPR One Billion Barrel Expansion." Please provide the following and describe the method used for each calculation:

Total estimated construction cost for the additional expansion to 1.5 billion barrels.

Answer. The Department has not finalized its expansion plan, nor selected the sites for the expansion of the SPR from 1.0 billion to 1.5 billion barrels. The DOE has requested $13.5 million in FY 2009 to prepare its expansion plans and complete a NEPA environmental review. However, if two additional new salt dome storage sites of 250 million barrels each-that would be similar to the existing SPR sites-were developed in the Gulf Coast region, the total estimated construction cost for the expansion of the SPR from 1.0 billion to 1.5 billion barrels is about $6.5 billion based on the construction costs for existing SPR sites.

Question 1e. The Administration has announced that it intends to expand the capacity of the Strategic Petroleum Reserve to 1.5 billion barrels, apparently with an increase to 1 billion barrels—project 09-FE-100, "SPR One Billion Barrel Expansion." Please provide the following and describe the method used for each calculation:

Total estimated cost to the Federal Government of the additional 500 million barrels of oil.

Answer. DOE anticipates the continuation of the current DOE/DOI program to use Federal Royalty oil from the Outer Continental Shelf for the fill of the SPR to 1.5 billion barrels. As such, there is no acquisition cost for this oil as Federal royalty oil is owned by the Government, although it does reduce receipts to the Treasury, thereby increasing the deficit.. This oil would be transferred to DOE for SPR storage directly or exchanged for oil of equivalent value meeting SPR specifications prior to SPR storage. However, assuming a maximum royalty oil fill rate of 150,000 barrel per day and 2009 Budget oil price assumptions, the value of the oil that would be added to increase the SPR inventory from 1.0 billion to 1.5 billion, is estimated to be more than $40 billion.

Question 1f. The Administration has announced that it intends to expand the capacity of the Strategic Petroleum Reserve to 1.5 billion barrels, apparently with an increase to 1 billion barrels—project 09-FE-100, "SPR One Billion Barrel Expansion." Please provide the following and describe the method used for each calculation:

The estimated additional annual maintenance and operations cost associated with the additional expansion to 1.5 billion barrels (1) during development, and (2) once complete.

Answer. There would be no additional maintenance and operations cost associated with expansion during the period the site expansions are taking place. The expansion cost includes all maintenance and operations costs associated with the expansion efforts until the site's expansion has been completed. Since the Department has not finalized its expansion plan, nor determined the number or locations of the sites to be developed for the expansion from 1.0 billion to 1.5 billion barrels, the additional annual maintenance and operations cost associated with the additional expansion to 1.5 billions barrels once complete, has not been estimated.

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