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**FY 2012 Appropriations Hearing
House Committee on Appropriations
Subcommittee on Energy and Water Development**

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Mr. Chairman, Members of the Committee, it is my pleasure to appear before you today to present the Office of Fossil Energy's (FE) proposed Budget for Fiscal Year 2012.

The Office of Fossil Energy's primary objective is to ensure that we can continue to utilize our traditional fuel sources for clean, affordable, reliable energy. Fossil fuels currently provide 83 percent of U.S. energy consumption and are expected to continue to play a critical role in meeting our Nation's energy needs for the foreseeable future. Making use of these assets in an environmentally responsible manner will help the United States meet its energy requirements, hold down cost increases for consumers, minimize environmental impacts, positively contribute to energy security and enable the Nation to better compete in the global marketplace.

First and foremost, FE's research and development (R&D) program supports the U.S. Department of Energy's (DOE) overall mission to achieve national energy security in an economic and environmentally sound manner. The mission of the FER&D program is to create technology and technology-based policy options for public benefit by enhancing U.S. economic, environmental, and energy security. This mission is achieved by developing technologies to enhance the clean use of domestic fossil fuels and to reduce emissions from fossil-fueled electricity generation plants to achieve near-zero atmospheric emissions power production.

The bulk of FE's current R&D program activities focus on: 1) CO₂ capture technology applicable to both new and existing fossil-fueled facilities; 2) CO₂ storage, with emphasis on CO₂ monitoring, verification and accounting; 3) advanced coal-fueled power systems that support carbon capture and storage (CCS), including integrated gasification combined cycle (IGCC) and oxy-combustion technologies; and 4) cross-cutting research to bridge fundamental science and engineering development.

Currently, we are pursuing the integrated demonstration of first generation CCS technologies with existing and new power plants and industrial facilities. These demonstrations are focused on using a range of capture technologies and storing CO₂ in a variety of geologic formations, including enhanced oil recovery. The current portfolio of funded projects is on course to meet the President's goal of bringing five to ten commercial scale demonstration projects online by 2016. In parallel, we are conducting and supporting long-term, high-risk R&D to significantly reduce coal power plant emissions (including CO₂) and substantially improve

efficiency to reduce carbon emissions, leading to a viable near-zero atmospheric emissions coal energy system and supporting carbon capture and storage.

FE also manages the Nation's 727-million-barrel U.S. Strategic Petroleum Reserve (SPR) that serves as the largest stockpile of government-owned emergency crude oil in the world. The SPR helps ensure U.S. energy security. This stockpile of crude oil provides energy and economic security against disruptions in U.S. oil supplies and also allows the United States to meet part of its International Energy Agency obligation to maintain emergency oil stocks. In addition, FE oversees the Northeast Home Heating Oil Reserve and the Naval Petroleum Reserves.

Fiscal Year 2012 Budget Request

DOE is requesting \$520.7 million for FE programs in FY 2012. Included in this budget are \$453.0 for Fossil Energy Research and Development; \$121.7 million for the Strategic Petroleum Reserve; -\$69 million (net) for the Northeast Home Heating Oil Reserve; and \$14.9 million for the Naval Petroleum Reserves.

The FY 2012 budget request will allow FE to fulfill the mission I just outlined: 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 2012 budget requests \$453.0 million for a fossil energy research and development portfolio focused on advancing carbon capture and storage technologies. This program is designed to ensure we can continue to use the Nation's abundant fossil resources through the development of clean energy technologies, with a specific focus on dramatic reductions of global carbon emissions at acceptable cost.

The CCS Demonstrations program, including the Clean Coal Power Initiative, FutureGen 2.0, and Industrial CCS Demonstrations, enables and accelerates the deployment of advanced carbon capture and storage technologies to ensure clean, reliable, and affordable electricity for the United States. The 2012 budget request does not provide any demonstration funds because these projects are already strongly supported through the 2009 American Recovery and Reinvestment Act (ARRA). ARRA provided \$3.4 billion for CCS, of which \$2.5 billion is supporting large-scale demonstration projects.

CCS and Power Systems R&D

The CCS and Power Systems R&D FY 2012 budget request of \$291.3 million represents more than 55 percent of FE's total FY 2012 budget request. The program provides research to significantly reduce coal power plant emissions (including CO₂) and substantially improve efficiency to reduce carbon emissions, leading to a viable near-zero atmospheric emissions coal energy system and supporting carbon capture and storage.

The Department is developing advanced clean coal technology with a goal of deploying high efficiency coal power plants achieving near-zero atmospheric emissions. The Office of Fossil Energy's CCS and Power Systems program is leading efforts to make possible greater utilization of the Nation's most abundant commercially available energy resource (coal) in an environmentally sensitive way. The core Research and Development efforts of the CCS and Power Systems program focuses on a variety of carbon capture and storage technologies for pulverized coal, oxy-combustion, and gasification plants: post-combustion carbon capture for new and existing plants, improved gasification technologies, development of stationary power fuel cells, improved turbines for future coal-based combined cycle plants, and creation of a portfolio of technologies that can capture and permanently store greenhouse gases.

In addition to the funding levels reflected in the CCS and Power Section, Program Direction accounts for NETL Program Specific Activities supporting CCS and Power Systems. This funding supports Federal staff directly associated with conducting research activities specific to CCS and Power Systems in Carbon Capture, Carbon Storage, Advanced Energy Systems and Crosscutting Research.

Carbon Capture. The President's budget requests \$68.9 million for DOE's Carbon Capture program. This sub-program is focused on the development of post-combustion and pre-combustion CO₂ capture technologies for new and existing power plants. Post-combustion CO₂ capture technology is applicable to pulverized coal (PC) power plants, which is the current standard industry technology for coal-fueled electricity generation. Pre-combustion CO₂ capture is applicable to gasification-based systems such as IGCC, a potential technology for future generation of electricity from coal-fueled plants.

The increase in funding for post-combustion R&D will include funding for slip stream testing of a larger number of advanced technology systems and will shorten the time required for development of systems ready for commercial application.

Carbon Storage. The FY 2012 budget requests \$115.5 million for Carbon Storage R&D. The activities conducted under this sub-program will be used to benefit the existing and future fleet of fossil fuel power generating facilities by developing tools to increase our understanding of geologic reservoirs appropriate for CO₂ storage and the behavior of CO₂ in the subsurface.

The Regional Carbon Sequestration Partnerships, which unite more than 400 public and private entities in an effort to complete and evaluate small- and large-volume CO₂ injection tests across the nation, are an essential piece of this program. Large-volume injections are needed to demonstrate the formations selected for storage are capable and have the capacity to store supercritical carbon dioxide. They are also needed for the development of technology that can safely and economically store CO₂ from coal-based energy systems.

In FY 2012, projects will focus on the development of innovative, advanced technology and protocols for the monitoring, verification, accounting, and assessment of CO₂ storage

in geologic formations as well as simulating the behavior of geologically-stored CO₂ will continue all of which will culminate in a set of best practices for CCS deployment.

Additionally, work on carbon storage will continue to be coordinated between the U.S. and China with the aim of leveraging each country's investment and accelerating carbon storage technology deployment through sharing of experiences. This coordination will be done under the U.S.-China Clean Energy Research Initiative.

Advanced Energy Systems. The President's Budget requests \$64.2 million for Advanced Energy Systems research. This sub-program focuses on improving the efficiency of coal-based power systems, enabling affordable CO₂ capture, increasing plant availability, and maintaining the highest environmental standards. The program supports gasification-related R&D to convert coal into synthesis gas (syngas) that can in turn be converted into electricity, chemicals, hydrogen, and liquid fuels. In addition, this sub-program advances hydrogen turbine designs to improve the performance of pre-combustion capture systems and supports the development of Advanced Combustion Systems through research focused on new high-temperature materials and the continued development of oxy-combustion technologies.

Advanced Combustion Systems R&D will continue laboratory through pilot scale testing of advanced chemical looping and oxy-combustion as an option for lower cost and more efficient CO₂ capture systems. Work will also include the use of computational techniques to design and develop materials for use in advanced combustion systems.

The Gasification Systems research effort will continue to develop technologies for gas stream purification to achieve near-zero atmospheric emission goals and to meet syngas quality requirements; enhance process efficiency and availability; reduce costs for producing oxygen; and develop advanced gasification technologies. The Advanced Turbines activity will implement projects to enable efficient, clean and cost effective hydrogen fueled turbines for coal-based IGCC power systems that capture and store CO₂.

Cross-Cutting Research. The FY 2012 budget requests \$42.8 million for Cross-cutting Research. This sub-program serves as a bridge between basic and applied research by fostering the development and deployment of innovative systems for improving efficiency and environmental performance through the research and development of instrumentation, sensors, and controls targeted at enhancing the availability of advanced power systems while reducing costs of CCS and Power Systems. This program area also develops computation, simulation, and modeling tools focused on optimizing plant design and shortening developmental timelines. The Cross-cutting Research activity also addresses advanced and cross-cutting issues, including plant optimization technologies, environmental and technical/economic analyses, coal technology export, and integrated program support.

Unconventional Natural Gas R&D

The Natural Gas Technologies program developed scientific information and advanced technologies to increase environmentally responsible supplies of natural gas through

research and development. Consistent with Administration policy to phase out inefficient fossil fuel subsidies, the program is requesting no funding in FY 2012 for R&D to increase hydrocarbon production.

Petroleum Reserves

The Office of Petroleum Reserves manages the Strategic Petroleum Reserve and Northeast Home Heating Oil Reserve programs, which provide strategic and economic protection to the Nation from disruptions in foreign and domestic petroleum supplies; and the Naval Petroleum and Oil Shale Reserves, involving the Department's environmental legacy responsibilities from the sale of the Naval Petroleum Reserve No. 1 (NPR-1) in California and the operation of the NPR-3 stripper oil field and Rocky Mountain Oilfield Testing Center, both located near Casper, Wyoming.

Strategic Petroleum Reserve. The Department of Energy is requesting \$121.7 million for the SPR in FY 2012. This decrease from FY 2011 funding assumes a cancellation of \$71 million in balances from prior year appropriations for a 1 billion barrel expansion at the Richton, Miss., site and the use of these balances to partially fund operations and management activities of the SPR.

The FY 2012 budget also proposes a \$500 million non-emergency sale of SPR oil for operational purposes. The sale of approximately 6 million barrels will reduce import protection from 75 days to 74 days. Additionally, the request includes funding to continue completion of a replacement cavern at the Bayou Choctaw, La., site as well as for degas operations to begin at the West Hackberry, La., site.

Northeast Home Heating Oil Reserve. The Northeast Home Heating Oil Reserve, established in 2000, is capable of assuring a short-term supplement to home heating oil supplies during times of very low inventories or in the event of significant threats to immediate energy supplies. The Reserve provides a buffer for the Northeast against a supply disruption for approximately 10 days, the time required for ships to carry heating oil from the Gulf of Mexico to New York Harbor.

In FY 2011, the program sold 1,984,253 barrels of heating oil for approximately \$227 million and will use the receipts to purchase 1 million barrels of ultra low sulfur (ULS) distillate to serve New England and comply with new state environmental requirements; the program will also award new storage contracts. The reduction of reserve inventory due to the sale is offset by a regional increase in the use of natural gas for residential heating. In addition, the New York Harbor area has abundant commercial stocks available, as well as connections to local refineries and the Colonial Pipeline for resupply.

The FY 2012 request is \$10.9 million for heating oil storage leases and will be offset due to excess net balances estimated in the 2012 Budget to be \$79.0 million from the sale, which are proposed for cancellation in FY 2012.

Naval Petroleum and Oil Shale Reserves. Three of the four original Naval Petroleum Reserves (NPR-1, NPR-2, and NPR-4) have been sold or transferred to the Department of the Interior. Environmental remediation and equity finalization continues at NPR-1. The only remaining oil reserve managed by the DOE is the Teapot Dome field (NPR-3) in Casper, Wyo., which is now a stripper field that also serves as an oilfield technology testing center (Rocky Mountain Oilfield Testing Center).

Since production costs are expected to exceed oil revenues, production operations at NPR-3 are no longer economic and will be discontinued except for incidental oil production associated with produced water needed for geothermal testing (funded by DOE's Energy Efficiency and Renewable Energy's Geothermal Technology Program or by test users). Accelerated environmental remediation will continue and a plan will be developed for the sale or disposition of NPR-3. The FY 2012 budget request for this program is \$14.9 million, which will fund the environmental remediation of NPR-1 and activities at NPR-3.

Conclusion

The Office of Fossil Energy is committed to developing the science and technology that will allow the Nation to use its abundant fossil energy resources in a way that balances the energy needs for sustaining a robust economy with a clean environment. Our FY 2012 budget request will help maintain DOE's leadership role in addressing issues of energy and environmental security. We believe this budget, targeted as it is toward these essential objectives, will provide the resources needed to achieve these goals while providing maximum benefit to U.S. taxpayers.

Mr. Chairman, and members of the Committee, this completes my prepared statement. I would be happy to answer any questions you may have at this time.