

**Statement of Kristina Johnson  
Under Secretary for Energy**

**Before the**

**House Committee on Appropriations  
Subcommittee on Energy and Water Development and Related Agencies**

**Regarding the FY 2011 Budget  
March 17, 2010**

Mr. Chairman, Ranking Member Frelinghuysen, Members of the Committee, thank you for the opportunity to appear before you today to discuss the President's fiscal year 2011 budget request.

In his State of the Union address several weeks ago, the President reiterated how important clean energy will be to the country's competitiveness going forward: "The nation that leads the world in creating new sources of clean energy will be the nation that leads the 21st century global economy." I repeat this quote before you today because this view frames the Department's mission and guides our energy investments.

I would like to describe the big picture view of these energy investments in the President's FY 2011 Budget and describe how the Office of the Under Secretary of Energy is coordinating efforts across program offices. I will then highlight a few initiatives and proposed funding shifts. I will close with an update on our progress in implementing the American Recovery and Reinvestment Act.

**DOE Approach to Energy Investments**

This administration is committed to fulfilling the many opportunities inherent in developing new technologies that enable our Country to produce and use energy in cleaner smarter ways while also paving the way for what Secretary Chu calls "the next Industrial Revolution." Few sectors of the economy hold as much promise as energy when it comes to encouraging widespread impact. By investing in clean energy industries and technologies, we can create jobs and strengthen America's economic standing at home and abroad, reduce our dependence on oil, and become better stewards of our environment.

The United States is in an enviable position in delivering on these opportunities. We are a nation of innovators. Innovation is a cornerstone of American prosperity, and the primary source of our economic competitiveness. We jumpstarted the global manufacturing industry and redefined transportation in the 19<sup>th</sup> century, and our more recent breakthroughs in biotechnology and computer science have helped us retain our competitive edge.

Yet as we seek to take this expertise and apply it to our energy sector, we find ourselves limited by three intertwined constraints: cost, speed and scale. We know that it takes enormous amounts of capital to develop and deploy new energy technologies that can help the nation achieve energy security and environmental goals. At the same time, we face a difficult deficit situation..

From the outset, we will have to be three things if we are to achieve our mutual goals of standing up a clean energy economy, securing our energy future and safeguarding our environment. Those three things are: innovative, efficient, and focused.

First, I want to talk about how the Department is encouraging those attributes with respect to our energy research and development enterprise. The challenge we face is that despite years of important contributions made by DOE science and engineering in energy-related fields, we are still confronted by the fundamental problems tied to our energy use: oil dependence and environmental degradation.

Given the urgency of our energy and environmental challenges, we believe new and innovative approaches to research and development are warranted – approaches that cultivate *use-inspired* research by bridging fundamental and applied science and engineering. There are plenty of precedents for what we're encouraging. In fact, we as a nation have enjoyed a long history of use-inspired fundamental advances, from understanding the origins of the great influenza, to the development of radar in World War II and the invention of the transistor at Bell Laboratories and the information technology revolution..

In the pursuit of replicating discoveries such as these in energy-related fields, we have designed three cross-cutting approaches that cover the spectrum of fundamental to applied science and engineering to maximize our chances of transformational energy breakthroughs making it into the marketplace, thus growing the clean energy economy.

The first approach, Energy Frontier Research Centers (EFRCs), involve collaborations among small groups of researchers that are focused on overcoming known hurdles in basic science that block energy breakthroughs. Major areas of emphasis will be in fundamental sciences that can be tied in the future to specific commercial uses, such as carbon capture and sequestration, and advanced nuclear energy systems.

The Advanced Research Projects Agency for Energy, or ARPA-E, is the second approach. It involves a highly entrepreneurial funding model that explores potentially revolutionary technologies that have gone unfunded by industry. Unlike the EFRCs, the work conducted at ARPA-E is technology-oriented. We seek to fund the boldest and best ideas for potentially transformative technologies.

The third approach is the Energy Innovation Hubs. Research conducted at the Hubs involves large, multi-disciplinary, joining highly collaborative teams of scientists and engineers working largely under one roof to integrate knowledge at the systems level to scale solutions to our Nation's energy challenges. This knowledge will come from advances in our core RD&D energy programs, fundamental breakthroughs from the EFRCs and game-changing technology from ARPA-E.

All three approaches are complemented by ongoing core fundamental R&D, as well as applied R&D, that seeks to address technological challenges in concert with industry, national lab, university, and State partners.

## **Management and Planning**

The Department is also paying special attention to making our research programs more efficient and focused. We're taking this task on by reformulating the way we plan, select and execute on research projects that are funded through DOE contracts and grants.

Let me give you some examples. The Office of the Under Secretary formed an Assistant Secretary Cabinet, which meets weekly to discuss our research goals and coordinate our upcoming programs to ensure a coherent research strategy. The group also addresses cross-cutting management challenges. To help identify challenges and collaborative opportunities for our labs, we also established a new applied laboratories directors council, which meets quarterly with the Under Secretary and Assistant Secretaries.

In addition, we are improving our peer review process after assessing its quality and examining best practices across the Department. We are developing quality criteria for reviewers, diversifying the pool of available experts, and identifying ways to recruit and retain high quality peer reviewers who are recognized experts in their respective fields.

We are looking for ways to better plan and implement our research, development, demonstration, and deployment (RDD&D) efforts for crosscutting programs, such as energy storage. Offices with current efforts in energy storage RDD&D include EERE, OE, ARPA-E, the Office of Science, and the Loan Program Office. These offices have clearly defined roles and responsibilities consistent with their missions. At the same time, they are planning joint workshops to help identify RDD&D needs, participating in the review of each other's projects, and hosting regular coordination meetings to ensure no duplication of efforts. The Department has established a standing Working Group on Energy Storage to ensure continued collaboration and coordination.

### **2011 Budget Highlights and Initiatives**

The Office of the Under Secretary for Energy includes six major program offices: Energy Efficiency and Renewable Energy (EERE), Fossil Energy (FE), Office of Electricity Delivery and Energy Reliability (OE), Nuclear Energy (NE), Environmental Management (EM), and Legacy Management (LM), as well as Civilian Radioactive Waste Management (RW), which the Department plans to transition to other offices.

The 2011 budget request for these programs is \$10.5 billion, more than one third of the Department's overall request of \$28.4 billion. Focusing on EERE, FE, and OE in this hearing, there are several significant changes compared with the FY 2010 appropriations.

EERE has the largest net increase, \$113 million, in the budget request, reflecting our commitment to developing the renewable energy sector and improving energy efficiency in all sectors of the economy. The EERE request of \$2.4 billion includes increases of \$55 million (22 percent) for the Solar Energy Technology Program, \$42.5 million (53 percent) for the Wind Energy Program, and \$14 million (4.5 percent) for the Vehicle Technologies Program.

One important initiative within EERE is a \$10 million request within the Industrial Technologies program for Manufacturing Energy Systems Partnerships (MESPs). This program is focused on helping accelerate the most promising clean energy technologies into the manufacturing sector, thus creating good-paying jobs and helping get Americans back to work. The MESPs engage private sector engineers and technologists who know how to manufacture goods at scale and low-cost, to work with scientists and engineers carrying out the fundamental and applied clean energy research and development. Designing fundamental research programs with cost and manufacturing feasibility in mind will reduce the time necessary to translate innovation into commercial processes, products and companies. Our proposal would fund consortia at several premier U.S. universities, and leaders from academia, industry, and National Laboratories.

This manufacturing initiative is consistent with the spirit of Section 656 of the Energy Independence and Security Act of 2007. Specifically, Section 656 authorizes the Renewable Energy Innovation Manufacturing Partnership. While we would expand the intent beyond renewables to include energy efficiency technologies, the key elements of the stated purpose of this provision still apply. In short, we aim to "develop...advanced manufacturing processes, materials, and infrastructure" through awards to

consortia, which can reduce the time from concept to market for innovative energy technology ideas that can help reduce the nation's greenhouse gas emissions and increase the nation's energy security.

The budget request for OE is \$186 million, \$14 million (8 percent) more than 2010 appropriations. There are two major funding shifts. First, we are proposing to nearly triple the energy storage budget from \$14 million to \$40 million. The OE program will increase its highly leveraged participation with state energy agencies, utility companies, and end users to field test energy storage systems to evaluate readiness for commercial market entry. With the increase in funding, the OE program will be able to evaluate several technology pathways simultaneously rather than serially, shortening the development path to commercial market entry. Secondly, the FY 2011 request winds down DOE's involvement in high temperature superconductivity wire research (HTS), providing \$5 million for orderly closeout activities. After investing over \$600 million over the past 20 years, the Department believes that HTS wire research has reached a point that provides meaningful technical value, and that HTS wire technology developed at the DOE National Laboratories is ready for transition to a U.S. manufacturing base. OE will continue to coordinate closely with the Office of Science, which conducts fundamental research on superconductivity, such as the discovery of new superconducting materials.

The budget request for FE is \$760 million, a decrease of \$191 million (20 percent). The request continues strong support for coal research related to carbon capture and storage (CCS), including \$20 million for modeling and simulation of CCS systems that could save millions of dollars in the long run by helping avoid costly demonstration steps. The request for FE also reflects the Administration's commitment to fiscal responsibility and the ability to prioritize our work. We are proposing to terminate the Unconventional Fossil Energy Technologies program, saving \$20 million, as we believe industry is capable of continuing this research on its own. [The budget request for the Strategic Petroleum Reserve is \$139 million. It includes the cancellation of \$71 million in previously appropriated balances, which we are proposing to dedicate in FY 2011 to continuing operations of the SPR. We are also proposing to transfer methane hydrates research to the Office of Science, where similar work is ongoing.

One crosscutting initiative that I'd like to highlight is RE-ENERGYSE, or REgaining our ENERGY and Scientific Edge. RE-ENERGYSE is a \$55 million collaborative effort which includes EERE (\$50 million) and NE (\$5 million) and involves close coordination with the Offices of Science, the National Science Foundation, and other agencies. This initiative is aimed at filling the gaps in the energy workforce pipeline by training current and future generations of energy professionals through fellowships for higher education, energy-focused curriculum development for technical training, and K-12 education and outreach. We have extensively surveyed existing educational activities within the Department and in other agencies and found that we lack a coordinated funding approach for these proposed activities. RE-ENERGYSE will focus on engineering and applied sciences, separate and distinct from existing Office of Science educational programs focused on basic science and experiential teacher training. RE-ENERGYSE will also, however, tap into existing Department resources to administer fellowships and coordinate other activities.

Our RE-ENERGYSE request is consistent with the spirit and intent of several authorizing provisions in the America COMPETES Act of 2007. For example, Section 5003 of the Act authorizes the Secretary to establish the Protecting America's Competitive Edge (PACE) Graduate Fellowship Program. Eligibility criteria for students applying for fellowships under this program include: the pursuit of a field of science or engineering of importance to a mission area of the Department; imagination and creativity; leadership skills in organizations or intellectual endeavors; and excellent verbal and communication skills to explain, defend, and demonstrate an understanding of technical subjects relating to the fellowship. These are exactly the types of students to whom we would like to award fellowships through RE-ENERGYSE.

As President Obama said on April 29, 2009: “RE-ENERGYSE is...an educational campaign to capture the imagination of young people who can help us meet the energy challenge...Energy is this generation’s greatest project. America’s young people will rise to the challenge if given the opportunity – if called upon to join a cause larger than themselves.” The Administration looks forward to working with the Committee and other Members of Congress to help make this vision and program a reality.

### **American Recovery and Reinvestment Act (Recovery Act)**

I understand this Committee, the Congress, and the American people have a continued interest in our progress in implementing the Recovery Act. Thanks in large part to this legislation, we are well on our way to fulfilling the President’s goals: achieving global energy leadership, encouraging innovation, and increasing our security.

Importantly, our economy is growing again after two years of recession. In just the past few weeks, we have learned from preliminary data reported by industry that: the US solar industry grew by almost 40 percent in 2009 and added 18,000 new jobs;<sup>1</sup> the US wind industry – after warning of a 50 percent drop in development for 2009 – installed more than 9.9 gigawatts of new generating capacity, creating thousands of new jobs along the way;<sup>2</sup> and – thanks once again to the Recovery Act – that America’s geothermal industry saw a 46 percent uptick in confirmed new power projects last year.<sup>3</sup> There can be little doubt that the Recovery Act’s Treasury grants in lieu of tax credits program (1603), along with the expanded manufacturing tax credit (48C), were big contributors to the expansion of these important industries.

Small businesses are major players in our economic recovery. As of last month, more than 200 small businesses benefited from DOE Recovery Act funding, through almost \$1.6 billion in grants and contracts, and nearly \$1.9 billion in conditional loan guarantee commitments. We also increased the number and size of Small Business Innovation Research (SBIR) grants funded by the Recovery act to promote commercialization and job creation.

When the Recovery Act legislation was passed nearly a year ago, the DOE received \$36.7 billion in direct funding to jump-start the clean energy economy. I am happy to report that, as of last week, we have selected \$31.4 billion worth of specific projects to receive contracts and grants, and have obligated \$25.9 billion. Accounting for private industry cost share and the impact of loan guarantees, we expect to support an estimated \$100 billion in clean energy and environmental projects. These investments have targeted needs across the technology portfolio and at companies both big and small. Recovery Act funding has also helped create demand for energy efficient products and helped businesses and consumers save money, through investments in suppliers, weatherization support to local agencies, and partnerships with cities, counties, and states to create and expand energy efficiency programs.

Finally, the Recovery Act has given educational institutions and national laboratories a financial shot in the arm. We have obligated almost \$600 million to colleges and universities to provide the research and training required to achieve our long-term goals. The national labs were able to expand their research mission significantly, with a combined \$3.3 billion in funding. And our state and local partners received over \$11 billion under DOE partnerships supporting their activities in energy efficiency, renewable energy, and modernizing the grid.

---

<sup>1</sup> [http://www.seia.org/cs/news\\_detail?pressrelease.id=707](http://www.seia.org/cs/news_detail?pressrelease.id=707)

<sup>2</sup> [http://www.awea.org/newsroom/releases/01-26-10\\_AWEA\\_Q4\\_and\\_Year-End\\_Report\\_Release.html](http://www.awea.org/newsroom/releases/01-26-10_AWEA_Q4_and_Year-End_Report_Release.html)

<sup>3</sup> <http://www.renewableenergyworld.com/rea/news/print/article/2010/01/us-geothermal-industry-hits-3-gw-in-2009>

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

Mr. Chairman, this concludes my prepared statement. I look forward to answering any questions that you and other Members of the Committee may have. Thank you.