

President Requests \$842.1 Million for Fossil Energy Programs

February 2, 2015 - 3:19pm

President Obama's FY 2016 budget seeks \$842.1 million for the Office of Fossil Energy (FE) to advance technologies related to the reliable, efficient, affordable and environmentally sound use of fossil fuels, implement ongoing federal responsibilities at the Naval Petroleum and Oil Shale Reserves, and manage the Strategic Petroleum Reserve, Northeast Gasoline Supply Reserve and Northeast Home Heating oil Reserve to provide strategic and economic security against disruptions in U.S. petroleum supplies. The request includes \$560 million for Fossil Energy Research and Development, \$257 million for the Strategic Petroleum Reserve, \$7.6 million for the Northeast Home Heating Oil Reserve and \$17.5 million for the Naval Petroleum Reserves.

The FY 2016 budget request will allow FE to fulfill its mission: to provide the nation with the best opportunity to tap the full potential of its abundant fossil energy resources in an environmentally sound and affordable manner and to ensure America's readiness to respond to short-term energy supply disruptions.

FOSSIL ENERGY RESEARCH AND DEVELOPMENT

The President's FY 2016 budget requests \$560 million for the fossil energy research and development (FER&D) portfolio. FE leads Federal research, development, and demonstration efforts on advanced carbon capture and storage (CCS) technologies to facilitate achievement of the President's climate goals. FE also conducts R&D related to prudent and sustainable development of our unconventional domestic resources.

In FY 2016, Fossil Energy Research and Development will continue to focus on carbon capture and storage and activities that increase the performance, efficiency, and availability of systems integrated with CCS.

CCS Demonstrations. FER&D manages the Clean Coal Power Initiative program along with two American Recovery and Reinvestment Act CCS demonstration programs: FutureGen 2.0 and the Industrial Carbon Capture and Storage program under the CCS Demos program.

Carbon Capture & Storage and Power Systems. The CCS and Power Systems program conducts research to reduce carbon emissions by improving the performance and efficiency of CCS technologies and of fossil energy systems integrated with CCS. The FY 2016 budget request for the program is \$369.4 million. It also includes \$34 million for NETL staff to conduct in-house fossil energy R&D.

Carbon Capture. The President's FY 2016 budget requests \$116.6 million for carbon capture R&D. The Carbon Capture activity is focused on the development of post-combustion and pre-combustion CO₂ capture and compression technologies for new and existing coal and natural gas-fired power plants and industrial sources. Post-combustion CO₂ capture technology R&D is focused on capturing CO₂ from flue gas after the fuel has been consumed/combusted. Pre-combustion CO₂ capture is applicable to systems that capture and separate the CO₂ from mixed gas streams prior to combustion or utilization of the gas. The FY 2016 Budget Request funds a new emphasis on optimizing carbon capture on natural gas systems, funds ongoing projects, and proceeds to larger scale pilot tests of technologies on both coal and natural gas. These efforts will support the program's commitment to deliver a demonstration project that captures and stores >75 percent of the carbon emissions from a natural gas power system of at least 50 MWe capacity by 2020 using what has been determined to be the best available carbon capture technology available for demonstration at the time.

Carbon Storage. The President's FY 2016 budget requests \$108.8 million for carbon storage R&D. The overall goal of the Carbon Storage Program is to develop and validate technologies to ensure safe and permanent geologic storage of captured CO₂. Development and validation of these technologies is critical to ensure stakeholders have the capability to assess, monitor and mitigate storage risks for CO₂, and ensure the viability of carbon storage as an effective technology solution that can be implemented on a large-scale to mitigate carbon emissions.

Advanced Energy Systems (AES). The President's FY 2016 budget requests \$39.4 million for advanced energy systems R&D. The AES mission is to increase the availability and efficiency of fossil energy systems integrated with CO₂ capture, while maintaining the highest environmental standards at the lowest cost. The program elements focus on oxy-combustion, advanced turbines, gasification, and solid oxide fuel cells.

Cross-cutting Research. The President's FY 2016 budget requests \$51.2 million for crosscutting research. The Program serves as a bridge between basic and applied research by targeting concepts that offer the potential for transformational breakthroughs and step change benefits in the way energy systems are designed, constructed, and operated. In addition, the Cross-cutting Research Program leads efforts that support University-based energy research including science and engineering education at minority colleges and universities.

Supercritical Carbon Dioxide Technology. The Supercritical Carbon Dioxide Technology's (sCO₂) \$19.3 million request supports the Department's sCO₂ crosscut which is focused on technology development for supercritical carbon dioxide-based power conversion cycles. These cycles can be applied to most heat sources, including fossil, nuclear, solar and geothermal applications, while offering significant improvements in efficiency, cost, footprint, and water use. FER&D's ultimate goal is a directly-fired supercritical CO₂ fuel cycle which could also significantly reduce the costs of carbon capture and storage. The major thrusts of the crosscut are a coordinated R&D effort in high temperature technology development/component validation, and the

Supercritical Transformational Electric Power Generation (STEP) initiative to design, construct and operate a 10MW pilot test bed.

Natural Gas Technologies. The mission of the Natural Gas program – with a FY 2016 budget request of \$44 million – is to support DOE missions in energy, environment and national security. The program will focus on continued implementation of priority collaborative research and development, together with Department of the Interior, and Environmental Protection Agency, to ensure that shale gas development is conducted in a manner that is environmentally sound and protective of human health and safety. The Natural Gas Technologies program will continue implementation of the multi-agency collaborative research strategy in such areas as water quality and availability including the treatment and use of co-produced water from oil and gas wells, air quality, induced seismicity, and mitigating the impacts of development (e.g. wellbore integrity, reducing surface and subsurface footprint, and reduced water use). The program will initiate a midstream natural gas infrastructure subprogram to improve technologies that detect and mitigate methane emissions from natural gas infrastructure, communicate results to and partner with stakeholders to ensure that new technologies can be implemented, and measure the effectiveness on emission reductions. In addition, the program will initiate a new emissions quantification from natural gas infrastructure subprogram focused on better quantifying methane emissions from the natural gas value chain for updating the national Greenhouse Gas Inventory.

PETROLEUM RESERVES

FE's Office of Petroleum Reserves manages programs that provide the United States with strategic and economic protection against disruptions in oil supplies.

Strategic Petroleum Reserve. The Strategic Petroleum Reserve (SPR) provides strategic and economic security against foreign and domestic disruptions in oil supplies via an emergency stockpile of crude oil. The program fulfills U.S. obligations under the International Energy Program, which avails the U.S. of International Energy Agency assistance through its coordinated energy emergency response plans, and provides a deterrent against energy supply disruptions. In 2014, the SPR performed an operational Test Sale that completed delivery of 4,998,146 barrels of crude oil over a 47 day period resulting in \$468,564,599 in receipts. This sale helped evaluate how changes in the TEXOMA distribution group impacts SPR's ability to distribute crude oil. A portion of these receipts (\$235,587,000) were the source for all Northeast Gasoline Supply Reserve (NGSR) requirements including 4.5 years of commercial storage, 1MMB of government-owned, commingled gasoline stocks, third-party quality assurance and inventory certifications and sales platform readiness.

The FY 2016 budget request for SPR is \$257 million which will provide the program with full SPR operational readiness and drawdown capability. The program will continue the degasification of crude oil inventory at the West Hackberry site to ensure its availability. Wellbore testing and cavern remediation will also continue to ensure the availability of caverns for drawdown and to meet regulatory compliance. Major changes from FY 2015 include: an increase in the number of

cavern remediations from 6 to 10; the addition of a custody transfer flow metering skid to provide distribution flexibility and reliability; and increased funding for the Major Maintenance construction program for timely replacement of equipment and physical systems and to reduce the deferred maintenance backlog.

Northeast Home Heating Oil Reserve. The Northeast Home Heating Oil Reserve (NEHHOR) provides a short-term supplement to the Northeast systems' commercial supply of heating oil in the event of a supply interruption. In FY 2011, the NEHHOR Program completed the sale of all 2 million barrels of its high sulfur heating oil inventory located in commercial storage. In FY 2012, NEHHOR converted to a 1 million barrel configuration of Ultra Low Sulfur Diesel (ULSD) stored in the Northeast terminals, to meet new Northeast states' emission standards being instituted. The FY 2016 program continues the storage of one million barrels of ultra-low sulfur diesel at locations in New England. The FY 2016 budget request for NEHHOR is \$7.6 million, and focuses on an acceptable and effective transition to the new storage terminal contracts, solicited in FY 2015. The Program will continue oversight and management including quality analysis of the Reserve and support for the sales system.

Naval Petroleum and Oil Shale Reserves. The FY 2016 budget requests \$17.5 million for the Naval Petroleum and Oil Shale Reserves (NPOSR). Following the 1998 sale of the government's interests in NPR-1 (Elk Hills, CA) environmental cleanup/remediation activities under the Corrective Action Consent Agreement with the State of California Department of Toxic Substances Control (DTSC) began. Of 131 Areas of Concern (AOCs) for which DOE is responsible for environmental cleanup, 13 AOCs have received a DTSC certification of "No Further Action"; 7 AOCs are under DTSC review; 46 AOCs require additional testing; and 65 AOCs are awaiting field investigation or remediation activities. In FY 2016, NPR-1 will continue these assessment and remediation activities.

The account also funds activities at the Naval Petroleum Reserve 3 (NPR-3) in Wyoming (Teapot Dome field), a stripper well oil field. Disposition of NPR-3 through sale to private ownership is anticipated to occur in FY 2015. Therefore in FY 2016, NPR-3 will complete Phase III of the disposition plan - the closeout of the Casper office - with activities including closure of contracts, preparation of field IT and equipment for disposal, records management processing, and disposal of personal property.