

## National Nuclear Security Administration Weapons Activities

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Directed Stockpile Work	1,590,152	0	1,505,859	1,898,379	+392,520	+26.1%
Science Campaign	316,690	0	295,646	365,222	+69,576	+23.5%
Engineering Campaign	150,000	0	150,000	141,920	-8,080	-5.4%
Inertial Confinement Fusion and High Yield Campaign	436,915	0	457,915	481,548	+23,633	+5.2%
Advanced Simulation and Computing Campaign	556,125	0	567,625	615,748	+48,123	+8.5%
Readiness Campaign	160,620	0	100,000	112,092	+12,092	+12.1%
Readiness in Technical Base and Facilities	1,674,406	0	1,842,870	1,848,970	+6,100	+0.3%
Secure Transportation Asset	214,439	0	234,915	248,045	+13,130	+5.6%
Nuclear Counterterrorism Incident Response	215,278	0	221,936	233,134	+11,198	+5.0%
Facilities and Infrastructure Recapitalization Program	147,449	0	93,922	94,000	+78	+0.1%
Site Stewardship	0	0	61,288	105,478	+44,190	+72.1%
Environmental Projects and Operations	38,596	0	0	0	---	---
Safeguards and Security	856,494	0	891,555	844,299	-47,256	-5.3%
Science, Technology and Engineering Capability	30,000	0	0	20,000	+20,000	N/A
Congressionally Directed Projects	22,836	0	3,000	0	-3,000	-100.0%
<b>Subtotal, Weapons</b>	<b>6,410,000</b>	<b>0</b>	<b>6,426,531</b>	<b>7,008,835</b>	<b>+582,304</b>	<b>+9.1%</b>
Use of Prior Year Balances	0	0	-42,100	0	+42,100	+100.0%
<b>Total, Weapons Activities</b>	<b>6,410,000</b>	<b>0</b>	<b>6,384,431</b>	<b>7,008,835</b>	<b>+624,404</b>	<b>+9.8%</b>

The FY 2011 **Weapons Activities** budget request is \$7,008.8 million, or 9.8% above the FY 2010 level, reflecting the President's commitment to maintain the safety, security and effectiveness of the nuclear deterrent without underground nuclear testing, consistent with the principles of the Stockpile Management Program outlined in Section 3113 (a)(2) of the National Defense Authorization Act for Fiscal Year 2010 (50 U.C.C. 2524). Increased funding supports the nuclear weapon stockpile management program, the scientific, technical and engineering activities supporting the stockpile and broader national security objectives, and critical major infrastructure improvements.

### Directed Stockpile Work (\$1,898.4 million)

- FY 2011 request is 26.1 percent above the FY 2010 level to meet the immediate needs of the stockpile, stockpile surveillance, annual assessment, and Life Extension Programs (LEP).
- The increase of \$392.5M is associated with the B61 Phase 6.2/6.2A study, the life extension study of the W78, the ramp up to full production for the W76 LEP, restoration of the capability to build 10 pits per year, and support for surveillance and assessment activities.

### Campaigns (\$1,716.5 million)

- Increased support for science focusing on Advanced Certification (+\$70M), Advanced Simulation and Computing (+\$48M), Inertial Confinement and Fusion (+\$24M), and Readiness Campaign (+\$12M)
- Strengthens the stockpile certification program and partially supports the experimental program associated with stockpile management.

### Readiness in Technical Base and Facilities (\$1,848.9 million)

- Supports construction efforts for the Chemistry and Metallurgy Research Building Replacement-Nuclear Facility (CMRR-NF) at Los Alamos and the Uranium Processing Facility at Y-12, with completion of these new facilities scheduled for delivery no later than 2022, in order to meet commitments to the Department of Defense for sustainment of the NNSA uranium and plutonium capability.

### Secure Transportation Asset (\$248.0 million)

- Funding provides personnel, training and equipment for the safe and secure transport of the nuclear security enterprise, DOE, DoD and other customer requirements.

**Nuclear Counterterrorism Incident Response (\$233.1 million)**

- Emergency management and response activities that ensure a central point of contact and integrated response to emergencies requiring DOE assistance, including the Nuclear Emergency Support Team, which responds to nuclear terrorist threats.

**Facilities and Infrastructure Recapitalization Program (FIRP) (\$94.0 million)**

- Funding for recapitalization, infrastructure planning and facility disposition.

**Site Stewardship (\$105.5 million)**

- Provides funding for energy efficiency, site utility upgrade projects and the removal security category I/II special nuclear material from LLNL by the end of FY 2012.

**Science, Technology and Engineering Capability (\$20.0 million)**

- New program which utilizes NNSA laboratory capabilities in science, technology and engineering to strategically address various global security issues. This program was created to continue efforts directed by Congress in the Supplemental Appropriations Act, 2009.

**Safeguards and Security (\$844.3 million)**

- Defense Nuclear Security funding decrease reflects efficiencies achieved through risk-informed decisions regarding staffing levels and procurement of equipment and supplies.
- Cyber Security sustains NNSA's information infrastructure and upgrades elements to counter cyber threats from external and internal attacks using the latest available technology. Increased support to the Technology Application Development program supports the implementation of risk mitigation processes complex-wide.

## Advanced Research Projects Agency - Energy

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Science						
Advanced Research Projects Agency-Energy (ARPA-E)	6,300	0	0	0	—	—
Energy Transformation Acceleration Fund						
Advanced Research Projects Agency - Energy						
ARPA-E Projects	0	377,556	0	273,400	+273,400	N/A
Program Direction	8,700	11,300	0	26,566	+26,566	N/A
<i>Subtotal, Energy Transformation Acceleration Fund</i>	<i>8,700</i>	<i>388,856</i>	<i>0</i>	<i>299,966</i>	<i>+299,966</i>	<i>N/A</i>
<b>Total, Advanced Research Projects Agency - Energy</b>	<b>15,000</b>	<b>388,856</b>	<b>0</b>	<b>299,966</b>	<b>+299,966</b>	<b>N/A</b>

The FY 2011 **Advanced Research Projects Agency-Energy (ARPA-E)** budget request is \$300.0 million, an increase of \$300.0 million over the FY 2010 appropriation. ARPA-E is responsible for funding specific high-risk and high-payoff game-changing research and development projects to meet the nation's long-term energy challenges. An essential component of ARPA-E's culture is an overarching focus on accelerating science to market. Beyond simply funding transformational research, ARPA-E is dedicated to the post-research market adoption of those technologies to fuel the economy, create new jobs, reduce energy imports, improve energy efficiency, reduce energy-related emissions, and ensure that the U.S. maintains a technological lead in developing and deploying advanced energy technologies. Funding for each subprogram is as follows:

### ARPA-E Projects (\$273.4 million)

- The ARPA-E Projects program directly supports the program's mission to support transformational research. The program provides funding and commercialization support to research and development programs at the intersection of applied sciences and integrated energy systems. ARPA-E has created a matrix-based organization structure with two intersecting offices. The Applied Science and Technology Office or the "Technology Push" Office will invest in platform technologies that can be integrated into various energy systems. The Integrated Energy Systems Office or "Technology Pull" Office will invest in the integration of these technologies into smart, energy efficient, and cost-effective energy systems that will have direct market impact. This matrix structure will maximize ARPA-E's impact with limited resources and prevent organizational stove piping that could hinder innovation and stifle creative problem solving.

### Program Direction (\$26.6 million)

- Program Direction provides funding for the federal and contractor staff charged with fulfilling the ARPA-E mission. ARPA-E has special hiring authority to bring on Program Directors and other program leadership and is a lean and agile organization able to recruit and rotate the best and brightest minds in energy research fields. Project teams receiving funding from ARPA-E get more than just federal funds; they receive full coordinated support and scrutiny from the ARPA-E team. This support includes: a Program Team to provide technical help and monitor technical progress; an Operations Team to expedite transactions within the constraints of Congressional statute; an Outreach Team to highlight progress to all stakeholders; and a Commercialization Team to accelerate the deployment of technology developed by ARPA-E funded entities.

## Departmental Administration

(dollars in thousands)

	FY 2009	FY 2009	FY 2010	FY 2011	FY 2011 vs. FY 2010	
	Current	Current	Current	Congressional		
	Approp.	Recovery	Approp.	Request	\$	%
Administrative Operations:						
Salaries and Expenses:						
Office of the Secretary						
Program Direction	5,700	4,800	5,864	5,864	—	—
Management Reform	0	0	0	2,000	+2,000	N/A
<i>Subtotal, Office of the Secretary</i>	<i>5,700</i>	<i>4,800</i>	<i>5,864</i>	<i>7,864</i>	<i>+2,000</i>	<i>+34.1%</i>
Chief Financial Officer	43,257	15,000	62,981	62,731	-250	-0.4%
Office of Management	67,790	10,000	78,456	74,783	-3,673	-4.7%
Human Capital Management	31,436	2,800	29,537	27,560	-1,977	-6.7%
Chief Information Officer	115,500	5,700	103,063	102,163	-900	-0.9%
Congressional & Intergovernmental Affairs						
Program Direction	4,700	0	4,826	4,826	—	—
Office of Indian Energy Policy and Programs	1,500	0	5,500	1,500	-4,000	-72.7%
<i>Subtotal, Congressional &amp; Intergovernmental Affairs</i>	<i>6,200</i>	<i>0</i>	<i>10,326</i>	<i>6,326</i>	<i>-4,000</i>	<i>-38.7%</i>
Economic Impact and Diversity	4,400	500	6,671	6,337	-334	-5.0%
General Counsel	31,233	3,200	32,478	36,654	+4,176	+12.9%
Policy and International Affairs	23,000	0	30,253	30,253	—	—
Public Affairs	3,780	0	4,500	4,500	—	—
<i>Subtotal, Administrative Operations</i>	<i>332,296</i>	<i>42,000</i>	<i>364,129</i>	<i>359,171</i>	<i>-4,958</i>	<i>-1.4%</i>
Cost of Work for Others	48,537	0	47,537	48,537	+1,000	+2.1%
<i>Subtotal, Departmental Administration</i>	<i>380,833</i>	<i>42,000</i>	<i>411,666</i>	<i>407,708</i>	<i>-3,958</i>	<i>-1</i>
Other Defense Related Activities						
Funding from Other Defense Activities	-108,190	0	-122,982	-118,836	+4,146	+3.4%
<i>Subtotal, Departmental Administration (gross)</i>	<i>272,643</i>	<i>42,000</i>	<i>288,684</i>	<i>288,872</i>	<i>188</i>	<i>-1</i>
Miscellaneous Revenues						
Revenues Associated with Cost of Work	-48,537	0	-48,537	-48,537	—	—
Other Revenues	-68,780	0	-71,203	-71,203	—	—
<i>Subtotal, Miscellaneous Revenues</i>	<i>-117,317</i>	<i>0</i>	<i>-119,740</i>	<i>-119,740</i>	<i>—</i>	<i>—</i>
<i>Subtotal, Cost of Work/Revenue</i>	<i>-176,970</i>	<i>0</i>	<i>-195,185</i>	<i>-190,039</i>	<i>+5,146</i>	<i>+2.6%</i>
<b>Total, Departmental Administration (net)</b>	<b>155,326</b>	<b>42,000</b>	<b>168,944</b>	<b>169,132</b>	<b>+188</b>	<b>+0.1%</b>

The FY 2011 **Departmental Administration (DA)** budget request is a net \$169.1 million, an increase of \$0.2 million, or .1% above the FY 2010 appropriation. The Departmental Administration (DA) appropriation funds 9 DOE-wide management organizations under Administrative Operations. These organizations support headquarters operations in human resources, administration, accounting, budgeting, program analysis, project management, information management, legal services, life-cycle asset management, workforce diversity, minority economic impact, policy, international affairs, congressional and intergovernmental liaison, and public affairs. Funding for the Office of the Secretary is provided separately from the other administrative functions within the DA appropriation. The DA appropriation also budgets for Cost of Work for Others and receives Miscellaneous Revenues from other sources.

DOE also operates a Working Capital Fund (WCF) within Departmental Administration as a financial tool to improve management of common administration services. The objectives of the WCF are to fairly allocate costs to mission programs; to offer better choices on amount, quality, and sources of services; and to provide flexibility for service providers to respond to customer needs.

## National Nuclear Security Administration Defense Nuclear Nonproliferation

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Nonproliferation and Verification R&D	356,281	0	317,300	351,568	+34,268	+10.8%
Nonproliferation and International Security	150,000	0	187,202	155,930	-31,272	-16.7%
International Nuclear Materials Protection and Cooperation	460,592	0	572,050	590,118	+18,068	+3.2%
Elimination of Weapons-Grade Plutonium Production Program	141,299	0	24,507	0	-24,507	-100.0%
Fissile Materials Disposition	41,774	0	701,900	1,030,713	+328,813	+46.8%
Global Threat Reduction Initiative	404,640	0	333,500	558,838	+225,338	+67.6%
Congressionally Directed Projects	1,903	0	250	0	-250	-100.0%
<b>Subtotal, Defense Nuclear Nonproliferation</b>	<b>1,556,489</b>	<b>0</b>	<b>2,136,709</b>	<b>2,687,167</b>	<b>+550,458</b>	<b>+25.8%</b>
Use of Prior Year Balances (NN)	-11,418	0	0	0	—	—
<b>Total, Defense Nuclear Nonproliferation</b>	<b>1,545,071</b>	<b>0</b>	<b>2,136,709</b>	<b>2,687,167</b>	<b>+550,458</b>	<b>+25.8%</b>

The FY 2011 **Defense Nuclear Nonproliferation** budget request is \$2.7 billion, 25.8% above the FY 2010 level, to accelerate efforts to secure vulnerable nuclear materials around the world, and further the construction of U.S. and Russian facilities to dispose of weapons-grade plutonium. The FY 2011 request provides \$383.9 million as DOE's annual share of U.S. support for Global Partnership against the Spread of Weapons and Materials of Mass Destruction.

### Nonproliferation and Verification R&D (\$351.6 million)

- Develops the next-generation nuclear detection technologies and methods to detect foreign nuclear materials and weapons production.
- The FY 2011 increase is for testing & evaluation of new technologies in support of treaty monitoring and verification at NTS, offset by a reduction to Nuclear Detonation Detection to return to baseline funding after a one-time Congressional increase in FY 2010.

### Nonproliferation and International Security (\$155.9 million)

- Strengthens nonproliferation regimes; promotes foreign compliance with nonproliferation norms and commitments; and reduces or eliminates proliferation programs and stockpiles of sensitive materials.
- Decrease of \$31.3 million primarily due to an estimated reduction of activities in the DPRK.

### International Nuclear Materials Protection and Cooperation (\$590.1 million)

- Increase of \$18.1 million to prevent nuclear terrorism by securing and eliminating vulnerable nuclear weapons and weapons-usable material; and installing detection equipment at border crossings, and Megaports to prevent the illicit transfer of nuclear material.
- Increase reflects selected post-Bratislava Agreement MPC&A upgrades at Rosatom Weapons Complex sites, upgrades to address both outsider and insider threats; and infrastructure sustainability at selected sites.

### Elimination of Weapons Grade Plutonium Production Program (\$0.0 million)

- Works with the Russian Federation to enable the shut down of the last of the three Russian plutonium production reactors in Zheleznogorsk by replacing it with fossil-fueled power plants.
- The \$24.5 million decrease reflects the December 2010 completion of the project.

### Fissile Materials Disposition (\$1,030.7 million)

- Conducts activities in the United States to dispose of surplus weapons-grade fissile materials and supports the disposal of Russian surplus weapons-grade plutonium. Includes;
  - U.S. Surplus Fissile Materials Disposition of \$917.7 million for construction of the MOX Fuel Fabrication Facility, the Waste Solidification Building, and the Pit Disassembly and Conversion Facility (PDCF). The PDCF funding is requested this year in DNN.

- Russian program funding of \$113.0 million provides the first \$100 million of the pledged \$400 million support, and support for the GT-MHR R&D.

**Global Threat Reduction Initiative (\$558.8 million)**

- Prevents the acquisition of nuclear and radiological materials in weapons of mass destruction by reducing and protecting vulnerable nuclear and radiological materials located at civilian sites worldwide. Includes;
  - Nuclear Radiological Material Removal \$355.7 million, an increase of \$210.9 million to support the international effort to secure vulnerable nuclear material over four years ,
  - HEU to LEU reactor conversions of \$119 million increasing reactor conversions from four in FY 2010 to seven in FY 2011 and including support for the production of Molybdenum-99 using LEU, and
  - Nuclear and Radiological Material Protection \$84.1 million.

# Office of Energy Efficiency and Renewable Energy

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Hydrogen Technology	164,638	42,967	174,000	0	-174,000	-100.0%
Hydrogen and Fuel Cell Technologies	0	0	0	137,000	+137,000	N/A
Biomass and Biorefinery Systems R&D	214,245	777,138	220,000	220,000	—	—
Solar Energy	172,414	115,963	247,000	302,398	+55,398	+22.4%
Wind Energy	54,370	106,932	80,000	122,500	+42,500	+53.1%
Geothermal Technology	43,322	393,106	44,000	55,000	+11,000	+25.0%
Water Power	39,082	31,667	50,000	40,488	-9,512	-19.0%
Vehicle Technologies	267,143	109,249	311,365	325,302	+13,937	+4.5%
Building Technologies	138,113	319,186	222,000	230,698	+8,698	+3.9%
Industrial Technologies	88,196	212,854	96,000	100,000	+4,000	+4.2%
Federal Energy Management Program	22,000	22,388	32,000	42,272	+10,272	+32.1%
RE-ENERGYSE (Regaining Our Energy Science and Engineering Edge)	0	0	0	50,000	+50,000	N/A
Facilities and Infrastructure	76,000	258,920	19,000	57,500	+38,500	+202.6%
Advanced Battery Manufacturing	0	1,990,000	0	0	—	—
Alternative Fueled Vehicles	0	298,500	0	0	—	—
Transportation Electrification	0	398,000	0	0	—	—
Information and Communication Efficiency	0	48,647	0	0	—	—
Program Direction	127,620	80,000	140,000	200,008	+60,008	+42.9%
Program Support	18,157	21,890	45,000	87,307	+42,307	+94.0%
Weatherization and Intergovernmental Energy Efficiency and Conservation Block Grants - Competitive	516,000	8,360,500	270,000	385,000	+115,000	+42.6%
Energy Efficiency and Conservation Block Grants, Subtitle E Title V EISA	0	398,000	0	0	—	—
Congressionally Directed Projects	228,803	0	292,135	0	-292,135	-100.0%
<b>Subtotal, Energy Efficiency and Renewable Energy</b>	<b>2,170,103</b>	<b>16,771,907</b>	<b>2,242,500</b>	<b>2,355,473</b>	<b>+112,973</b>	<b>+5.0%</b>
Use of Prior Year Balances and Other Adjustments	-13,238	0	0	0	—	—
<b>Total, Energy Efficiency And Renewable Energy</b>	<b>2,156,865</b>	<b>16,771,907</b>	<b>2,242,500</b>	<b>2,355,473</b>	<b>+112,973</b>	<b>+5.0%</b>

The FY 2011 **Office of Energy Efficiency and Renewable Energy (EERE)** Budget Request is \$2,355.5 million, an increase of \$113 million, or 5.0% above the FY 2010 appropriation. EERE conducts research, development, demonstration and deployment (RDD&D) activities in partnership with industry to advance a diverse supply of energy efficiency and clean power technologies and practices. The FY 2011 budget request continues to support research on pathways that will decrease our Nation's dependence on oil and accelerate development of clean energy use and electricity supply options.

## Advanced Fuels and Vehicles (\$545.3 million)

- Advances essential RD&D projects to achieve cost competitive, commercial scale cellulosic ethanol production by 2012; and
- Accelerates RD&D on Plug-in Hybrid Electric Vehicles (PHEVs) and drive-train electrification to reduce petroleum dependency and make our Nation's vehicles more efficient, facilitating the domestic production of more than 500,000 PHEVs per year by 2015.

## Clean Generation and Renewable Power (\$657.4 million)

- Develops and demonstrates a diverse portfolio of renewable energy technology solutions to meet growing national electricity generation needs;
- Invests in solar power to make photovoltaics and concentrated solar power widely available and commercially cost-competitive with conventional electricity by 2015;
- Supports a refocused geothermal RD&D program to conduct enhanced geothermal systems R&D;
- Pursues water power technologies as part of EERE's R&D portfolio; and
- Continues to research and develop critical fuel cell technologies that enable near term commercialization pathways.

**Energy Efficiency (\$758.0 million)**

- Reduces energy consumption and transforms the carbon footprint of the built environment through the development of technologies that will enable cost competitive retrofits today and zero energy buildings by 2020; and
- Supports the advancement of clean and efficient domestic industrial technologies and processes.

**RE-ENERGYSE (\$50.0 million)**

- RE-ENERGYSE encourages students to pursue careers in science, engineering, and entrepreneurship related to clean energy. In FY 2011, funding will support the Solar Decathlon; development of training programs at community colleges and other training centers; and, fellowships, internships, post-doctoral opportunities and the development of interdisciplinary masters programs in the area of clean energy.

**Program Direction, Facilities and Support (\$344.8 million)**

- The FY 2011 request provides the federal staffing resources and associated costs required to provide overall direction and execution of EERE, as well as oversight of ongoing projects. Funding will support facilities at the National Renewable Energy Laboratory; cross-cutting analyses and initiatives on impacts of EERE technologies and barriers to marketing EERE technologies; and international activities to increase coordination and best practice sharing with other nations.



## Energy Information Administration

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
National Energy Information System	110,595	0	110,595	128,833	+18,238	+16.5%
<b>Total, Energy Information Administration</b>	<b>110,595</b>	<b>0</b>	<b>110,595</b>	<b>128,833</b>	<b>+18,238</b>	<b>+16.5%</b>

The FY 2011 **Energy Information Administration (EIA)** budget request is \$128.8 million, an increase of \$18.2 million, or 16.4% above the FY 2010 appropriation. EIA conducts a comprehensive data collection program that covers the full spectrum of energy sources, end uses, and energy flows; generates short- and long-term domestic and international energy projections; and performs informative energy analyses. EIA disseminates its data products, analyses, reports, and services to customers and stakeholders primarily through its website.

# Office of Environmental Management

(dollars in thousands)

	FY 2009	FY 2009	FY 2010	FY 2011	FY 2011 vs. FY 2010	
	Current	Current	Current	Congressional		
	Approp.	Recovery	Approp.	Request	\$	%
Defense Environmental Cleanup	5,656,345	5,127,000	5,642,331	5,588,039	-54,292	-1.0%
Non-Defense Environmental Cleanup	261,819	483,000	254,673	225,163	-29,510	-11.6%
Uranium Enrichment D&D Fund	535,503	390,000	573,850	730,498	+156,648	+27.3%
Uranium Enrichment D&D Fund Discretionary Payments	-463,000	0	-463,000	-496,700	-33,700	-7.3%
<b>Total, Environmental Management</b>	<b>5,990,667</b>	<b>6,000,000</b>	<b>6,007,854</b>	<b>6,047,000</b>	<b>+39,146</b>	<b>+0.7%</b>

*\*The Defense Environmental Cleanup/Uranium Enrichment Decontamination and Decommissioning Fund accounts reflect correctly the Administration's policy for the Department's FY 2011 request. These accounts include \$47 million that was inadvertently omitted from the official Budget request. A budget amendment is expected to be forthcoming to formally correct for this error.*

The FY 2011 **Office of Environmental Management (EM)** budget request totals \$6.0 billion, an increase of \$39 million from the FY 2010 appropriation. The program scope includes cleanup of the environmental legacy from 50 years of nuclear weapons production and government-sponsored nuclear energy research at sites around the country. The FY 2011 request places a priority on balancing risk reduction and regulatory requirements, while continuing the Department's commitment to the highest level of safety performance standards. EM's objective is to reduce the legacy footprint 40% to 50% by the end of FY 2011 and 80% to 90% by the end of FY 2015. The FY 2011 request continues EM's risk reduction strategy and focuses on footprint reduction by leveraging additional progress enabled by the American Reinvestment and Recovery Act. The FY 2011 request reflects the following priorities: essential activities to maintain a safe and secure posture in the EM complex; radioactive tank waste stabilization, treatment, and disposal; spent nuclear fuel storage, receipt and disposition; special nuclear material consolidation, processing, and disposition; high priority groundwater remediation; transuranic and mixed/low level waste disposition; soil and groundwater remediation; excess facilities deactivation and decommissioning.

## Hanford Site/Richland (\$1,042 million)

- Includes funding for deactivation, decommissioning, and demolition of facilities and structures in the 100 and 300 Areas within the **River Corridor Closure Project**, including acceleration of **K East Reactor** Interim Safe Storage and disposition activities. Decreases reflect completion of 200 Area pump-and-treat system and completion of shipment of nuclear materials from the **Plutonium Finishing Plant**. Includes \$69M for Safeguards and Security.

## Hanford Site/River Protection (\$1,158 million)

- Provides \$740 million for construction of the **Waste Treatment and Immobilization Plant (WTP)**. Continues safe management of underground tanks and waste retrievals from single shell tanks. The request also supports scientific applied research and technology development activities related to advanced solutions for treatment of radioactive waste including pre-treatment processes, tank structural integrity, and advanced retrieval technologies.

## Idaho National Laboratory (\$412 million)

- Provides for completion of the **Sodium Bearing Waste Treatment Facility**. The decrease reflects acceleration of remote-handled transuranic waste shipments to the waste Isolation Pilot Plant and a scope of work included in the American Recovery and Reinvestment Act.

## Oak Ridge Reservation (\$450 million)

- Includes treatment and disposal of defense-funded decommissioning, legacy waste management activities, including ongoing operation of the **Environmental Management Waste Management Facility**, processing of contact-and remote-handled waste at the **Transuranic Waste Treatment Facility**, and continuing demolition of the **K-25 process building**. Reflects ongoing facility design activities for the U-233 down-blending building, the start of K-33 demolition and work scope included in the American Recovery and Reinvestment Act. Includes \$17M for Safeguards and Security at ETPP

## Paducah Gaseous Diffusion Plant (\$145 million)

- Supports start of operations **Depleted Uranium Hexafluoride Conversion Facility** and the packaging of 7,750 metric tons of depleted uranium, continued landfill operations, pump and treat operations, and completion of the remediation of the surface water operable units and three soils facilities. Reflects completion of groundwater monitoring systems in the C-400 area and other site groundwater pump-and-treat systems. Includes \$8M for Safeguards and Security.

#### **Portsmouth Gaseous Diffusion Plant (\$479 million)**

- Increase supports acceleration of decontamination and decommissioning of enrichment facilities. Reflects contract award for decontamination and decommissioning services and continued disposal of low-level waste. Supports startup of **Depleted Uranium Hexafluoride Conversion Facility** operations at Portsmouth and the packaging of 9,800 metric tons of depleted uranium. Includes \$16M for Safeguards and Security.

#### **Savannah River Site (\$1,342 million)**

- Supports Savannah River Site's critical role in the Department's efforts to consolidate spent nuclear fuel and nuclear materials across the complex, and the management of spent nuclear fuel and nuclear materials. The request continues receipt of plutonium from other DOE sites at the Savannah River Site, safe storage of nuclear materials in K Area, and continued operations in the **H Canyon/H-B Line** to process legacy materials and aluminum-clad spent nuclear fuel and NNSA-funded efforts to blend highly enriched uranium to low enriched uranium. Provides for vitrification of tank waste at the Defense Waste Processing Facility and continuing construction of the **Salt Waste Processing Facility**. Includes \$132M for Safeguards and Security.

#### **Waste Isolation Pilot Plant/Carlsbad (\$225 million)**

- Supports receipt of 21 contact-handled and 5 remote-handled shipments of transuranic waste per week. Reflects ongoing work of Centralized Characterization Project waste characterization activities at Oak Ridge, Idaho, and Los Alamos. Includes \$5M for Safeguards and Security.

#### **West Valley Demonstration Project (\$60 million)**

- Supports continued processing and disposal of waste generated from the decontamination and decommissioning activities at the Main Process Plant Building, and processing of transuranic (TRU) and high-activity wastes through the **Remote-Handled Waste Facility**. The decrease reflects a scope of work included in the American Recovery and Reinvestment Act. Includes \$1.9M for Safeguards and Security.

#### **Closure Sites (\$6 million)**

- Provides for post closure administration at Rocky Flats (litigation, pensions, medical benefits, etc.), and other ongoing litigation liabilities, contract closeout.

#### **National Nuclear Security Administration Sites (\$279 million)**

- Reflects completion of the installation of monitoring well networks, and the completion of decontamination and decommissioning of activities at Technical Area 21 Delta Prime West and Technical Area 54 at **Los Alamos National Laboratory**, operation of the low-level waste disposal facility at the **Nevada Test Site**, and acceleration of the North Field land remediation and completion of some demolition of nuclear facility Buildings G2 and H2 at the **Separations Process Research Unit**.

#### **Technology Development and Deployment (\$32 million)**

- Supports applied research and technology development in areas such as tank waste, soil and groundwater remediation and deactivation and decommissioning.

#### **Program Direction (\$324 million)**

- Provides funding for salaries, benefits, travel, training, support services, and other related expenses for 1,674 FTEs, 1,133 of which are located in field offices, 351 in Headquarters, and 190 FTEs are assigned to the EM Consolidated Business Center. The FTEs support initiative to improve project management and contract management and to provide for succession planning as the number of retirement-eligible personnel increases.

## Office of Fossil Energy

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Fossil Energy Research And Development	863,104	3,398,607	672,383	586,583	-85,800	-12.8%
Clean Coal Technology	0	0	0	0	—	—
Naval Petroleum & Oil Shale Reserves	19,099	0	23,627	23,614	-13	-0.1%
Strategic Petroleum Reserve	226,586	0	243,823	138,861	-104,962	-43.0%
Strategic Petroleum Reserve - Petroleum Account	-21,586	0	0	0	—	—
Northeast Home Heating Oil Reserve	9,800	0	11,300	11,300	—	—
<b>Total, Fossil Energy</b>	<b>1,097,003</b>	<b>3,398,607</b>	<b>951,133</b>	<b>760,358</b>	<b>-190,775</b>	<b>-20.1%</b>

The FY 2011 **Office of Fossil Energy (FE)** budget request is \$760.4 million, a decrease of \$190.8 million, or 20.1% below the FY 2010 appropriation. FE manages multiple programs which are described below.

### **Fossil Energy Research and Development (FER&D) (\$586.6M)**

- The coal R&D program (\$403.9M) continues the research and development of carbon capture and storage technologies. R&D funding is relatively flat compared to the 2010 request, and demonstrations (such as the Clean Coal Power Initiative) will be funded under the American Reinvestment and Recovery Act. R&D includes large-scale geologic storage demonstrations which will inject carbon dioxide in a variety of geologic formations.

### **The American Recovery and Reinvestment Act (ARRA) (\$3.4 B)**

- ARRA provides funds for Fossil Energy Research and Development, focused on Carbon Capture and Storage (CCS). Specific programs funded by the ARRA include: Fossil Energy Research and Development; the Clean Coal Power Initiative Round III; Industrial Carbon Capture and Storage Applications; Geologic Site Characterizations; and Geologic Sequestration Research and Training.

### **Oil and Natural Gas (\$0.0 M)**

- No funding is requested in FY 2011.

### **Strategic Petroleum Reserve (SPR) (\$138.9M)**

- The SPR is vital to ensuring U.S. energy security; this stockpile of crude oil provides National and economic security against foreign and domestic disruptions to critical oil supplies. The FY 11 Budget continues a SPR program that is environmentally responsible and fully responsive to the needs of the Nation and the public. The request proposes use of prior year balances for a billion barrel expansion at Richton, MS site to partially fund required operations and management activities.

### **Northeast Home Heating Oil Reserve (NEHHOR) (\$11.3M)**

- NEHHOR continues to maintain a 2M barrel reserve of home heating oil at three locations in the U.S. Northeast and provides funding for the award of new storage contracts in late FY 2011.

### **Naval Petroleum and Oil Shale Reserve (NPOSR) (\$23.6M)**

- NPOSR continues environmental remediation and equity finalization at NPR-1; NPR-3 operation as a stripper field; the Rocky Mountain Oilfield Testing Center as a field demonstration facility; and environmental remediation of facilities that are no longer useful for either field testing projects or for future production operations.

## Other Defense Activities Health, Safety and Security

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Health, Safety and Security	346,874	0	337,757	356,471	+18,714	+5.5%
Program Direction	99,597	0	104,125	107,740	+3,615	+3.5%
Congressionally Directed Projects	999	0	2,000	0	-2,000	-100.0%
<b>Total, Health, Safety and security</b>	<b>447,470</b>	<b>0</b>	<b>443,882</b>	<b>464,211</b>	<b>+20,329</b>	<b>+4.6%</b>

The FY 2011 **Health, Safety and Security** request is \$464.2 million, an increase of \$20.3, or 4.6% percent over the FY 2010 enacted funding level to maintain a safe and secure work environment for all Federal and contractor employees; to ensure that its operations preserve the health, safety, and security of the surrounding communities; and protect the national security and other assets entrusted to the Department.

### Health and Safety (\$75.1 million)

- Health and Safety Activities ensure that DOE workers, the public, and the environment are adequately protected from the nuclear, chemical, and industrial hazards posed by DOE operations while striving to be current with worldwide technologies, knowledge, and experience.
- Program is roughly constant with a slight decrease in funding due to a reduced need for DOE operational data from the Department of Labor in the Employee Compensation program, and the Russian Health Project moving from data collection to reporting writing activities.

### Security (\$281.3 million)

- Security Activities provide for security policy development, interpretation, and guidance; the development and conduct of security and safety training; the deployment of new security technologies; and development and management of the Department's classification, declassification, and controlled information program.
- The funding increase is a result of increases in specialized security activities; an increase in the number and cost of access authorization investigations for DOE Headquarters and other U.S. government personnel; offset by a decrease in security technology systems development and deployment based on a shrinking nuclear footprint and the value of systems previously deployed.

### Program Direction (\$107.7 million)

- Program Direction provides the federal staffing, support services, and other resources and associated costs. Work includes the Independent Oversight activity, which provides accurate, comprehensive analysis of the effectiveness of the implementation of DOE nuclear safeguards and security; cyber security; emergency management; and environment, safety and health programs. Also provides liaison with the Defense Nuclear Facilities Safety Board.
- Increase reflects the cost of living adjustments for the Federal workforce; an increase in executive protection travel; and increased independent oversight activities to implement nuclear safety enhancements in response to the Government Accountability Office.

## Office of Inspector General

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Office of Inspector General	51,927	15,000	51,927	42,850	-9,077	-17.5%
<b>Total, Office Of The Inspector General</b>	<b>51,927</b>	<b>15,000</b>	<b>51,927</b>	<b>42,850</b>	<b>-9,077</b>	<b>-17.5%</b>

The FY 2011 **Office of Inspector General (IG)** budget request is \$42.9 million, a decrease of \$9.1 million, or 17.4% below the FY 2010 appropriation. The IG promotes the effective, efficient, and economical operation of the programs and operations of DOE, including the National Nuclear Security Administration and the Federal Energy Regulatory Commission, through audits, inspections, investigations and other reviews, while detecting and preventing fraud, waste, abuse, and violations of law. Additionally, in FY 2009, the OIG received \$15 million from the American Recovery & Reinvestment Act. These funds will be used to provide effective oversight of the Department's Recovery Act programs, grants and projects in an effort to protect taxpayer interests.

## Office of Legacy Management

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Other Defense Activities						
Legacy Management	174,397	0	177,618	176,122	-1,496	-0.8%
Program Direction	11,584	0	12,184	12,504	+320	+2.6%
Congressionally Directed Projects	0	0	1,000	0	-1,000	-100.0%
<b>Total, Office Of Legacy Management</b>	<b>185,981</b>	<b>0</b>	<b>190,802</b>	<b>188,626</b>	<b>-2,176</b>	<b>-1.1%</b>

The FY 2011 **Office of Legacy Management (LM)** budget request is \$188.6 million, a decrease of \$2.2 million, or 1.1%, below the FY 2010 appropriation. The request continues to ensure sustainable protection of human health and the environment after DOE cleanup is completed and manages post-closure responsibilities. LM is responsible for long-term stewardship activities (e.g., groundwater monitoring, disposal cell maintenance, records management, and management of natural resources) at sites where active remediation has been completed. In addition, at some sites the program includes management and administration of pension and benefit continuity for contractor retirees. The proposed budget includes:

### Other Defense Activities: Legacy Management (\$188.6M)

- **Legacy Management (\$176.1 million):** Funding focuses on carrying out all post closure long-term surveillance and maintenance responsibilities at 85 sites and pensions and benefits claims for former contractor employees at 7 sites. In addition, funds support all other legacy management functions including the reuse and property management of DOE sites, archiving records and the Environmental Justice program.
- **Program Direction (\$12.5 million):** FY 2011 funding supports salaries/benefits, travel, support services, other related expenses and continues to administer its programs consistent with its delegation as a High Performing Organization.

## Loan and Loan Guarantee Programs

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Title 17 - Innovative Technology Loan Guarantee Program						
Administrative Operations	19,880	0	26,000	38,000	+12,000	+46.2%
Administrative Operations, Offsetting Collections	-19,880	0	-26,000	-38,000	-12,000	-46.2%
Cost of Loan Guarantees	0	0	0	500,000	+500,000	N/A
<i>Total, Title 17 - Innovative Technology Loan Guarantee</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>500,000</i>	<i>+500,000</i>	<i>N/A</i>
Section 1705 Temporary Loan Guarantee Program						
Cost of Loan Guarantees	0	3,935,000	0	0	---	---
Administrative Operations	0	25,000	17,000	20,000	+3,000	+17.6%
Administrative Operations, Offsetting Collections	0	0	-17,000	-20,000	-3,000	-17.6%
<i>Total, Section 1705 Temporary Loan Guarantee Program</i>	<i>0</i>	<i>3,960,000</i>	<i>0</i>	<i>0</i>	<i>---</i>	<i>---</i>
<b>Total, Innovative Technology Loan Guarantee Program</b>	<b>0</b>	<b>3,960,000</b>	<b>0</b>	<b>500,000</b>	<b>+500,000</b>	<b>N/A</b>

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Direct Loan Subsidy Costs	7,500,000	0	0	0	---	---
Administrative Expenses	10,000	10,000	20,000	9,998	-10,002	-50.0%
<b>Total, Advanced Technology Vehicles Manufacturing Loan Program</b>	<b>7,510,000</b>	<b>10,000</b>	<b>20,000</b>	<b>9,998</b>	<b>-10,002</b>	<b>-50.0%</b>

The FY 2011 Budget Request for the **Title XVII Innovative Technology Loan Guarantee Program** is \$500.0 million in credit subsidy costs to support renewable energy systems and efficient end-use energy technology projects and an additional \$36.0 billion in loan guarantee authority to support nuclear power projects. The Loan Guarantee program is also requesting \$58 million for administrative expenses to operate the office and support personnel and associated costs. This request will be offset by collections. The FY 2011 Budget Request for the **Advanced Technology Vehicles Manufacturing Loan Program (ATVM)** is \$10.0 million for administrative expenses. DOE is not seeking additional appropriations for credit subsidy costs in FY 2011.

Section 1703 of EPLAct05 authorizes the Department to provide loan guarantees for renewable energy systems, advanced nuclear power facilities, advanced fossil energy technologies, energy efficiency technologies, and many other types of projects. These projects must avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; employ new or significantly improved technologies compared to commercial technologies in service in the United States at the time the guarantee is issued; and offer a reasonable prospect of repayment of the principal and interest on the guaranteed obligation.

The ATVM Loan Program was authorized under Section 136 of the Energy Independence and Security Act of 2007 and provides direct loans to eligible automobile manufacturers and component suppliers for projects that reequip, expand, and establish manufacturing facilities in the United States. The program will produce light-duty vehicles and components for such vehicles, and provide meaningful improvements in fuel economy performance beyond certain specified levels. Section 136 also allows these grants and loans to cover engineering integration costs associated with such projects.

### Renewable Energy Systems and Efficient End Use Energy Technology Projects

- The \$500 million request for loan guarantee credit subsidy costs will support an estimated \$3 to \$5 billion in eligible loans for innovative renewable energy systems and efficient end-use energy technology projects.
- Innovative renewable energy projects will be increasingly sought as Federal, state, and regional actions and financial incentives affecting the deployment of clean energy technologies and renewable energy portfolio standards are implemented nationwide.

### Nuclear

- The request for \$36 billion in loan guarantee authority for nuclear power projects in FY 2011 will support the near-term deployment of new plants in support of clean energy goals and demonstrate that the factors



responsible for financing risk premiums are manageable, clearing the way to affordable private sector financing as quickly as possible.

#### **Administrative Operations**

- The \$58 million request to support administrative operations of the Innovative Technology Loan Guarantee program and the \$10 million request to support administrative operations of the ATVM program allows Department meets statutory requirements and implements effective management and oversight of its loan guarantee activities. Program funding supports federal staff and associated costs as well as the procurement of outside expertise in areas such as finance, project engineering, legal and commercial market assessment.

#### **Accomplishments to Date**

- Since inception, the Innovative Technology Loan Guarantee Program has issued eight competitive solicitations. The program has made four conditional commitments totaling \$839 million.
- The ATVM program has issued five conditional commitments totaling \$8.5 billion.

# Office of Nuclear Energy

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Nuclear Energy Enabling Technologies	0	0	0	99,300	+99,300	N/A
Integrated University Program	5,000	0	5,000	0	-5,000	-100.0%
RE-ENERGYSE	0	0	0	5,000	+5,000	N/A
Reactor Concepts RD&D	0	0	0	195,000	+195,000	N/A
Generation IV Nuclear Energy Systems	178,649	0	220,137	0	-220,137	-100.0%
Nuclear Power 2010	177,500	0	105,000	0	-105,000	-100.0%
Nuclear Hydrogen Initiative	7,343	0	0	0	—	—
Advanced Fuel Cycle Initiative	142,652	0	0	0	—	—
Fuel Cycle Research and Development	0	0	136,000	201,000	+65,000	+47.8%
International Nuclear Power Programs	0	0	0	3,000	+3,000	N/A
Radiological Facilities Management	66,146	0	72,000	66,818	-5,182	-7.2%
Idaho Facilities Management	140,000	0	173,000	162,482	-10,518	-6.1%
Idaho Sitewide Safeguards and Security	78,811	0	0	0	—	—
Program Direction	73,000	0	73,000	91,452	+18,452	+25.3%
Transfer from State Department	3,300	0	0	0	—	—
Congressional Directed Projects	2,854	0	2,500	0	-2,500	-100.0%
<b>Subtotal, Nuclear Energy</b>	<b>875,255</b>	<b>0</b>	<b>786,637</b>	<b>824,052</b>	<b>+37,415</b>	<b>+4.8%</b>
Adjustments:						
Use of Prior Year Balances	-5,000	0	0	0	—	—
Funding from Other Defense Activities	-78,811	0	0	0	—	—
<b>Total, Nuclear Energy</b>	<b>791,444</b>	<b>0</b>	<b>786,637</b>	<b>824,052</b>	<b>+37,415</b>	<b>+4.8%</b>
Other Defense Activities						
Defense-Related Activities	78,811	0	83,358	88,200	+4,842	+5.8%
Mixed Oxide Fuel Fabrication Facility	487,008	0	0	0	—	—
<b>Total, Other Defense Activities</b>	<b>565,819</b>	<b>0</b>	<b>83,358</b>	<b>88,200</b>	<b>+4,842</b>	<b>+5.8%</b>
<b>Total, Office of Nuclear Energy</b>	<b>1,357,263</b>	<b>0</b>	<b>869,995</b>	<b>912,252</b>	<b>+42,257</b>	<b>+4.9%</b>

The FY 2011 **Office of Nuclear Energy (NE)** Budget Request is \$912.3 million, an increase of \$42.3 million, or 4.9% above the FY 2010 appropriation. NE conducts research and development on nuclear energy generation, security, materials, systems, safety, and waste management technologies and tools, and operates and maintains nuclear infrastructure in a safe and compliant manner to support achievement of national energy, climate, and non-proliferation goals.

## Reactor Concepts Research, Development, and Demonstration (\$195.0 million)

- This program supports research and development for a diverse set of advanced fission power systems capable of producing electricity (MWe) and, in the case of the Next Generation Nuclear Plant, generating process heat (BTUs) sustainably and economically.
- Reactor concepts include Small Modular Reactors, the Next Generation Nuclear Plant, and other advanced reactor concepts. R&D activities will also form the scientific basis for extending the life of the current fleet of nuclear plants.

## Fuel Cycle Research and Development (\$201.0 million)

- This research and development program supports long-term, science-based research and development of nuclear fuel and waste management technologies that will enable a safe, secure, and economic fuel cycle.
- NE will lead future waste management activities for the Department, including providing support to the planned Blue Ribbon Commission.

## Nuclear Energy Enabling Technologies (\$99.3 million)

- This program investigates crosscutting technologies and transformative breakthroughs across a broad spectrum of areas with applicability to multiple reactor concepts and fuel cycle approaches. Within this

program, activities will be carried out through directed research projects, as well as through investigator-initiated projects selected through open, competitive solicitations.

- The Modeling and Simulation Energy Innovation Hub is a prime example of the type of crosscutting, transformative activity that will enhance many research areas within NE.

#### **RE-ENERGYSE (\$5.0 million)**

- RE-ENERGYSE encourages students to pursue careers in science, engineering, and entrepreneurship related to clean energy. In FY 2011, funding will support competitively-selected, merit-based one-year undergraduate scholarships and three-year graduate degree fellowships to M.S. and Ph.D. students enrolled in nuclear science & engineering, and related fields (e.g., radiochemistry) at U.S. universities.

#### **International Nuclear Energy Cooperation (\$3.0 million)**

- The International Nuclear Energy Cooperation program helps ensure the safe and secure deployment of civilian nuclear power world-wide by supporting officially approved international agreements and other relevant U.S. international commitments in civilian nuclear energy matters. These activities will complement on-going international collaborations on reactor and fuel cycle-related R&D carried out within NE's technical programs.

#### **Radiological Facilities Management (\$66.8 million)**

- The request maintains important DOE nuclear technology facilities in a safe, secure, environmentally compliant and cost-effective manner.
- The FY 2011 request includes \$15 million, as part of a 50/50 cost share project with NASA to begin reestablishing domestic capability to produce Plutonium (Pu)-238 for use in radioisotope power systems for NASA missions and national security applications. NASA uses Pu-238-based power systems where other power sources, such as batteries, fuel cells, and solar technologies, are not economical or technologically viable.

#### **Idaho Facilities Management (\$162.5 million)**

- The FY 2011 request supports Idaho National Laboratory (INL) site-wide infrastructure used to ensure the Department's nuclear energy research and development facilities are maintained and operated to support national priorities. Key activities conducted under this program include ensuring that all NE facilities meet essential safety and environmental requirements, and managing all special nuclear materials contained in these facilities.

#### **Idaho Site-Wide Safeguards and Security (\$88.2 million)**

- The FY 2011 request protects DOE interests from theft, diversion, sabotage, espionage, unauthorized access, compromise, and other hostile acts which could adversely impact national security, program continuity, the health and safety of INL employees, the public, or the environment.

#### **Program Direction (\$91.5 million)**

- The FY 2011 request provides the federal staffing resources and associated costs required to provide overall direction and execution of the Department's Nuclear Energy program, including funding for oversight of Nuclear Waste Policy Act requirements.

## National Nuclear Security Administration Naval Reactors

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Naval Reactors Development	793,600	0	908,333	1,030,486	+122,153	+13.4%
Program Direction	34,454	0	36,800	40,000	+3,200	+8.7%
<b>Total, Naval Reactors</b>	<b>828,054</b>	<b>0</b>	<b>945,133</b>	<b>1,070,486</b>	<b>+125,353</b>	<b>+13.3%</b>

The FY 2011 **Naval Reactors** request is \$1.1 billion, an increase of \$125.4 million over the FY 2010 appropriation to support several important new initiatives: design work for the OHIO-class ballistic missile submarine replacement, refueling of the S8G land-based nuclear prototype, and the recapitalization of spent nuclear fuel infrastructure in Idaho. The Naval Reactors (NR) program is responsible for all naval nuclear propulsion work, beginning with reactor technology development, continuing through construction, testing, operation, maintenance, and ultimately, reactor plant disposal.

### Naval Reactor Development

#### Operations and Maintenance (\$997.9 million)

- FY 2011 increases reflect design work for the reactor plant for the OHIO-class ballistic missile submarine replacement for significant improvements in life-cycle costs, advanced power capabilities, and increased endurance,
- New core development in support of refueling efforts for a land-based testing platform prototype for new naval reactor technologies, and
- Conceptual design efforts in support of recapitalization of the Program's spent nuclear fuel infrastructure.
- Ongoing work includes the development and delivery of the next-generation reactor for the VIRGINIA-class submarine, and design of the next-generation reactor for the GERALD R. FORD aircraft carrier.

#### Construction (\$32.6 million)

- Overall increase supports line item construction funding for the Expended Core Facility M-290 Receiving and Discharge Station at NRF (+\$15.5),
- Offset by decreases for the Materials Research and Technology Complex at the Bettis Atomic Power Laboratory (-\$9.0), the Production Support Complex at NRF (-\$2.4), infrastructure upgrades at the Naval Reactors Facility (NRF) in Idaho (-\$.2), infrastructure upgrades at Knolls Atomic Power Laboratory (-\$1.0) and KSO security upgrades (-\$1.1).

### Program Direction (\$40.0 million)

- Increase reflects inflationary-based salary adjustments and achievement of the FY 2011 target of 217 FTEs, an increase of 2 FTEs, to support oversight of new projects and escalation of travel costs.

# Office of Electricity Delivery and Energy Reliability

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Research and Development	83,119	0	124,900	144,293	+19,393	+15.5%
Operations and Analysis	11,451	0	0	0	—	—
Permitting, Siting and Analysis	0	0	6,400	6,400	—	—
Infrastructure Security & Energy Restoration	0	0	6,187	6,188	+1	+0.0%
Program Direction	21,180	22,500	21,420	29,049	+7,629	+35.6%
Congressionally Directed Projects	19,648	0	13,075	0	-13,075	-100.0%
Smart Grid Investment Program (EISA 1306)	0	3,375,700	0	0	—	—
Smart Grid Regional and Energy Storage Demos	0	700,000	0	0	—	—
Workforce Training	0	100,000	0	0	—	—
Interoperability Standards and Framework	0	10,000	0	0	—	—
Interconnection Planning and Analysis	0	80,000	0	0	—	—
State Assistance on Electricity Policy	0	50,000	0	0	—	—
Enhancing State and Local Gov. Energy Assurance	0	55,000	0	0	—	—
Other Recovery Act	0	102,512	0	0	—	—
<b>Subtotal, Electricity Delivery &amp; Energy Reliability</b>	<b>135,398</b>	<b>4,495,712</b>	<b>171,982</b>	<b>185,930</b>	<b>+13,948</b>	<b>+8.1%</b>
Use of Prior Year Balances and Other Adjustments	-769	0	0	0	—	—
<b>Total, Office Electricity Delivery &amp; Energy Reliability</b>	<b>134,629</b>	<b>4,495,712</b>	<b>171,982</b>	<b>185,930</b>	<b>+13,948</b>	<b>+8.1%</b>

The FY 2011 Office of **Electricity Delivery and Energy Reliability (OE)** budget request is \$185.9 million, \$14.0 million more than the FY 2010 Appropriation, which reflects increased investments in research and development, particularly in energy storage, advanced grid modeling and power electronics.

The FY 2011 request supports the efforts of the Research and Development program; the Permitting, Siting, and Analysis program; and the Infrastructure Security and Energy Restoration program to modernize the electric grid, enhance security and reliability of the energy infrastructure, and facilitate recovery from disruptions to the energy supply. The proposed budget provides a balanced and diverse portfolio of activities, including:

## Research and Development (\$144.3 million)

- In FY 2011 the research and development program's portfolio comprises four subprograms:
  - **Clean Energy Transmission and Reliability (\$35.0 million):** Supports the development of transmission-related technologies that will improve grid reliability, efficiency, and security. Continues expansion of phasor measurement unit (PMU) capabilities and initiates the Advanced Modeling Grid Research activity, in developing the analytical tools that will use the new data captured by the PMU-based networks and Smart Grid technologies deployed on the grid. Supports the completion of High Temperature Superconductivity wire development and phase-out of the program.
  - **Smart Grid Research and Development (\$39.3 million):** Continues efforts to achieve a coordinated deployment of Smart Grid technologies, including the development of Smart Grid functions for renewable systems, plug-in hybrid electric vehicles, and other end-use applications. Supports a new activity, Power Electronics, which will engage universities in developing solid-state devices such as wide-bandgap semiconductors, improving grid performance and efficiency while reducing costs.
  - **Energy Storage (\$40.0 million):** Focuses on development and deployment of storage devices, through research, bench testing and extensive field testing in collaboration with utilities, with a goal of moving technologies towards commercialization. Initiates analysis on new methods for identifying promising locations for pumped storage and Compressed Air Energy Storage (CAES) systems. Accelerates research into prototype electrode development and testing for advantages and challenges for each new battery material. Expands research into integration of renewable energy resources into the grid.
  - **Cyber Security for Energy Delivery Systems (\$30.0 million):** Continues the test bed assessment of SCADA systems; development of advanced cyber security technologies, including trust anchors to build trustworthy networks from untrusted components; development of modeling and simulation tool to evaluate risk of newly discovered vulnerabilities, and research to develop a resilient infrastructure for Smart Grid that can withstand cyber attacks.

**Permitting, Siting and Analysis (\$6.4 million)**

- Supports grid modernization by providing technical and financial assistance to States, regional entities, and other Federal agencies to develop and improve policies, market mechanisms, State laws, and programs that facilitate the development of the electricity infrastructure required to access clean energy resources; issues permits for international transmission lines and electricity exports; and implements other responsibilities under the Energy Policy Act of 2005 such as recommending energy corridor designations.

**Infrastructure Security and Energy Reliability (\$6.2 million)**

- Supports efforts to enhance the security of our Nation's critical energy infrastructure from all threats and hazards. Continues infrastructure reliability activities including advancements in power outage and restoration visualization and modeling, assistance to states and local government emergency response activities, and application of a robust systems analysis to identify critical assets and interdependencies.

**Program Direction (\$29.1 million)**

- Supports 82 federal FTEs, as well as 31 indirect FTEs at the National Energy Technology Laboratory that support OE programs. The increase primarily reflects an additional 29 FTEs associated with the ongoing management of Recover Act projects.

## Office of Hearings and Appeals

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Other Defense Activities						
Program Direction	6,603	0	6,444	6,444	---	---
<b>Total, Hearing and Appeals</b>	<b>6,603</b>	<b>0</b>	<b>6,444</b>	<b>6,444</b>	<b>---</b>	<b>---</b>

The FY 2011 **Office of Hearings and Appeals (OHA)** budget request is \$6.4 million, the same as the FY 2010 appropriation. OHA is responsible for all DOE adjudicative processes except those administered by the Federal Energy Regulatory Commission. The program's jurisdiction includes Freedom of Information Act and Privacy Act appeals, evidentiary hearings to determine an employee's eligibility for a security clearance, appeals and initial agency decisions on whistleblower complaints, and requests for exception from DOE regulations and orders, such as exceptions from the appliance efficiency regulations.

# Power Marketing Administrations

	(dollars in thousands)					
	FY 2009	FY 2009	FY 2010	FY 2011	FY 2011 vs. FY 2010	
	Current	Current	Current	Congressional	\$	%
	Approp.	Recovery	Approp.	Request		
<b>Southeastern Power Administration</b>						
Southeastern Power Administration	70,942	0	92,866	96,649	+3,783	+4.1%
Less Alternative Financing (for PPW)/Offsetting Collection	-63,522	0	-92,866	-96,649	-3,783	-4.1%
(Cost of Implementing Reclassification of Receipts, Non-Add)	0	0	7,638	0	-7,638	-100.0%
<b>Subtotal, Southeastern Power Administration</b>	<b>7,420</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>—</b>	<b>—</b>
<b>Southwestern Power Administration</b>						
Southwestern Power Administration	89,186	0	94,944	99,130	+4,186	+4.4%
Less Alternative Financing/Offsetting Collection	-60,772	0	-81,868	-86,431	-4,563	-5.6%
(Cost of Implementing Reclassification of Receipts, Non-Add)	0	0	31,868	0	-31,868	-100.0%
<b>Subtotal, Southwestern Power Administration</b>	<b>28,414</b>	<b>0</b>	<b>13,076</b>	<b>12,699</b>	<b>-377</b>	<b>-2.9%</b>
<b>Western Area Power Administration</b>						
Western Area Power Administration	901,634	10,000	899,317	912,890	+13,573	+1.5%
Less alternative financing/Offsetting collection (P.L. 108-477/109-103)	-683,288	0	-790,136	-807,332	-17,196	-2.2%
(Cost of Implementing Reclassification of Receipts, Non-Add)	0	0	147,530	0	-147,530	-100.0%
<b>Subtotal, Western Area Power Administration</b>	<b>218,346</b>	<b>10,000</b>	<b>109,181</b>	<b>105,558</b>	<b>-3,623</b>	<b>-3.3%</b>
<b>Falcon and Amistad Operating and Maintenance Fund</b>						
Operation and Maintenance	2,959	0	2,568	3,715	+1,147	+44.7%
Offsetting Collections	0	0	-2,348	-3,495	-1,147	-48.9%
(Cost of Implementing Reclassification of Receipts, Non-Add)	0	0	2,348	0	-2,348	-100.0%
<b>Subtotal, Falcon and Amistad Fund</b>	<b>2,959</b>	<b>0</b>	<b>220</b>	<b>220</b>	<b>—</b>	<b>—</b>
<b>Colorado River Basins Power Marketing Fund</b>						
Spending Authority from Offsetting Collections	240,284	0	261,723	227,303	-34,420	-13.2%
Offsetting Collections	-263,284	0	-284,723	-250,303	+34,420	+12.1%
<b>Subtotal, Colorado River Basins</b>	<b>-23,000</b>	<b>0</b>	<b>-23,000</b>	<b>-23,000</b>	<b>—</b>	<b>—</b>
<b>Total, Power Marketing Administrations</b>	<b>234,139</b>	<b>10,000</b>	<b>99,477</b>	<b>95,477</b>	<b>-4,000</b>	<b>-4.0%</b>

The FY 2011 **Power Marketing Administrations (PMAs)** budget request is \$95.5 million.

The President's FY 2011 budget continues the use of receipts to offset the annual expenses of the Western Area Power Administration (Southwestern), Southwestern Power Administration (Southwestern), and Southeastern Power Administrations (Southeastern). This allows for better operations and maintenance planning and execution, leading to a more reliable power system.

## **Southeastern Power Administration (FY 2011 \$0)**

Southeastern markets and delivers all available federal hydroelectric power from 22 U.S. Army Corps of Engineers (Corps) multipurpose projects to preference customers in an eleven-state area in the southeastern United States. Southeastern does not own or operate any transmission facilities, and contracts with regional utilities that own electric transmission systems to deliver the federal hydropower to Southeastern's customers.

## **Southwestern Power Administration (FY 2011 \$12.7)**

Southwestern markets and delivers renewable federal hydroelectric power from 24 Corps multipurpose projects to preference customers in a six-state area participates with other water resource users in an effort to balance diverse interests with power needs. To deliver power to its customers, Southwestern maintains 1,380 miles of high-voltage transmission lines, 25 substations/switchyards, and 51 microwave and VHF radio sites. **Budget Authority Requested: \$12.7 million**

## **Western Area Power Administration (FY 2011 \$82.3)**

Western markets and transmits Federal power to a 1.3-million-square-mile service area in 15 central and western states from 56 Federally-owned hydroelectric power plants primarily operated by the Bureau of Reclamation (Bureau), the Corps, and the International Boundary and Water Commission. Western also markets the United States' entitlement to power from the Navajo coal-fired power plant near Page, Arizona. The Recovery Act of 2009 provides Western with permanent borrowing authority not to exceed \$3.25 billion at any one time.

## **Bonneville Power Administration (self financed through revenues)**

Bonneville provides electric power, transmission, and energy services to a 300,000-square-mile service area in eight states in the Pacific Northwest. Bonneville wholesales the power produced at 31 federal projects operated by the Corps and the Bureau and from certain non-federal generating facilities.



Bonneville, which is self-financed with revenues, funds the expense portion of its budget, and the power operations and maintenance costs of the Bureau and the Corps in the Federal Columbia River Power System. The capital portion of the budget is funded mostly through borrowing from the U.S. Treasury at rates comparable to borrowings at open market rates for similar issues and with some non-federal financing.

## Office of Science

(dollars in thousands)

	FY 2009	FY 2009	FY 2010	FY 2011	FY 2011 vs. FY 2010	
	Current	Current	Current	Congressional	\$	%
	Approp.	Recovery	Approp.	Request		
Advanced Scientific Computing Research	358,772	161,795	394,000	426,000	+32,000	+8.1%
Basic Energy Sciences	1,535,765	555,406	1,636,500	1,835,000	+198,500	+12.1%
Biological and Environmental Research	585,176	165,653	604,182	626,900	+22,718	+3.8%
Fusion Energy Sciences Program	394,518	91,023	426,000	380,000	-46,000	-10.8%
High Energy Physics	775,868	232,390	810,483	829,000	+18,517	+2.3%
Nuclear Physics	500,307	154,800	535,000	562,000	+27,000	+5.0%
Workforce Development for Teachers and Scientists	13,583	12,500	20,678	35,600	+14,922	+72.2%
Science Laboratories Infrastructure	145,380	198,114	127,600	126,000	-1,600	-1.3%
Safeguards and Security	80,603	0	83,000	86,500	+3,500	+4.2%
Science Program Direction	186,695	5,600	189,377	214,437	+25,060	+13.2%
Congressionally Directed Projects	91,064	0	76,890	0	-76,890	-100.0%
Small Business Innovation Research (SBIR)	154,439	55,637	0	0	—	—
<b>Subtotal, Science</b>	<b>4,822,170</b>	<b>1,632,918</b>	<b>4,903,710</b>	<b>5,121,437</b>	<b>+217,727</b>	<b>+4.4%</b>
Use of Prior Year Balances and Other Adjustments	-15,000	0	0	0	—	—
<b>Total, Science</b>	<b>4,807,170</b>	<b>1,632,918</b>	<b>4,903,710</b>	<b>5,121,437</b>	<b>+217,727</b>	<b>+4.4%</b>

The FY 2011 **Office of Science** budget request is \$5,121.4 million, an increase of \$217.7 million, or 4.4% above the FY 2010 appropriation. The Science program is the Nation's primary sponsor of basic research in support of a broad array of subjects leading to improved energy security and related issues including climate change, biomass, hydrogen, solar, genomics, high performance computing, and nanotechnology. Science maintains and operates several major national laboratories and supports 27,000 researchers and associated technical workers at laboratories and universities nationwide. Funding for each scientific discipline is as follows:

### Advanced Scientific Computing Research (ASCR) (\$426.0 million)

- The ASCR program supports research to discover, develop, and deploy computational and networking capabilities to analyze, model, simulate, and predict complex phenomena important to DOE. The FY 2011 request supports the Oak Ridge and Argonne Leadership Computing Facilities, the National Energy Research Scientific Computing Center, and the Energy Sciences Network. Support is also provided for research in applied mathematics, computer science, advanced networking, and computational partnerships.

### Basic Energy Sciences (BES) (\$1,835.0 million)

- BES supports fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels to provide the foundations for new energy technologies and for mitigation of the environmental impacts of energy use. The FY 2011 request includes support for several high priority research areas such as discovery and development of new materials, combustion modeling, ultrafast science, and fundamental sciences related to carbon capture and advanced nuclear energy systems. BES also supports several major user facilities including synchrotron radiation light sources, neutron scattering facilities, and Nanoscale Science Research Centers. Construction continues on the National Synchrotron Light Source-II. Two Energy Innovation Hubs are supported in FY 2011 focusing on Fuels from Sunlight and Batteries and Energy Storage. Support increases for the Energy Frontier Research Centers and for the first full year of operations of the Linac Coherent Light Source.

### Biological and Environmental Research (BER) (\$626.9 million)

- The BER program supports research to explore the frontiers of genome-enabled biology; discover the physical, chemical, and biological drivers of climate change; and seek the molecular determinants of environmental sustainability and stewardship. The FY 2011 request continues support for the three Bioenergy Research Centers, the Joint Genome Institute, and the Environmental Molecular Sciences Laboratory. Support increases for uncertainty quantification in climate models, incorporation of observational data sets, model development testbeds, and the development on numerical methods to enable climate models to use future computing architectures.

**Fusion Energy Sciences (FES) (\$380.0 million)**

- FES supports research to expand the fundamental understanding of matter at very high temperatures and densities and the scientific foundations needed to develop a fusion energy source. In FY 2011 funding for the international ITER project decreases consistent with the current project status. Support continues for research and operation of domestic research facilities including the DIII-D tokamak, Alcator C-Mod tokamak, and the National Spherical Torus Experiment. Support also continues for the joint program in high energy density laboratory plasmas with the National Nuclear Security Administration.

**High Energy Physics (HEP) (\$829.0 million)**

- The HEP program supports research to understand how the universe works at its most fundamental level. This is accomplished by discovering the most elementary constituents of matter and energy, probing the interactions among them, and exploring the basic nature of space and time itself. The FY 2011 request supports research in these areas as well as operations of the user facilities. The Tevatron Collider at Fermi National Accelerator Laboratory is supported. Fabrication continues on the NuMI Off-Axis Neutrino Appearance project. Support for Large Hadron Collider detector operations, maintenance, computing, and R&D continues in FY 2011. Funding is provided to initiate project engineering and design for the Long Baseline Neutrino Experiment and the Muon to Electron Conversion Experiment.

**Nuclear Physics (NP) (\$562.0 million)**

- NP supports research to discover, explore, and understand all forms of nuclear matter. NP supports two large user facilities, the Continuous Electron Beam Accelerator Facility (CEBAF) at Thomas Jefferson National Accelerator Laboratory and the Relativistic Heavy Ion Collider at Brookhaven National Laboratory, as well as two smaller user facilities. Support is provided for the ongoing construction of the CEBAF 12 GeV Upgrade and for engineering and design activities for the Facility for Rare Isotope Beams. NP also supports the Isotope Development and Production for Research and Applications program.

**Workforce Development for Teachers and Scientists (WDTS) (\$35.6M)**

- The WDTS program contributes to the national effort to ensure that DOE and the Nation have a sustained pipeline of highly trained science, technology, engineering, and mathematics workers. In FY 2011, support for the SC graduate fellowship program is expanded and starts a new research program to assess the effectiveness of science investments in support of the Administration's Science of Science Policy initiative.