

Conservation Committee Report

Volume 16 Issue 2

Jack Walters—Conservation Chairman

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The Conservation Pledge

I give my pledge as an American to save and faithfully defend from waste, the natural resources of my country; the soil, the water, the air, the minerals, the plant life and the wildlife.

This is my Pledge!

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Coal Companies and Subsidiaries to Spend Estimated \$200 Million on Treatment and System-wide Upgrades to Reduce Water Pollution

\$27.5 Million Civil Penalty is Largest in History Under Section 402 of the Clean Water Act

Alpha Natural Resources, Inc. (Alpha), one of the nation's largest coal companies, Alpha Appalachian Holdings (formerly Massey Energy), and 66 subsidiaries have agreed to spend an estimated

\$200 million to install and operate wastewater treatment systems and to implement comprehensive, system-wide upgrades to reduce discharges of pollution from coal mines in Kentucky, Pennsylvania, Tennessee, Virginia, and West Virginia, the Department of Justice and the U.S. Environmental Protection Agency

(EPA) announced today. Overall, the settlement covers approximately 79 active mines and 25 processing plants in these five states.

EPA estimates that the upgrades and advanced treatment required by the

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Governor Proposes Enhanced Penn's Woods Initiative, \$45M for State Parks, Forests

Gov. Corbett's proposed FY 2014-15 budget includes the Enhance Penn's Woods initiative, a 2-year, more than \$200 million effort to repair and upgrade State Parks and State Forests

through the Department of Conservation and Natural Resources

The program includes \$45 million in additional monies from interest on the Growing Greener II bond funds and existing funding from the Keystone Recre-

ation, Park and Conservation Fund, Environmental Stewardship (Growing Greener) Fund and the Dirt and Gravel Road Program.

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Coal Companies and Subsidiaries to Spend Estimated \$200 Million on Treatment and System-wide Upgrades to Reduce Water Pollution (continued)

settlement will reduce discharges of total dissolved solids by over 36 million pounds each year, and will cut metals and other pollutants by approximately nine million pounds per year. The companies will also pay a civil penalty of \$27.5 million for thousands of permit violations, which is the largest penalty in history under Section 402 of the Clean Water Act (CWA).

“This settlement is the result of state and federal agencies working together to protect local communities from pollution by enforcing the law,” said Cynthia Giles, Assistant Administrator of EPA’s Office of Enforcement and Compliance Assurance. “By requiring reforms and a robust compliance program, we are helping to ensure coal mining in Appalachia follows environmental laws that protect public health.”

“The unprecedented size of the civil penalty in this settlement sends a strong deterrent message to others in this industry that such egregious violations of the nation’s Clean Water Act will not be tolerated,” said Robert G. Dreher, Acting Assistant Attorney General for the Justice Department’s Environment and Natural Resources Division. “Today’s agreement is good news for communities across Appalachia, who have too often been vulnerable to polluters who disregard the law. It holds Alpha accountable and will bring increased compliance and transparency among Alpha and its many subsidiaries.”

In addition to paying the penalty, the companies must build and operate treatment systems to eliminate violations of selenium and salinity limits, and also implement comprehensive, system-wide improvements to ensure future compliance with the CWA. These improvements, which apply to all of Alpha’s operations in Appalachia, include developing and implementing an environmental management system and periodic internal and third-party environmental compliance audits.

The companies must also maintain a database to track violations and compliance efforts at each outfall, significantly improve the timeliness of responding to violations, and consult with third party experts to solve problem discharges. In the event of future violations, the companies will be required to pay stipulated penalties, which may be increased and, in some cases, doubled for continuing violations.

The government complaint alleged that, between 2006 and 2013, Alpha and its subsidiaries routinely violated limits in 336 of its state-issued CWA permits, resulting in the discharge of excess amounts of pollutants into hundreds of rivers and streams in Kentucky, Pennsylvania, Tennessee, Virginia, and West Virginia. The violations also included discharge of pollutants without a permit.

In total, EPA documented at least 6,289 violations of permit limits for pollutants that include iron, pH, total suspended solids, aluminum, manganese, selenium, and salinity.

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Coal Companies and Subsidiaries to Spend Estimated \$200 Million on Treatment and System-wide Upgrades to Reduce Water Pollution (continued)

These violations occurred at 794 different discharge points, or outfalls. Monitoring records also showed that multiple pollutants were discharged in amounts of more than twice the permitted limit on many occasions. Most violations stemmed from the company's failure to properly operate existing treatment systems, install adequate treatment systems, and implement appropriate water handling and management plans.

Today's settlement also resolves violations of a prior 2008 settlement with Massey Energy, and applies to the facilities and sites formerly owned by the company. Under the 2008 settlement, Massey paid a \$20 million penalty to the federal government for similar CWA violations, in addition to over a million dollars in stipulated penalties over the course of the next two years. Alpha purchased Massey in June 2011 and, since taking over the company, has been working cooperatively with the government in developing the terms of today's settlement.

CWA permits allow for the discharge of certain pollutants in limited amounts to rivers, streams, and other water bodies. Permit holders are required to monitor discharges regularly and report results to the respective state agencies.

Alpha, headquartered in Bristol, Va., is one of the largest coal companies in the nation. Alpha operates more than 79 active coal mines and 25 coal preparation plants located throughout Kentucky, Pennsylvania, Tennessee, Virginia, West Virginia, and Wyoming. The Wyoming operations are not included in today's settlement.

The States of West Virginia, Pennsylvania, and Kentucky are co-plaintiffs in today's settlement. The U.S. will receive half of the civil penalty and the other half will be divided between the co-plaintiffs based on the number of violations in each state, as follows: West Virginia (\$8,937,500), Pennsylvania (\$4,125,000), and Kentucky (\$687,500).

The consent decree, lodged in the U.S. District Court for the Southern District of West Virginia, is subject to a 30-day public comment period and approval by the federal court.

More information on the settlement: <http://www2.epa.gov/enforcement/alpha-natural-resources-inc-settlement>

More information on Clean Water Act Enforcement:
<http://www.epa.gov/compliance/civil/cwa/index.html>

Source: the U.S. Environmental Protection Agency (EPA)

Governor Proposes Enhanced Penn's Woods Initiative, \$45M for State Parks, Forests (continued)

"There are so many ways to enjoy Pennsylvania's great outdoors.

With such a variety of unique activities – world class fishing, hunting, hiking and one of my favorites, kayaking – there's something for everyone in the Keystone State," Corbett said. "As a strategic investment in our future, we'll make the largest, short-term investment in state park and forest history to Enhance Penn's Woods."

The initiative was unveiled during a tour of the Great American Outdoor Show in Harrisburg, where the Governor also purchased his fishing license.

"The hunters, anglers, campers, hikers and outdoor enthusiasts of all types not only enjoy our natural treasures in Pennsylvania, but they also spend money in our local communities," Corbett said. "This short-term investment will make sure we enjoy the long-term benefits of a first class park and forest system such as healthy outdoor recreation, protecting our natural resources and attracting residents, tourists and private investment to communities around the state."

The Governor was joined for the announcement by DCNR Secretary Ellen Ferretti; Fish and Boat Commission Executive Director John Arway; and families with children who participate in hunting and fishing.

"The vision of great conservation leaders in Pennsylvania's history has resulted in the system of state parks and forests that Pennsylvanians enjoy and love today," Ferretti said. "Our modern challenge is caring for our public lands, focusing on improvements for aging facilities; well-managed forests; and high management standards for our award-winning state parks.

"DCNR is grateful for Gov. Corbett's commitment to honor the legacy of our state parks and forests. Our staff works tirelessly each day to protect these resources and ensure our visitors have a meaningful and enjoyable experience. This will allow us to be better stewards of the parks and forested entrusted to us," Ferretti said.

The department estimates about 200 projects will be covered under the 2-year investment, including:

-- Improvements to some of the most visited and unique parks in the system including a visitor center at Kinzua Bridge State Park, McKean County; new park office at Cook Forest State Park, Clarion County; and completion of the visitor center at Ohiopyle State Park, Fayette County;

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Governor Proposes Enhanced Penn's Woods Initiative, \$45M for State Parks, Forests (continued)

Dam repair at Sinnemahoning State Park, Cameron County; Marsh Creek State Park, Chester County; Chapman State Park, Warren County; Pymatuning State Park, Crawford County; and Gouldsboro State Park, Monroe County;

-- New opportunities for interaction with the public at offices in the Buchanan State Forest, Fulton County, and Gallitzin State Forest, Cambria and Indiana counties;

-- Repairs to fire towers in state forests statewide;

-- Adding 20,000 acres to the state forest system;

-- Twelve campground improvement projects including at Gifford Pinchot, Prince Gallitzin, Hickory Run, Bald Eagle, Parker Dam, Laurel Hill, Hills Creek, Black Moshannon and Caledonia state parks;

-- More than 50 public access improvement projects to roads, bridges and trails;

-- Seventeen state park drinking water or wastewater system projects; and

-- Continuing DCNR's track record of green buildings and sustainable features.

Enhance Penn's Woods covers the current fiscal year 2013-14, and fiscal year 2014-15. The additional special allocation of \$45 million will be from premiums and interest on Growing Greener II bond funds.

For each fiscal year, the infrastructure design and construction projects are expected to support almost 1,000 jobs in the engineering, architecture, landscape design, construction and other fields.

In addition to announcing Enhance Penn's Woods, Gov. Corbett also unveiled the Pennsylvania Outdoor Adventure Guide. Structured for outdoor enthusiasts, the 80-page guide highlights an array of recreation opportunities across the Commonwealth, and conveniently categorizes these adventures and activities.

Whether it's launching a kayak in more than 86,000 miles of the state's wild rivers and scenic streams or sliding down challenging runs at one of Pennsylvania's 21 ski resorts, the guide outlines and inspires outdoor recreation of every form.

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Governor Proposes Enhanced Penn's Woods Initiative, \$45M for State Parks, Forests (continued)

“Pennsylvania has 17 million acres of forest, attracting hikers, birdwatchers, hunters, anglers and other outdoor enthusiasts from far and wide. Our Outdoor Adventure Guide highlights the many unique tourism destinations that beckon visitors to Pennsylvania’s natural year-round playground.”

This first-of-its-kind guide represents the beginning of a unique collaboration among the Department of Community and Economic Development, the Department of Agriculture, the Department of Conservation and Natural Resources, the Game Commission, and the Fish & Boat Commission.

Pennsylvania has 120 state parks totaling almost 300,000 acres, and 2.2 million acres in 20 state forest districts. Visitors to Pennsylvania state parks generate more than a billion dollars in economic activity in nearby communities annually, supporting almost 13,000 jobs

Source: Pa Environment Digest

EPA TAKES ACTION TO PROTECT PUBLIC FROM HARMFUL LEAD EXPOSURE

The U.S. Environmental Protection Agency (EPA) announced enforcement actions that will require 35 home renovation contractors and training providers to take additional steps to protect communities by minimizing harmful lead dust from home renovation activities, as required by the EPA's Lead Renovation, Repair, and Painting (RRP) Standards. These standards provide important, front-line protection for children and others vulnerable to exposure to lead dust that can cause lead poisoning.

"Families deserve the peace of mind that home renovations occur without harming children," said Cynthia Giles, Assistant Administrator for EPA's Office of Enforcement and Compliance Assurance. "Businesses that play by the rules deserve to compete on a level playing field. EPA will continue to enforce the nation's lead rules to protect the public from illegal and dangerous lead exposure."

The settlements, issued between May 2013 and January 2014, include 17 contractors that failed to obtain required certification prior to performing renovation activities on pre-1978 homes, where lead is more likely to be present. In addition, 21 settlements involve violations for failure to follow required lead-safe work practices, and three cases involve general contractors who failed to ensure their subcontractors followed the RRP standards.

The enforcement actions, which all require contractors to certify compliance with the RRP standards, led to more than \$274,000 in civil penalties.

Three of the companies agreed to fund environmental projects to benefit communities. HarrenLaughlin Construction and Exterior Energy Consultants will fund lead abatement work at local properties, while the New Jersey Council of Community Colleges will provide tuition-free, EPA accredited training courses to renovators expected to work on projects impacted by Hurricane Sandy.

The RRP standards, which are part of the federal Toxic Substances Control Act, are intended to ensure that owners and occupants of housing built before 1978 and child-occupied facilities receive information on lead-based paint hazards before renovations begin, that individuals performing such renovations are properly trained and certified by EPA, and that, during renovations, specific work practices are followed to reduce the potential for lead-based paint exposure.

Contractors that are certified under EPA's RRP standards are encouraged to display EPA's "Lead-Safe" logo on worker's uniforms, signs, websites, and other material, as appropriate. Consumers can protect themselves by looking for the logo before hiring a home contractor.

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EPA TAKES ACTION TO PROTECT PUBLIC FROM HARMFUL LEAD EXPOSURE (continued)

Between May 2013 and January 2014, EPA has settled enforcement actions with the following companies:

Environmental Engineering & Technology, Inc. of Newport News, VA
The Training Network, Inc. of Oak Hill, VA
Professional Training Associates, Inc. of Duquesne, PA
The Home Hero, LLC of Philadelphia, PA
Thermo-Twin Industries, Inc. of Oakmont, PA
Samuel M. Lewis of Columbus, OH
Midwest College Painters, LLC of Bloomfield, MI
D&S Construction of Western Ohio, LLC of Sidney, OH
M&J Environmental Institute of Maple Grove, MN
Hannegan Construction Company of St. Charles, MO
HarenLaughlin Construction of Lenexa, KS
Jason Madura of Warsaw, MO
Nezerka Enterprises LLC d/b/a Certa Pro Painters of Shawnee Mission, KS
James L. and Dona D. Jungers of Lincoln, NE
Dennis Barker of Fairbury, NE
Painting Done Right of Lincoln, NE
Prudent Technologies, Inc. of Kansas City, MO
Rothers Inc., d/b/a Rothers Design/Build of Kansas City, KS
Ritchie Enterprises, Inc. d/b/a Puroclean Emergency Restoration Services of Sullivan, MO
Exterior Energy Consultants, Inc. of Gladstone, MO
Philip Thornton and Stanley Thornton of Marshall, MO

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EPA TAKES ACTION TO PROTECT PUBLIC FROM HARMFUL LEAD EXPOSURE (continued)

Van Dyk Construction of Littleton, CO
Devex Construction LLC of Greenwood Village, CO
Thomas Breuer Construction of Sioux Falls, SD
Alaska Commercial Contractors, Inc. of Juneau, AK
VanPool Painting, Inc. of Juneau, AK
Kachina Contractor Solutions, LLC of Elkins Park, PA
Collegiate Entrepreneurs, Inc. of Braintree, MA
Bill Vizzo Contractors, LLC of Shelton, CT
James J. Welch & Co., Inc. of Salem, MA
New Hampshire Plate Glass Corp. of Portsmouth, NH
Dura-Plex, Inc. of Brick, NJ
Hernandez Painting of Hempstead, NY
Consortium for Workforce and Economic Development / New Jersey Council of Community Colleges of Trenton, NJ
Schryer Thompson Construction, Inc. of Concord, CA

More information about the settlements: <http://www2.epa.gov/enforcement/lead-renovation-repair-and-painting-rule-february-2014>

More information about the RRP standards and how contractors can get certified:
www.epa.gov/lead

Source: The U.S. Environmental Protection Agency (EPA)

EPA Partnerships Cut Greenhouse Gas Emissions and Save Businesses Money

The U.S. Environmental Protection Agency (EPA) released its annual Climate Protection Partnerships report, highlighting the steps more than 21,000 organizations across the United States have taken to reduce greenhouse gas pollution while achieving significant environmental and economic benefits.

“The urgency to act on climate change is clear,” said EPA Administrator Gina McCarthy. “Through investments in cleaner technologies and energy-efficient practices, EPA’s Climate Protection Partners show us that we can cut the harmful carbon pollution that fuels climate change and protects public health—while continuing to grow a strong, sustainable economy.”

The achievements outlined in this report support the goals of President Obama’s Climate Action Plan by cutting energy waste, encouraging energy efficiency, and saving money for American families and businesses. The report, “EPA’s Office of Atmospheric Programs Climate Protection Partnerships 2012 Annual Report” includes accomplishments such as:

-- In 2012, EPA’s climate protection programs prevented 365 million metric tons of U.S. greenhouse gas emissions—equivalent to the emissions from the annual electricity use of more than 50 million homes.

-- Americans saved more than \$26 billion on their utility bills in 2012 with the help of ENERGY STAR® and prevented greenhouse gas emissions equal to the annual electricity use of 35 million homes.

-- Since the Green Power Partnership was introduced in 2001, more than 1,400 organizations have committed to using about 29 billion kilowatt-hours of green power each year.

-- More than 450 partners have installed over 5,700 megawatts of new combined heat and power since the Combined Heat and Power Partnership launched in 2001.

-- In 2012, EPA’s methane and fluorinated greenhouse-gas-program partners used EPA tools and resources to prevent emissions equal to the annual electricity use from more than 10 million homes.

-- In total, more than 21,000 organizations and millions of Americans have partnered with the EPA through the Office of Atmospheric Programs’ climate partnerships and produced significant environmental benefits.

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EPA Partnerships Cut Greenhouse Gas Emissions and Save Businesses Money (continued)

EPA's climate protection programs continue to advance greenhouse gas reduction goals and deliver greater benefits each year. These benefits can only grow as more businesses, public sector institutions, households, and others adopt the practices promoted by the climate protection partnerships. All of these benefits are the result of voluntary actions by individuals, businesses and industry.

These reductions in greenhouse gas emissions are increasingly important to tackle climate change challenges. The global average temperature for every decade since the Industrial Revolution has been hotter than the previous decade, and the 12 hottest years on record have all occurred within the past 15 years. Scientists have observed changes in precipitation, rising sea level, melting ice and altered weather patterns, including more frequent and intense storms.

The report further outlines the environmental accomplishments of these programs. To read the full report:

http://www.energystar.gov/about/sites/default/uploads/files/2012_AnnualReport_Final.pdf?3cd5-e266. To learn more about climate change: www.epa.gov/climatechange/

Source: The U.S. Environmental Protection Agency

PRESIDENT REQUESTS \$711.0 MILLION FOR FOSSIL ENERGY PROGRAMS

Learn more about the FE Budget on the Fossil Energy website. <http://energy.gov/fe/about-us/our-budget>

President Obama's FY 2015 budget seeks \$711.0 million for the Office of Fossil Energy (FE) to advance technologies related to the reliable, efficient, affordable and environmentally sound use of fossil fuels as well as manage the Strategic Petroleum Reserve and Northeast Home Heating oil Reserve to provide strategic and economic security against disruptions in U.S. oil supplies. The request includes \$475.5 million for Fossil Energy Research and Development, \$205.0 million for the Strategic Petroleum Reserve, \$1.6 million for the Northeast Home Heating Oil Reserve and \$19.95 million for the Naval Petroleum Reserves.

The FY 2015 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 2015 budget requests \$475.5 million for a 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 develops technological solutions for the prudent and sustainable development of our unconventional domestic resources.

In FY 2015, Fossil Energy Research and Development will continue to focus on carbon capture and storage and activities that increase the 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. In FY2015, FER&D will establish a new demonstration program, Natural Gas Carbon Capture and Storage (NG-CCS), to support projects to capture and store carbon emissions from natural gas power systems. The ability to demonstrate advanced technologies at a scale that has been developed within the FER&D or other R&D programs is an important benefit of the demonstration programs.

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

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PRESIDENT REQUESTS \$711.0 MILLION FOR FOSSIL ENERGY PROGRAMS (CONTINUED)

fossil energy systems and CCS technologies. The FY 2015 budget request for the program is \$277.4 million. It also includes \$34.0 million for NETL staff to conduct in-house coal R&D.

Carbon Capture. The President's FY 2015 budget requests \$77.0 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 fossil fuel-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.

Carbon Storage. The President's FY 2015 budget requests \$80.1 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 industry and regulatory agencies have the capability to assess, monitor and mitigate storage risks for CO₂ onshore and offshore storage 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 2015 budget requests \$51.0 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 gasification, oxy-combustion, advanced turbines, and other energy systems.

Cross-cutting Research. The President's FY 2015 budget requests \$35.3 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.

Natural Gas Technologies. The mission of the Natural Gas program – with a FY 2015 budget request of \$35.0 million – is to support DOE missions in energy, environment and national security. The Natural Gas Technologies program will focus on technologies to reduce the carbon footprint, emissions, and water use in order to enable safe and responsible development of unconventional domestic natural gas resources. The Department of Energy, Department of the Interior, and Environmental Protection Agency developed a focused, collaborative research effort to address high-priority challenges to safe and prudent development of unconventional resources. FER&D research includes advancements in technology, methodology, risk assessment, and mitigation consistent with the multiagency effort.

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PRESIDENT REQUESTS \$711.0 MILLION FOR FOSSIL ENERGY PROGRAMS (CONTINUED)

The program will initiate a midstream natural gas infrastructure program focused on advanced cost-effective technologies to detect and mitigate methane emissions from natural gas transmission, distribution, and storage facilities and to communicate results on methane emissions mitigation to stakeholders. In addition, the program intends to conduct lab- and field-based research focused on increasing public understanding of methane dynamics in gas-hydrates bearing areas. These public sector-led efforts will be designed to evaluate the occurrence, nature and behavior of naturally occurring gas hydrates and resulting resource, hazard, and environmental implications.

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) protects the U.S. from disruptions in critical petroleum supplies and meets the U.S. obligations under the International Energy Agency (IEA). The most recent drawdown of the SPR was 30 million barrels in FY 2011 as the U.S. obligation under the IEA Libya Collective Action. The remaining 696 million barrels of inventory provided 112 days of net import protection in 2013. The SPR remains configured to address energy vulnerabilities established in the 1970's/1980's based on then-existing U.S. supply and demand requirements. The FY 2015 budget request for SPR is \$205.0 million which will provide the program with full SPR operational readiness and drawdown capability.

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 2014 program will continue operation of the 1 million barrel Reserve of ULSD in Groton, CT and Revere, MA. The FY 2015 budget request for NEHHOR is \$1.6 million, which will be supplemented by use of prior year balances.

Naval Petroleum and Oil Shale Reserves. The FY 2015 budget requests \$19.95 million for the Naval Petroleum and Oil Shale Reserves (NPOSR). The NPOSR program manages a number of legal agreements that were executed as part of the 1998 sale of NPR-1 in California. These agreements direct post-sale work including environmental restoration and remediation, contract closeout, and records disposition.

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PRESIDENT REQUESTS \$711.0 MILLION FOR FOSSIL ENERGY PROGRAMS (CONTINUED)

The NPR-1 program continues to work towards closing out the remaining environmental findings, as required by the 2008 agreement between DOE and the California DTSC. DOE also operates NPR-3 and RMOTC, co-located near Casper, Wyoming. NPR-3/RMOTC will implement the approved disposition plan with final disposition of the property estimated to occur December 2015.

Elk Hills School Land Fund. The Elk Hills School Lands Fund, subject to appropriation, provides a source of compensation for the California State Teachers' Retirement System as a result of a settlement with the State of California with respect to its longstanding claim to title of two sections of land within NPR-1. In 2011, the Department and the State of California agreed on the final, last payment of \$15.6 million. Funding for this payment is requested in the FY 2015 budget.

Source: U.S. Department of Energy

FE'S ULTRA-DEEPWATER PROGRAM FOCUSES ON SPILL PREVENTION, SAFETY AND ENVIRONMENTAL STEWARDSHIP

Nearly everyone recognizes that prudent development of domestic oil and natural gas resources will continue to be an important part of U.S. energy strategy for decades to come. How important depends a lot on conducting operations responsibly, ensuring communities are safe and the environment protected as the nation maximizes use of this vital domestic energy resource.

That's where DOE's ultra-deepwater (UDW) research program plays a significant role. Managed by FE's Office of Oil and Natural Gas with the support of NETL, the UDW program's mission is to work toward mitigating the risks and challenges associated with ultra-deepwater drilling and production operations. This includes deepening the collaboration and coordination already established with the Department of the Interior's Bureau of Safety and Environmental Enforcement.

Only 30 years ago, "deepwater" oil and natural gas production referred to offshore wells in water depths of several hundred feet. Today's deepwater operations are generally in the 1,000-to-5,000 foot range, and ultra-deepwater production can occur in water depths of between 5,000-to-10,000 feet or more.

Why are these resources important? Consider these facts:

- U.S. offshore oil and gas resources comprise 25 percent (about 4.6 billion barrels) of total proved crude oil reserves in the lower 48 states. Annually, they account for about 20 percent of total domestic crude production.
- They also make up nearly 6 percent (15 trillion cubic feet) of total U.S. natural gas proved reserves (263 trillion cubic feet) and provide about 10 percent of total annual dry gas production.

The Gulf of Mexico is one of the most important locations of U.S. offshore and deepwater resource production. This area produces 93 percent of all U.S. offshore oil and about 96 percent of offshore natural gas; DOI's Bureau of Ocean Energy Management, Regulation and Enforcement estimates the Central Gulf alone holds more than 30 billion barrels of oil and nearly 134 trillion cubic feet of natural gas yet to be discovered.

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FE'S ULTRA-DEEPWATER PROGRAM FOCUSES ON SPILL PREVENTION, SAFETY AND ENVIRONMENTAL STEWARDSHIP (CONTINUED)

Additionally, the Energy Information Administration (EIA) projects the deepwater contribution of domestic oil and natural gas supplies will continue to be significant in the years ahead, assuming ongoing technological solutions to improve production, increase safety and mitigate environmental impacts.

By 2040, EIA forecasts crude oil production of 1.75 million barrels a day and 2.85 trillion cubic feet of natural gas from U.S. offshore resources in the lower 48 states.

Obviously, working in environments at UDW depths can pose special complex challenges not only to production, but also to worker safety and the environment, as the tragic Macondo/Deepwater Horizon incident of January 2011 emphasized.

As a result of Macondo, DOE UDW research shifted focus from maximizing value and increasing energy security to spill prevention, safety and environmental protection. This includes additional emphasis not only on improved understanding of systems risk, but also reducing risk through real-time data analysis and the development of advanced technologies.

NETL's Ultra-Deepwater and Deepwater research is working to build the scientific understanding and assessment tools necessary to develop confidence in the safe and environmentally sustainable development of domestic oil and gas resources. Some examples of current projects within this portfolio include:

- *Determining Physical and Chemical Behavior of Cement Barriers Used in Ultra-Deepwater Systems:* NETL is researching the behavior of typical wellbore cements to better understand how cement formulations perform, with an emphasis on potential failure pathways and remediation technologies. Currently, there is no information on how foam cements, commonly used in extreme offshore settings, perform and persist under in situ conditions. NETL researchers initiated laboratory characterization studies of commonly used formulations of foam cements, obtained the first CT images of foamed cement systems, and developed a reliable methodology to analyze the microstructure of foamed cements under in situ conditions. Going forward, the team will use this methodology to determine stability of foamed cement systems at various "depths" in the subsurface.

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FE'S ULTRA-DEEPWATER PROGRAM FOCUSES ON SPILL PREVENTION, SAFETY AND ENVIRONMENTAL STEWARDSHIP (CONTINUED)

- *Quantifying Complex Fluid-Phase Properties Under High-Pressure/ High-Temperature (HPHT) Conditions:* NETL is working to improve the accuracy of thermodynamic models under HPHT conditions, allowing for better characterization of reservoir fluids and the dynamics of these fluids during extraction. Improved models will decrease uncertainty associated with fluid quantity and flow at and near the borehole. Accurate understanding of the reservoir and associated well behavior is an important component of our ability to predict the behavior of wells. NETL researchers have expanded the density and viscosity databases for hydrocarbon compounds in HPHT conditions and integrated these results with existing data, resulting in a comprehensive database.

Additional information on these projects can be found here.

<https://edx.netl.doe.gov/dataset/ultra-deepwater>

Working with its partners in industry and academia, NETL's Strategic Center for Oil and Natural Gas and FE's Oil and Gas Safety and Environmental Sustainability Research Division have collectively amassed wide ranging expertise in areas related to deepwater and UDW resource location, production, safety and environmental protection. While challenges associated with increasingly hard-to-locate-and-produce UDW resources will always be present to some degree, FE's innovative research portfolio is making real progress toward ensuring this important domestic resource will fulfill its potential in a safe and sustainable way in the years ahead.

Source: U.S. Department of Energy