

**Statement of Secretary Steven Chu
U.S. Department of Energy
Before the
House Committee on Science and Technology
U.S. House of Representatives**

**FY 2013 Budget Hearing
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Chairman Hall, Ranking Member Johnson, and Members of the Committee, thank you for the opportunity to appear before you today to discuss the President's Fiscal Year 2013 Budget request for the Department of Energy.

To promote economic growth and strengthen national security, President Obama has called for "an all-out, all-in, all-of-the-above strategy that develops every source of American energy – a strategy that is cleaner and cheaper and full of new jobs." The President wants to fuel our economy with domestic energy resources while increasing our ability to compete in the global clean energy race.

Although the United States has reclaimed the title of world leader in clean energy investments, we are at risk of falling behind again unless we make a sustained federal commitment to supporting our domestic clean energy economy. To compete globally, America has to do more than invent technologies, we also have to produce and sell them. Our country faces a stark choice: we can create jobs making and exporting the energy technologies of tomorrow or we can cede leadership to other countries that are investing in these industries. As President Obama re-iterated in his State of the Union address, passing a Clean Energy Standard is a vital step that Congress can take to broaden our clean energy market and promote U.S. leadership.

Making the most of America's energy resources is a pillar of the President's economic blueprint to build an economy that lasts. The Energy Department also supports other key elements of the President's agenda including leading in innovation, reducing our dependence on oil, cutting costs for families, businesses and manufacturers through energy efficiency and reducing nuclear dangers worldwide.

Guided by the President's vision, the Department's 2011 Strategic Plan and our inaugural Quadrennial Technology Review, our FY13 budget request of \$27.2 billion invests in the following priorities:

- Accelerating the transformation of America's energy system, and securing U.S. leadership in clean energy technologies;
- Investing in science and innovation to promote our nation's economic prosperity; and

- Keeping Americans safe by enhancing nuclear security through defense, nonproliferation and environmental cleanup.

These priorities will be enabled through a continuing commitment to fiscal responsibility and management excellence.

Leading in the Energy Technologies of the 21st century

Last year, a record \$260 billion was invested globally in clean energy, and trillions of dollars will be invested in the coming decades. To seize this market and job creation opportunity, the President's budget request invests in programs that advance research, development, manufacturing and deployment of the energy technologies of the future.

Decades ago, support from the Energy Department helped to develop the technologies that have allowed us to tap into America's abundant shale gas resources. Today, our investments can help us advance technologies that will unlock the promise of renewable energy and energy efficiency.

The budget request invests approximately \$4 billion in our energy programs. It supports the Department's SunShot initiative to make solar energy cost-competitive with any other form of electrical energy, without subsidy, by the end of the decade. It advances technological progress in areas ranging from offshore wind to carbon capture, utilization and storage to smart grid and energy storage. And it helps reduce our dependence on oil by developing the next generation of biofuels and accelerating research in advanced batteries and fuel-efficient vehicle technologies.

Leadership in nuclear energy technologies is also essential to our ability to compete globally. The budget request invests \$770 million in the nuclear energy program to help develop the next-generation of nuclear power technologies, including small modular reactors. It also includes funding for continued R&D on the storage, transportation and disposal of nuclear waste, which also aligns with the recommendations of the Blue Ribbon Commission on America's Nuclear Future.

As we move to a sustainable energy future, America's fossil energy resources will continue to play an important role in our energy mix. President Obama is committed to developing our oil and gas resources in a safe and sustainable manner. Last year, our oil import dependence was at its lowest level in 16 years, oil production reached its highest level in eight years and natural gas production set a new record. Building on this progress, the Energy Department's budget request includes \$12 million as part of a \$45 million priority research and development initiative by the Departments of Energy, the Interior, and the Environmental Protection Agency to understand and minimize the potential environmental, health and safety impacts of natural gas development through hydraulic fracturing (fracking).

The budget request also promotes energy efficiency to create jobs and to help Americans save money by saving energy. It supports home weatherization and calls for passage of the HOME STAR program to provide incentives to homeowners to make energy efficiency

upgrades. It also invests in research and development to improve building efficiency and supports the President's "Better Buildings" Initiative to catalyze private sector investment in commercial building efficiency. Finally, the budget request sponsors R&D on industrial materials and processes to help U.S. manufacturers cut costs and improve their global competitiveness.

To maximize our energy technology efforts, the Department is breaking down silos and coordinating research and development across our program offices. Modeled after our SunShot initiative, we're bringing together our basic and applied research programs and ARPA-E to harmonize their work in areas including batteries, biofuels and electric grid technologies.

And to encourage manufacturing and deployment of clean energy technologies, the President has called for renewing and extending proven tax incentives including the Production Tax Credit, the 1603 cash payment in lieu of tax credit program and the Advanced Energy Manufacturing Tax Credit, known as 48C.

As industry, Congress and the American people make critical energy decisions and require greater understanding of domestic and international energy markets, it's important that we adequately fund the Energy Information Administration, the nation's premier source of independent statistical information about energy production and use. That is why the budget request includes \$116 million for EIA.

Unleashing U.S. Innovation to Create Jobs and Lead in the Global Economy

Competing in the new energy economy will require our country to harness all of our resources, including as the President said, the "one critical, renewable resource that the rest of the world can't match: American ingenuity." A key part of our country's success has been our leadership in science and technology, but we can't take that leadership for granted. According to the National Science Foundation's *2010 Science and Engineering Indicators* report, from 1996 to 2007, the average annual growth of R&D expenditures in the United States was about five to six percent compared to more than 20 percent in China.

To help keep the United States at the forefront of science and technology, the budget request invests in cutting-edge research that could spur new jobs and industries. This includes \$5 billion for the Office of Science to support basic research that could lead to new discoveries and help solve our energy challenges. These funds support progress in materials science, basic energy science, advanced computing and more. They also provide America's researchers and industries with state-of-the-art tools to help take their work to the next level.

The budget request continues to support Energy Frontier Research Centers. The Energy Frontier Research Centers are working to solve specific scientific problems to unlock new clean energy development. So far, the EFRCs have published more than 1,000 peer-reviewed papers and filed more than 90 patent applications or patent/invention disclosures. Researchers are reporting multiple breakthroughs in areas ranging from advanced battery technology and solar energy to solid-state lighting and nuclear power.

The budget request also supports the five existing Energy Innovation Hubs and proposes a new Hub in electricity systems. Through the Hubs, we are bringing together our nation's top scientists and engineers to achieve game-changing energy goals. The Hubs continue to make progress. For example, the Modeling and Simulation for Nuclear Reactors Hub has released the first versions of its software that, upon completion, will simulate a virtual model of an operating physical reactor. The Fuels from Sunlight Hub has filed multiple invention disclosures and published scientific papers. And the Energy Efficient Building Systems Hub is developing advanced building modeling tools and has built one of the country's first 3-D building design labs.

Additionally, the budget request includes \$350 million for the Advanced Research Projects Agency for Energy, known as ARPA-E, to support research projects that could fundamentally transform the ways we use and produce energy. ARPA-E has invested in roughly 180 high-risk, high-reward research projects that, if successful, could create the foundation for entirely new industries. These companies and research teams are working toward a prototype of a battery that has double the energy density and one-third the cost of batteries in 2010, bacteria that use carbon dioxide and electricity to make fuel for cars, grid scale electricity storage and other potentially game-changing breakthroughs. Eleven projects that received \$40 million from ARPA-E over the last two years have done such promising work that they have now received more than \$200 million in combined private sector funding.

Taken together, our research initiatives will help rev up America's great innovation machine to accelerate energy breakthroughs.

Nuclear Safety and Security

In addition to strengthening our economy, the budget request also strengthens our security by providing \$11.5 billion for the Department's National Nuclear Security Administration. NNSA plays a key role in achieving President Obama's nuclear security objectives.

As the United States begins the nuclear arms reduction required by the New START treaty, the science, technology and engineering capabilities within the nuclear security enterprise will become even more important to sustaining the U.S. nuclear deterrent. The budget request includes \$7.6 billion for Weapons Activities, a five percent increase over the FY 2012 enacted levels. This increase provides a strong basis for transitioning to a smaller yet still safe, secure and effective nuclear stockpile. It also strengthens the science, technology and engineering base of our enterprise.

The budget request also includes \$1.1 billion for the Naval Reactors program to ensure the safe and reliable operation of reactors in nuclear-powered submarines and aircraft carriers and to fulfill the Navy's requirements for new nuclear propulsion plants that meet current and future national defense requirements.

Additionally, the budget request supports NNSA's critical work to prevent nuclear terrorism – one of the most immediate and extreme threats to global security and of one

President Obama's top priorities. It includes \$2.5 billion to implement key nuclear security, nonproliferation and arms control activities. It supports efforts to detect, secure and dispose of dangerous nuclear and radiological material around the world. And it will help the Department to fulfill its role in accomplishing the President's goal of securing all vulnerable nuclear materials worldwide in four years.

Finally, the budget request includes \$5.7 billion for the Office of Environmental Management to continue progress cleaning up the nation's Cold War nuclear sites.

Fiscal Responsibility and Management Excellence

The Department of Energy's FY13 budget request makes strategic investments to promote our country's future prosperity and security. At the same time, we recognize the country's fiscal challenges and our responsibility to invest in much-needed programs while cutting back where we can. That is why the President's budget request eliminates \$4 billion in inefficient and unnecessary fossil fuel subsidies.

Given the urgency of the challenges we face, the Department is committed to performing our work efficiently and effectively. We are streamlining our organization to improve performance and save taxpayer money. For example, the Department achieved approximately \$330 million in strategic procurement savings in FY11. We are taking several other steps such as reducing the size of our vehicle fleet, cutting back travel costs and consolidating websites.

We are also breaking down barriers to make it easier for businesses to move technologies from our national labs to the marketplace, which can help the United States seize technological leadership and create jobs. For example, we've started a program which makes it easier, quicker and less costly for start-up companies to sign option agreements to license national lab technologies. And to make it easier to work with the labs, we've reduced the advanced payment requirement, and streamlined the Cooperative Research and Development Agreement contract and approval process.

Throughout American history, the federal government has played a critical role in supporting industries that are important to our prosperity and security, from aviation and agriculture to biotechnologies and computer technologies. We should continue to do so today to lead in the new clean energy economy. Countries in Europe, Asia and throughout the Western Hemisphere recognize the energy opportunity and are moving aggressively to lead. This is a race we can win, but we must act with fierce urgency.

Thank you, and now I am pleased to answer your questions.