

# CRS Report for Congress

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## **Energy and Water Development: FY2007 Appropriations**

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The annual consideration of appropriations bills (regular, continuing, and supplemental) by Congress is part of a complex set of budget processes that also encompasses the consideration of budget resolutions, revenue and debt-limit legislation, other spending measures, and reconciliation bills. In addition, the operation of programs and the spending of appropriated funds are subject to constraints established in authorizing statutes. Congressional action on the budget for a fiscal year usually begins following the submission of the President's budget at the beginning of the session. Congressional practices governing the consideration of appropriations and other budgetary measures are rooted in the Constitution, the standing rules of the House and Senate, and statutes, such as the Congressional Budget and Impoundment Control Act of 1974.

This report is a guide to the regular appropriations bills that Congress considers each year. It is designed to supplement the information provided by the House and Senate Appropriations Subcommittees on Energy and Water Development. It summarizes the status of the bill, its scope, major issues, funding levels, and related congressional activity, and is updated as events warrant. The report lists the key CRS staff relevant to the issues covered and related CRS products.

**NOTE: A Web version of this document with active links is available to congressional staff at [[http://beta.crs.gov/cli/level\\_2.aspx?PRDS\\_CLI\\_ITEM\\_ID=73](http://beta.crs.gov/cli/level_2.aspx?PRDS_CLI_ITEM_ID=73)].**

# Energy and Water Development: FY2007 Appropriations

## Summary

The Energy and Water Development appropriations bill in the past included funding for civil works projects of the Army Corps of Engineers (Corps), the Department of the Interior's Bureau of Reclamation (BOR), most of the Department of Energy (DOE), and a number of independent agencies. For FY2006, the Congress reorganized the appropriations subcommittees and the content of the various appropriations bills to be introduced. In the case of Energy and Water Development, the only changes were the consolidation of DOE programs that had previously been funded by the Interior and Related Agencies bill. That organization was followed by the Administration in submitting its FY2007 budget request in February 2006.

Key budgetary issues involving these programs include

- the need to balance efforts by the Army Corps of Engineers to prevent storm damage in Louisiana with the rest of the agency's portfolio of authorized projects (Title I);
- support of major ecosystem restoration initiatives, such as Florida Everglades (Title I) and California "Bay-Delta" (CALFED) (Title II);
- funding for the proposed national nuclear waste repository at Yucca Mountain, Nevada (Title III: Nuclear Waste Disposal); and
- the Administration's proposed Global Nuclear Energy Partnership to supply plutonium-based fuel to other nations (Title III: Nuclear Energy).

This report will be updated as events warrant.

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Division abbreviations: RSI = Resources, Science, and Industry; FDT= Foreign Affairs, Defense, and Trade.

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# Energy and Water Development: FY2007 Appropriations

## Most Recent Developments

The Bush Administration's FY2007 budget request was released in February 2006. The request followed the reorganization of appropriations subcommittees in 2005, in which the Energy and Water Development appropriations bill acquired Department of Energy (DOE) programs that previously had been included in the appropriations bill for Interior and Related Agencies. Including these programs, the requested amount for FY2007 Energy and Water Development totaled \$29.43 billion. For FY2006, \$33.07 billion was appropriated for comparable programs (including \$2.9 billion in emergency supplemental appropriations for the Corps of Engineers).

## Status

**Table 1. Status of Energy and Water Development Appropriations, FY2007**

Subcommittee Markup		House Report	House Passage	Senate Report	Senate Passage	Conf. Report	Conference Report Approval		Public Law
House	Senate						House	Senate	

## Overview

The Energy and Water Development bill has historically included funding for civil works projects of the U.S. Army Corps of Engineers (Corps), the Department of the Interior's Bureau of Reclamation (BOR), most of DOE, and a number of independent agencies, including the Nuclear Regulatory Commission (NRC) and the Appalachian Regional Commission (ARC). With the reorganization of the appropriations subcommittees, DOE programs that had been funded in the Interior and Related Agencies bill were transferred to the Energy and Water Development bill. The Bush Administration's FY2007 request was \$29.429 billion for all of the programs now included in the Energy and Water bill, compared with \$33.071 billion appropriated for FY2006, including \$2.9 billion in emergency funding for the Corps of Engineers following the Katrina hurricane disaster.

**Table 2** includes budget totals for energy and water development appropriations enacted for FY2000 to FY2006 and the requested amount for FY2007.

**Table 2. Energy and Water Development Appropriations, FY2000 to FY2007**

(budget authority in billions of current dollars)

FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07
21.2	23.9	25.2	26.1	26.7	30.2 <sup>a</sup>	33.1 <sup>a</sup>	29.4 <sup>a</sup>

**Note:** These figures represent current dollars, exclude permanent budget authorities, and reflect rescissions.

a. Includes DOE programs transferred from Interior and Related Agencies appropriations bill.

**Table 3** lists totals for each of the four titles. It also lists several “scorekeeping” adjustments of accounts within the four titles, reflecting various expenditures or sources of revenue besides appropriated funds. These adjustments affect the total amount appropriated in the bill but are not included in the totals of the individual titles. Amounts listed in this report are derived from the Administration’s FY2007 Congressional Budget Requests.

**Table 3. Energy and Water Development Appropriations Summary**  
(\$ millions)

Title	FY2006	FY2007 Request	House	Senate	Conf.
Title I: Corps of Engineers	\$8,227.6*	\$4,733.0			
Title II: CUP & BOR	1,054.8	1,011.7			
Title III: Department of Energy	24,047.6	24,048.2			
Title IV: Independent Agencies	269.8	248.9			
<b>E&amp;W Subtotal</b>	<b>33,599.8</b>	<b>30,041.8</b>			
Scorekeeping Adjustments					
Title II					
Central Valley	(43.9)	(33.8)			
Desert Terminal Lakes Rescission	—	(88.0)			
Title III					
Colorado River Basins, WAPA	(23.0)	(23.0)			
Uranium Fund	(446.5)	(452.0)			
Excess Fees FERC	(15.5)	(16.4)			
<b>E&amp;W Total</b>	<b>33,070.9</b>	<b>29,428.6</b>			

**Source:** Administration FY2007 budget request.

**Note:** Details may not add to totals due to rounding.

\* Includes \$2.9 billion emergency supplemental funding. See **Table 4** for details.

For the FY2007 Corps budget, the Administration requested \$4.733 billion, a decrease of \$0.595 billion from the enacted appropriation for FY2006 (not including emergency supplementals). It asked for \$1,012 million for FY2007 for the Department of the Interior (DOI) programs included in the Energy and Water Development bill: the Bureau of Reclamation and the Central Utah Project. This would be a decrease of \$43 million from the FY2006 funding level.

The FY2007 request for DOE programs was \$24.048 billion, approximately the same amount appropriated for the previous year. The major activities in the DOE budget are energy research and development, general science, environmental cleanup, and nuclear weapons programs. Also included in the DOE total is funding of DOE's programs for fossil fuels, energy efficiency, and energy statistics, which had historically been included in the Interior and Related Agencies appropriations bill.

The FY2007 request for funding the independent agencies in Title IV of the bill was \$250 million, compared with \$270 million appropriated for FY2006.

**Tables 4 through 15** provide budget details for Title I (Corps of Engineers), Title II (Department of the Interior), Title III (Department of Energy), and Title IV (independent agencies) for FY2005-FY2006.

## Title I: Army Corps of Engineers

The Energy and Water Development FY2007 budget request provides for \$4.733 billion for the U.S. Army Corps of Engineers, a decrease of \$0.595 billion (11%) from the FY2006 enacted appropriations (not including supplemental funds). Funding for the Corps' civil works program often is a contentious issue between the Administration and Congress, with final appropriations typically providing more funding than requested, regardless of which political party controls the White House and Congress.

**Table 4. Energy and Water Development Appropriations**  
**Title I: Army Corps of Engineers**  
(\$ millions)

Program	FY2006 Approp.			FY2007 Request	House	Senate	Conf.
	P.L. 109-103	Emerg. Funding <sup>a</sup>	Total				
Investigations and Planning	\$162.0	\$37.3	\$199.3	\$94.0			
Construction	2,348.0	101.4	2,449.4	1,555.0			
Flood Control, Mississippi River	396.0	153.8	549.8	278.0			
Operation and Maintenance (O&M)	1,969.0	327.5	2,296.5	2,258.0			
Regulatory	158.0	—	158.0	173.0			

Program	FY2006 Approp.			FY2007 Request	House	Senate	Conf.
	P.L. 109-103	Emerg. Funding <sup>a</sup>	Total				
General Expenses	152.0	—	152.0	164.0			
FUSRAP <sup>b</sup>	139.0	—	139.0	130.0			
Flood Control and Coastal Emergencies	—	2,278.0	2,228.0	81.0			
Office of the Asst. Secretary of the Army	4.0	1.6	5.6	—			
<b>Total Title I</b>	<b>5,328.0</b>	<b>2,899.6</b>	<b>8,227.5</b>	<b>4,733.0</b>			

Source: FY2007 Budget Request.

- a. The Defense Appropriations Act for FY2006 (P.L. 109-148) reallocated FY2005 emergency supplement funds to the Corps' civil works program.
- b. "Formerly Utilized Sites Remedial Action Program."

## Key Policy Issues — Corps of Engineers

**Hurricane Katrina Repairs and Coastal Louisiana Restoration.** The Corps is responsible for much of the repair and fortification of the hurricane damage protection system of southeast Louisiana, particularly in the greater New Orleans area; to date, most of the Corps' work on the region's hurricane protection system has been funded through FY2006 emergency supplemental appropriations as shown in **Table 4**; the Corps also received \$400 million for these activities through FY2005 supplemental appropriations. Additional supplemental appropriations of \$1.46 billion are being considered by the 109<sup>th</sup> Congress. The vast majority of the enacted and requested supplemental appropriations for the region is for structural hurricane defenses; coastal wetlands restoration activities by the Corps have received \$86 million of the enacted Katrina appropriations and would receive another \$100 million in the \$1.46 billion package being considered. For more information on the \$1.46 billion supplemental request, see CRS Report RL33298, *FY2006 Supplemental Appropriations: Iraq and Other International Activities; Additional Hurricane Katrina Relief*, coordinated by Paul M. Irwin and Larry Nowels.

**Agency Priorities.** As a result of Hurricane Katrina, projects to prevent storm damage in southeast Louisiana have become Administration and congressional priorities for Corps attention and resources. Given current fiscal constraints, there is less agreement about the funding priorities for the rest of the agency's portfolio of authorized projects (e.g., the balance between spending on projects in the agency's primary mission areas of navigation, flood control, and ecosystem restoration, as well as other activities, such as recreation and municipal water protection and supply and wastewater and watershed improvements).

**Performance-Based Budgeting.** The Corps civil works program has been criticized by some observers as an agglomeration of projects with no underlying design. These observers see the Corps' backlog of authorized activities as an

example of this lack of focus. Estimates of the backlog's size vary from \$11 billion to more than \$50 billion, depending on which projects are included. Although some observers view the backlog as nothing more than a Corps "to do" list, others are concerned that projects in the list face construction delays and related cost overruns as available appropriations are spread across an increasing portfolio of projects.

One way the FY2007 request tried to address the Corps backlog of projects was to develop the budget request using a performance-based budgeting approach for determining which projects to fund for construction (and, to a lesser extent, maintenance); the performance measures were based on their economic and environmental returns. The construction projects selected for funding were chosen largely on their having either a high ratio of remaining benefits to remaining costs or, for environmental projects, a high cost-effectiveness. The economic and environmental criteria were largely the same criteria used in developing the FY2006 budget request; one distinction from the FY2006 budget request is that the FY2007 budget development process gave funding preference to projects that address a significant, ongoing risk to human safety. Another distinction was that the FY2007 budget request continued the Administration's movement toward presenting the agency's budget request according to 11 "business lines" (e.g., navigation, flood control, recreation, hydropower). For example, of the \$4.733 billion budget request, \$1.926 billion (41% of the agency's budget) is for commercial navigation; \$1.291 billion (27%) is for flood control and storm damage reduction; and \$0.320 billion (7%) and \$0.089 billion (2%) are for the agency's relatively new roles in aquatic ecosystem restoration and environmental stewardship, respectively. The agency's regulatory responsibilities represent \$173 million, 4% of the agency's budget.

**Priority Projects and New Starts.** To address the backlog of authorized Corps activities, the Administration's request limited the number of new activities started to only one construction project and two planning activities. The President's request would fund construction projects that could be completed in FY2007 and projects considered by the Administration to be priorities, similar to the President's FY2006 and FY2005 requests. The eight national priority projects for FY2006 included the New York and New Jersey Harbor Deepening project, restoration projects in the Florida Everglades, and activities to meet environmental requirements in the Columbia River and the Missouri River basins. The budget request for the Upper Mississippi River (UMR) navigation system states that the existing locks can process tows safely and reliably for the next 50 years with prudent maintenance rehabilitation investments; this statement, coupled with a letter by the Assistant Secretary of the Army for Civil Works regarding support for preconstruction design of expanded UMR navigation locks (but not outright construction authorization), appears to indicate that the Administration is giving priority to rehabilitation of existing works, while being cautious with its support for authorizing and funding new construction projects.

**Project Suspensions.** Using the performance-based budgeting criteria, the Administration identified construction projects to be studied for possible suspension (i.e., to buy out current construction contracts rather than complete them). The FY2007 request would provide a \$41 million fund with which to cancel contracts for these projects.

**Financial Management and O&M Budgeting.** During consideration of the FY2006 Corps appropriations, the House and Senate Appropriations Committees expressed dissatisfaction with the Corps' financial management, particularly the reprogramming of funds across projects and the use of multiyear continuing contracts for projects. The FY2006 appropriations bill, P.L. 109-103, included language changing the Corps' ability to reprogram, to use continuing contracts, and to allocate project funds on a quarterly rather than an annual basis.

Unlike in previous budget requests, the FY2007 request does not specify the amount that individual Corps projects are to receive for O&M. Instead, the budget request divides the country into 21 regions and then specifies O&M funding for each region for 6 different categories of activities — commercial navigation, flood and coastal storm reduction, environment, hydropower, recreation, and water supply. The Corps has provided estimates of how much individual projects are expected to receive; these estimates, however, are not part of the agency's formal budget request and budget justification package. This budgeting approach appears to allow the agency flexibility to move money across projects within the region as O&M needs arise, without being subject to many of the reprogramming restrictions. Some project stakeholders are likely to be uncomfortable as a result of the decreased certainty in the O&M funding available for particular projects under this regional O&M budgeting approach.

**Everglades.** The Corps plays a significant coordination role in the restoration of the Central and Southern Florida ecosystem. The President's request for FY2007 includes \$164 million for the Corps' construction projects in the region, up from \$139 million enacted in FY2006. The \$164 million would fund Everglades activities that were previously budgeted separately — the Central and Southern Florida Project (\$70.5 million), the Kissimmee River Restoration Project (\$50.3 million), and the Everglades and South Florida Restoration Projects (\$8.3 million) — and the Modified Water Deliveries Project (Mod Waters, \$35 million). FY2006 was the first year that funds for the Mod Waters project were included in the Corps budget request and enacted appropriations; previously, the project was funded solely through Department of Interior appropriations. (For more information on the Modified Water Deliveries Project, see CRS Report RS21331, *Everglades Restoration: Modified Water Deliveries Project*, by Pervaze A. Sheikh.) In addition to funding for Corps activities through Energy and Water Development appropriations, federal activities in the Everglades are funded through Department of the Interior appropriations bills.

## **Title II: Department of the Interior**

The Department of the Interior has requested that Congress provide an increase in funding for the Central Utah Project Completion Account and reduction for the Bureau of Reclamation (BOR) for FY2007.

**Table 5. Energy and Water Development Appropriations  
Title II: Central Utah Project Completion Account**  
(\$ millions)

Program	FY2006	FY2007 Request	House	Senate	Conf.
Central Utah Project Construction	\$31.4	\$37.6			
Mitigation and Conservation Activities	0.9	1.0			
Oversight & Administration	1.7	1.6			
<b>Total, Central Utah Project</b>	<b>34.0</b>	<b>40.2</b>			

**Source:** Central Utah Project Completion Act, *FY2007 Budget Justification*, and P.L. 109-103, Title II

**Note:** Details may not add to totals due to rounding.

**Table 6. Energy and Water Development Appropriations  
Title II: Bureau of Reclamation**  
(\$ millions)

Program	FY2006	FY2007 Request	House	Senate	Conf.
Water and Related Resources	\$874.7	\$833.4			
Policy & Administration	57.3	58.1			
CVP Restoration Fund (CVPRF) <sup>a</sup>	52.1	41.5			
Calif. Bay-Delta (CALFED)	36.6	38.6			
<b>Gross Current Authority</b>	<b>1,020.7</b>	<b>971.6</b>			
CVP Collections <sup>a</sup>	(43.9)	(33.8)			
Desert Terminal Lakes Rescission	—	(88.0)			
<b>Net Current Authority</b>	<b>976.8</b>	<b>849.8</b>			
<b>Total, Title II</b>	<b>1,054.7</b>	<b>1,011.8</b>			

**Source:** Bureau of Reclamation FY2007 Budget Justification.

a. In its request, the Reclamation lists CVPRF Collections as an “offset.” Congress does not follow this procedure.

### **Central Utah Project and Bureau of Reclamation: Budget In Brief**

The Administration requested \$40.2 million for the Central Utah Project (CUP) Completion Account for FY2007, an increase of \$5.8 million (17%) from the FY2006 appropriation of \$34.4 million. The FY2007 request for the Bureau of Reclamation (BOR) totals \$971.6 million in gross current budget authority. This amount is \$93.4 million less than enacted for FY2006. The FY2007 request includes “offsets” of \$33.8 million for the Central Valley Project (CVP) Restoration Fund and

\$88 million for the Desert Terminal Lakes rescission, yielding a “net” current authority of \$890.0 million for BOR — \$121.0 million less than enacted for FY2006.

BOR’s single largest account, Water and Related Resources, encompasses the agency’s traditional programs and projects, including construction, operations and maintenance, the Dam Safety Program, Water and Energy Management Development, and Fish and Wildlife Management and Development, among others. The Administration requested \$833.4 million for the Water and Related Resources Account for FY2007. This amount is \$41.3 million (4.7%) less than enacted for FY2006. The decreases are most apparent in Water and Energy Management and Development — about \$52 million less than FY2006 — as well as Fish and Wildlife Management and Development and Facility Maintenance and Rehabilitation, with reductions of \$6.6 and \$9.6 million, respectively. There is an offsetting increase of \$18 million for Facility Operations in FY2007.

## Key Policy Issues — Bureau of Reclamation

**Background.** Most of the large dams and water diversion structures in the West were built by, or with the assistance of, the Bureau of Reclamation (BOR). Whereas the Army Corps of Engineers built hundreds of flood control and navigation projects, BOR’s mission was to develop water supplies, primarily for irrigation to reclaim arid lands in the West. Today, BOR manages hundreds of dams and diversion projects, including more than 300 storage reservoirs in 17 western states. These projects provide water to approximately 10 million acres of farmland and 31 million people. BOR is the largest wholesale supplier of water in the 17 western states and the second-largest hydroelectric power producer in the nation. BOR facilities also provide substantial flood control, recreation, and fish and wildlife benefits. At the same time, operations of BOR facilities are often controversial, particularly for their effect on sensitive fish and wildlife species and conflicts among competing water users.

**CALFED.** The Administration requested \$38.6 million for the California Bay-Delta Restoration Account (Bay-Delta, or CALFED) for FY2007. The bulk of the requested funds are targeted at three main program areas, including the Environmental Water Account, the Storage Program, and conveyance. The remainder of the request is allocated for science, water quality, ecosystem restoration, planning and management, and water use efficiency. (For more information on CALFED, see CRS Report RL31975, *CALFED Bay-Delta Program: Overview of Institutional and Water Use Issues*, by Betsy A. Cody and Pervaze Sheikh.)

**Security.** The Administration requested \$39.6 million for site security for FY2007. This amount is comparable to that enacted for FY2006. The bulk of the request is for facility operations/security. Funding covers such activities as administration of the security program (e.g., surveillance and law enforcement), antiterrorism activities, and physical emergency security upgrades. (For more information, see CRS Report RL32189, *Terrorism and Security Issues Facing the Water Infrastructure Sector*, by Claudia Copeland and Betsy A. Cody.)

The FY2007 request assumes annual costs for guard and patrol activities will be treated as project O&M costs, and hence will be reimbursable based on project

cost allocations. These costs are estimated to be \$20.9 million in FY2007, of which \$18.9 million is reimbursable. BOR will continue to treat facility fortification and antiterrorism management-related expenses as nonreimbursable.

**Water 2025.** The 2007 budget request for this program is \$14.5 million, an increase of \$9.5 million from FY2006. In 2007, the program plans to continue retrofitting and modernizing existing facilities aimed at water conservation. BOR also plans to introduce a grant program for System Optimization Reviews in FY2007.

### Title III: Department of Energy

Until last year, the Energy and Water Development bill included funding for most, but not all, of DOE's programs; other DOE programs were funded in the Interior and Related Agencies bill. Major DOE activities historically funded by the Energy and Water bill include research and development on renewable energy and nuclear power, general science, environmental cleanup, and nuclear weapons programs.

The subcommittee reorganization of the appropriations committees last year transferred DOE's programs for fossil fuels, energy efficiency, the Strategic Petroleum Reserve, and energy statistics, formerly included in the Interior and Related Agencies appropriations bill, to the Energy and Water Development bill. Including the transferred programs, the total request for Title III for FY2007 was \$24.048 billion, essentially the same amount appropriated for FY2006 (excluding the adjustments noted in **Table 3**).

**Table 7. Energy and Water Development Appropriations**  
**Title III: Department of Energy**  
(\$ millions)

Program	FY2006	FY2007 Request	House	Senate	Conf.
<b>Energy Supply &amp; Conservation</b>					
Energy Efficiency & Renewables	\$1,173.8	\$1,176.4			
Electricity Transmission & Distribution	161.9	124.9			
Nuclear Energy	416.0	559.8			
Environment, Safety, Health	27.7	29.1			
Other	33.2	33.1			
<b>Total, Energy Supply &amp; Cons.</b>	<b>1,812.6</b>	<b>1,923.4</b>			
<b>Fossil Energy R&amp;D</b>					
Clean Coal Technology (Deferral)	(20.0)	—			
Naval Petrol. & Oil Shale Reserves	21.3	18.8			
Elk Hills School Lands Funds	84.0	—			
Strategic Petroleum Reserve	207.3	155.4			
Northeast Home Heating Oil Rsrv.	—	5.0			

Program	FY2006	FY2007 Request	House	Senate	Conf.
<b>Strategic Petroleum Acct.</b>	(43.0)	—			
<b>Energy Information Administration</b>	85.3	89.8			
<b>Non-Defense Environmental Cleanup</b>	349.7	310.4			
<b>Uranium Decontamination and Decommissioning Fund</b>	556.6	579.4			
<b>Science</b>					
High Energy Physics	716.7	775.1			
Nuclear Physics	367.0	454.1			
Basic Energy Sciences	1,134.6	1,421.0			
Bio. & Env. R&D	579.8	510.3			
Fusion	287.6	319.0			
Advanced Scientific Computing	234.7	318.7			
Other	281.6	309.3			
Adjustments	(5.6)	(5.6)			
<b>Total, Science</b>	3,596.4	4,101.7			
<b>Nuclear Waste Disposal</b>	148.5	156.4			
<b>Departmental Admin. (net)</b>	128.5	128.8			
<b>Office of Inspector General</b>	41.6	45.5			
<b>National Nuclear Security Administration (NNSA)</b>					
Weapons	6,369.6	6,407.9			
Nuclear Nonproliferation	1,614.8	1,726.2			
Naval Reactors	781.6	795.1			
Office of Administrator	338.5	386.6			
<b>Total, NNSA</b>	9,104.5	9,315.8			
<b>Defense Environmental Cleanup</b>	6,130.4	5,390.3			
<b>Other Defense Activities</b>	346.5	388.1			
<b>Defense Nuclear Waste Disposal</b>	635.6	717.8			
<b>Total, Defense Activities</b>	16,217.0	15,812.0			
<b>Power Marketing Administrations (PMA)</b>					
Southeastern	5.5	5.7			
Southwestern	29.9	31.5			
Western	231.7	212.2			
Falcon & Armistad O&M	2.7	2.5			
<b>Total, PMAs</b>	269.7	252.0			
FERC (revenues)					
<b>Total, Title III</b>	<b>24,047.6</b>	<b>24,048.2</b>			

Source: DOE FY2007 Congressional Budget Request, February 2006.

## Key Policy Issues — Department of Energy

DOE administers a wide variety of programs with different functions and missions. In the following pages, the programs are described, and major issues identified, in approximately the order in which they appear in the budget tables in **Table 7**.

**Energy Efficiency and Renewable Energy.** In his State of the Union address, President Bush announced the launch of the American Competitiveness Initiative (ACI) to stimulate long-term economic growth, in large part by increased promotion of research and development (R&D) and technological innovation. A key component of the ACI is the Advanced Energy Initiative, which DOE says “aims to reduce America’s dependence on imported energy sources.” The Hydrogen Fuel Initiative is one theme within the Advanced Energy Initiative that is funded under energy efficiency programs in DOE’s Office of Energy Efficiency and Renewable Energy (EERE). The goal of the Hydrogen Fuel Initiative is to “bring hydrogen and fuel cell technology from the laboratory to the showroom.” Specifically, the program aims to “facilitate a decision by industry to commercialize a hydrogen infrastructure and fuel cell vehicles by 2015.” To support this initiative, the DOE FY2007 request for energy efficiency programs proposes major funding increases for hydrogen and fuel cell technology programs.

The Solar America Initiative and the Biorefinery Initiative are two more themes under the Advanced Energy Initiative that are funded under renewable energy programs in EERE. The goals of the Solar America Initiative are to reduce the cost of photovoltaics (PV) technology and to increase its deployment so that it can help reduce the demand for natural gas in the electric power sector. A key goal of the Biorefinery Initiative is to develop transportation fuels that can help reduce dependence on imported oil. This includes fuels, like cellulosic ethanol, from agricultural waste products and energy crops, such as wood chips, switchgrass, and plant stalks. To support these two initiatives, the FY2007 DOE request for renewable energy programs proposes major funding increases for solar energy and biomass programs.

Specifically, the FY2007 DOE request seeks \$484.7 million for energy efficiency R&D, which is \$20.9 million, or 4.5%, more than the FY2006 appropriation. The main increases are for Hydrogen (\$40.2 million), Hybrid/Electric Vehicle Propulsion (\$6.9 million), Residential Buildings (\$4.5 million), and a total of \$2.3 million for new Industrial programs in Combustion, Robotics, and Sensors/Automation. The main program cuts are for Industries of the Future (“Specific,” -\$7.2 million), Industrial Technical Assistance (-\$1.5 million), Vehicle Materials (-\$5.5 million), and the Federal Energy Management Program (-\$2.3 million). In addition, the request seeks a \$13.8 million increase for State Energy Program grants and a \$78.4 million, or 32.3%, cut for Weatherization Program grants. Further, the Gateway Deployment program area would be eliminated, which includes terminations of the Building Codes Program (-\$4.5 million) and the Inventions Program (-\$3.0 million), as well as cuts in Clean Cities (-\$3.5 million), Rebuild America (-\$1.3 million), and Energy Star (-\$0.2 million) programs, which would be transferred to other program areas.

Also, the request seeks \$359.2 million for renewable energy R&D, which is \$84.0 million, or 30.5%, more than the FY2006 appropriation. The main increases are for Solar Photovoltaics (\$79.5 million) and Biomass (\$59.0 million). The main cuts are for Geothermal (-\$23.1 million), Solar Heat & Light (\$1.5 million), International Renewables (-\$1.4 million), and Small Hydro (-\$0.5 million).

Many EERE programs contain a sizable amount of funding for congressionally directed projects. The total amount of EERE earmarks nearly doubled from \$85.9 million in FY2005 to \$159.0 million in FY2006 (see **Table 8**). The ACI and the FY2007 federal budget documents express strong concern about the rapidly growing amount of legislative earmarks for R&D programs, including the Hydrogen program. The request calls for elimination (or reprogramming) of all congressional earmarks. This would include \$76.4 million for FY2006 Energy Efficiency programs, including Hydrogen (\$42.5 million) and Vehicle Technologies (\$20.3 million). Further, this would include about \$82.4 million for Renewable Energy programs, including Biomass (\$48.8 million) and Solar Energy (\$14.4 million). A discussion of the EERE earmarks appears in CRS Report RL33294, *DOE Budget Earmarks: A Selective Look at Energy Efficiency and Renewable Energy R&D Programs*, by Fred Sissine.

**Electricity Delivery and Energy Reliability (OE).** The FY2007 request includes \$124.9 million for the Office of Electricity Delivery and Energy Reliability (OE), which was formed by merging the former Office of Electricity Transmission and Distribution with the Office of Energy Assurance. This is \$36.9 million less than the FY2006 level.

**Table 8. Energy Efficiency and Renewable Energy Programs**  
(\$ in millions)

Program	FY2006	FY2007 Request	Difference	Percentage Difference
Hydrogen Technologies	\$155.6	\$195.8	40.2	25.8%
— Fuel Cell Technologies	67.8	96.6	28.8	42.4%
Biomass & Biorefinery Systems	90.7	149.7	59.0	65.0%
— Biochemical Platform (Cellulose)	10.4	32.8	22.4	215.4%
Solar Energy	83.1	148.4	65.3	78.5%
— Photovoltaics	60.0	139.5	79.5	132.6%
Wind Energy	38.9	43.8	5.0	12.8%
Geothermal Technology	23.1	0.0	(23.1)	-100.0%
Small Hydropower	0.5	0.0	(0.5)	-100.0%
Vehicle Technologies	182.1	166.0	(16.1)	-8.8%
Building Technologies	69.3	77.3	8.1	11.6%
Industrial Technologies	56.9	45.6	(11.3)	-19.9%
Distrib. Energy Resources*	0.0	—	—	—
Federal Energy Management	19.2	16.9	(2.3)	-11.8%

Program	FY2006	FY2007 Request	Difference	Percentage Difference
Facilities & Infrastructure	26.1	5.9	(20.1)	-77.2%
Intergovernmental	316.9	225.0	(91.8)	-29.0%
— Weatherization Grants	242.6	164.2	(78.4)	-32.3%
Program Management	111.9	102.0	(9.9)	-8.8%
<b>R&amp;D Subtotal</b>	<b>895.7</b>	<b>962.8</b>	<b>67.1</b>	<b>7.5%</b>
<b>Grants Subtotal</b>	<b>278.2</b>	<b>213.7</b>	<b>(64.5)</b>	<b>-23.2%</b>
<b>EERE Earmarks</b>	<b>159.0</b>	<b>0.0</b>	<b>(159.0)</b>	<b>-100.0%</b>
<b>Use of Prior Year Balances</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
<b>Total Appropriation, EE &amp; RE</b>	<b>1,173.8</b>	<b>1,176.4</b>	<b>2.6</b>	<b>0.2%</b>
Office of Electricity Delivery & Energy Reliability (OE)*	161.9	124.9	(36.9)	-22.8%
OE Earmarks	66.7	0.0	(66.7)	-30.0%

Source: DOE FY2007 Congressional Budget Request, v. 3, Feb. 2006.

\* The Distributed Energy Program was moved from EERE to OE.

**Nuclear Energy.** For nuclear energy research and development — including advanced reactors, fuel cycle technology, nuclear hydrogen production, and infrastructure support — DOE is requesting \$632.7 million for FY2007, an 18.1% increase from the FY2006 appropriation. The request would boost funding for the Advanced Fuel Cycle Initiative (AFCI) from \$79.2 million in FY2006 to \$243.0 million in FY2007. The higher AFCI funding would allow DOE to begin developing an engineering-scale facility to demonstrate new technology for separating plutonium and uranium in spent nuclear fuel, as part of the Administration’s Global Nuclear Energy Partnership (GNEP). The nuclear energy program is run by DOE’s Office of Nuclear Energy, Science, and Technology.

According to DOE’s budget justification, the nuclear energy R&D program is intended “to enable nuclear energy to fulfill its promise as a safe, advanced, inexpensive and environmentally benign approach to providing reliable energy to all of the world’s people.” Under the Administration’s GNEP initiative, plutonium partially separated from spent nuclear fuel would be recycled into new fuel to expand the future supply of nuclear fuel and potentially reduce waste. The United States and other advanced nuclear nations would lease new fuel to other nations that agreed to forgo uranium enrichment, spent fuel recycling (also called reprocessing), and other fuel cycle facilities that could be used to produce nuclear weapons materials; see [<http://www.gnep.energy.gov/>]. The leased fuel would then be returned to supplier nations for reprocessing. Solidified high-level reprocessing waste would be sent back to the nation that had used the leased fuel, along with supplies of fresh nuclear fuel, according to the GNEP concept.

However, opponents have criticized DOE’s nuclear research program as providing wasteful subsidies to an industry that they believe should be phased out as

unacceptably hazardous and economically uncompetitive. Opponents are particularly concerned about GNEP's emphasis on spent fuel reprocessing, which they see as a weapons proliferation risk even if weapons-useable plutonium is not completely separated from other spent fuel elements as envisioned by the Administration.

**Nuclear Power 2010.** President Bush's specific mention of "clean, safe nuclear energy" in his 2006 State of the Union address reiterated the Administration's interest in encouraging construction of new commercial reactors — for which there have been no U.S. orders since 1978. DOE's efforts to restart the nuclear construction pipeline are focused on the Nuclear Power 2010 Program, which will pay up to half of the nuclear industry's costs of seeking regulatory approval for new reactor sites, applying for new reactor licenses, and preparing detailed plant designs. The program is intended to provide assistance for advanced versions of existing commercial nuclear plants that could be ordered within the next few years.

The Nuclear Power 2010 Program is helping three utilities seek NRC approval for potential nuclear reactor sites in Illinois, Mississippi, and Virginia. In addition, two industry consortia are receiving DOE assistance over the next several years to design and license new nuclear power plants. DOE awarded the first funding to the consortia in 2004. The FY2006 Energy and Water appropriation included \$65.3 million for the program, a \$15.7 million boost over FY2005. DOE's FY2007 budget request includes \$52.3 million for Nuclear Power 2010. DOE assistance under the program, including the early site permits, is planned to reach a multiyear total of \$550 million.

The nuclear license applications under the Nuclear Power 2010 program are intended to test the "one step" licensing process established by the Energy Policy Act of 1992 (P.L. 102-486). Even if the licenses are granted by NRC, the industry consortia funded by DOE have not committed to building new reactors. Loan guarantees and tax credits to encourage construction of new reactors are included in the Energy Policy Act of 2005 (P.L. 109-58). The 2005 act also authorizes DOE to provide compensation to the first six new reactors for regulatory delays beyond their control; the FY2007 budget request for the Nuclear Power 2010 Program includes \$1.8 million to develop criteria for such assistance.

**Generation IV.** Advanced commercial reactor technologies that are not yet close to deployment are the focus of DOE's Generation IV Nuclear Energy Systems Initiative, for which \$31.4 million is being requested for FY2007 — 30% less than the FY2006 request and more than 40% below the final appropriation of \$54.5 million. Most of the proposed reduction would come from the Next Generation Nuclear Plant (a high-temperature reactor that could produce electricity and hydrogen), which would drop from \$40 million to \$23.4 million.

The Generation IV program is focusing on six advanced designs that could be commercially available around 2020-2030: two gas-cooled, one water-cooled, two liquid-metal-cooled, and one molten-salt concept. Some of these reactors would use plutonium recovered through reprocessing of spent nuclear fuel, using technologies being developed by the Advanced Fuel Cycle Initiative.

**Advanced Fuel Cycle Initiative.** The nuclear energy program's Advanced Fuel Cycle Initiative (AFCI) is the primary component of GNEP. DOE's \$243 million budget request for AFCI for FY2007 makes up nearly all of the \$250 million GNEP program (with the remaining \$7 million requested for program direction). The FY2007 AFCI budget request is more than triple the FY2006 appropriation of \$79.2 million.

According to the budget justification, AFCI will develop and demonstrate nuclear fuel cycles that could reduce the long-term hazard of spent nuclear fuel and recover additional energy. Such technologies would involve separation of plutonium, uranium, and other long-lived radioactive materials from spent fuel for reuse in a nuclear reactor or for transmutation in a particle accelerator. Most of the proposed AFCI funding (\$155 million) would be for an engineering-scale demonstration of a separations technology called UREX+, in which uranium and other elements are chemically removed from dissolved spent fuel, leaving a mixture of plutonium and other highly radioactive elements. Proponents believe the process is proliferation-resistant, because further purification would be required to make the plutonium useable for weapons.

Removing uranium from spent fuel would eliminate most of the volume of spent nuclear fuel that would otherwise require disposal in a deep geologic repository, which DOE is developing at Yucca Mountain, Nevada. The UREX+ process also would reduce the heat generated by nuclear waste — the major limit on the repository's capacity — by removing cesium and strontium for separate storage and decay over several hundred years. Plutonium and other long-lived elements would be destroyed in accelerators or fast reactors (such as the type under development by the Generation IV program), to reduce the long-term hazard of nuclear waste. Even if technically feasible, however, the economic viability of such waste processing has yet to be determined, and it still faces significant opposition on nuclear nonproliferation grounds, as noted above.

**Nuclear Hydrogen Initiative.** In support of President Bush's program to develop hydrogen-fueled vehicles, DOE is requesting \$18.1 million in FY2007 for the Nuclear Hydrogen Initiative, a 25% reduction from the FY2006 level. According to DOE's FY2005 budget justification, "preliminary estimates ... indicate that hydrogen produced using nuclear-driven thermochemical or high-temperature electrolysis processes would be only slightly more expensive than gasoline" and result in far less air pollution.

**Fossil Energy Research, Development, and Demonstration.** The Bush Administration's FY2007 budget request of \$469.7 million for fossil energy research and development is about 21% less than the amount enacted for FY2006 (\$592.0 million) and 16.2% less than the enacted amount for FY2005 (\$560.8 million). Major funding categories and amounts include Coal (President's Coal Research Initiative, \$280.7 million, and Other Coal Related Activities, \$63.9 million), Program Direction (\$129 million), and Fossil Energy Environmental Restoration (\$9.7 million). Coal and coal-related activities would account for more than 70% of the FY2007 Fossil Energy R&D budget.

DOE is proposing again this year to terminate both the Natural Gas and Oil Technology programs based on a Program Assessment Rating Tool review that rated both programs ineffective. Congressional support of Natural Gas and Oil Technology programs has been significantly higher than the Bush Administration's request in previous years. Congress funded both programs in FY2006.

The Administration's \$5 million request for its Clean Coal Power Initiative (CCPI) would be directed towards the next CCPI solicitation, but no new money would be requested for CCPI projects directly. The Administration would rather improve the use of current CCPI funds. According to DOE's budget justification, CCPI is a "cost-shared program between the government and industry to rapidly demonstrate emerging technologies in coal-based power generation and to accelerate their commercialization." About \$500 million has been appropriated since FY2002. The Administration has previously announced its commitment to spend \$2 billion over 10 years for clean coal research. CCPI is along the lines of the Clean Coal Technology Program (CCTP), which began in the late 1980s. CCTP has completed most of its projects and has been subject to rescissions and deferrals since the mid-1990s. It eventually is to be phased out.

However, while Congress and the Administration agree that there is an unused, previously appropriated balance of \$257 million from the Clean Coal Technology Program, the Administration requests again in FY2007 to rescind the money and incorporate the funds into the fossil fuel account for FutureGen activities as an advanced appropriation to be used beginning FY2007 (\$54 million) and beyond. In FY2006, Congress deferred the \$257 million but acknowledged that the funds would be used for the FutureGen program in fiscal years 2007 and beyond (see FutureGen funding schedule in **Table 9**, below). FutureGen is a project to demonstrate co-production of electricity and hydrogen from coal with no emissions.

Within the Coal R&D program, the Administration is requesting \$54 million for gasification research in FY2007, about \$2 million less than what was enacted for FY2006. This level of funding request indicates a sustained commitment by the Administration and Congress to the integrated gasification combined cycle (IGCC) technology aimed at commercialization. There is ongoing investment in IGCC because of its potential benefits from reduced NO<sub>x</sub>, SO<sub>x</sub>, mercury, and fine particulate matter emissions. Moreover, lower CO<sub>2</sub> emissions through greater plant efficiencies and/or potential sequestration could be substantial. Under the Administration's request, funding for DOE's Carbon Sequestration program would increase from \$66.3 million in FY2006 to \$73.9 million in FY2007.

In its report on the FY2005 funding bill, the House Appropriations Committee expressed disappointment with the emphasis of the Administration's request on funding new, long-term energy research efforts, such as FutureGen, at the expense of ongoing energy programs that could yield energy savings and emissions reductions over the next decade. The Committee recommended restoring many of the proposed reductions for research to improve fossil energy technologies, contending that it would be "fiscally irresponsible" to discontinue research in which major investments have been made before that research is concluded.

**Table 9. FutureGen Funding Profile**  
(\$ millions)

FY	DOE direct	Other cash flows	Total
2004-2005	27	2	11
2006	18	7	25
2007	50	25	75
2008	100	44	144
2009	89	75	164
2010	57	66	123
2011-2018	159	224	383
Total	500	450	950

**Source:** U.S. Department of Energy, Office of Fossil Energy, FutureGen, Integrated Hydrogen, Electric Power Production and Carbon Sequestration Research Initiative, March 2004.

**Strategic Petroleum Reserve.** The Strategic Petroleum Reserve (SPR), authorized by the Energy Policy and Conservation Act (P.L. 94-163) in late 1975, consists of caverns formed out of naturally occurring salt domes in Louisiana and Texas in which roughly 685 million barrels of crude oil are stored.<sup>1</sup> The purpose of the SPR is to provide an emergency source of crude oil that may be tapped in the event of a presidential finding that an interruption in oil supply, or an interruption threatening adverse economic effects, warrants a drawdown from the reserve. A Northeast Heating Oil Reserve (NHOR) was established during the Clinton Administration. NHOR houses 2 million barrels of home heating oil in above-ground facilities in Connecticut, New Jersey, and Rhode Island.

In mid-November 2001, President Bush ordered that the SPR be filled to capacity (then 700 million barrels) using royalty-in-kind (RIK) oil. This is oil turned over to the federal government as payment for production from federal leases. Acquiring oil for the SPR by RIK avoids the necessity for Congress to make outlays to finance direct purchase of oil; however, it also means a loss of revenues to the Treasury in so far as the royalties are paid in wet barrels rather than in cash. Deliveries of RIK oil began in the spring of 2002 and ended in August 2005, when the SPR reached 700 million barrels.<sup>2</sup> Some policymakers objected to RIK fill, arguing that this oil should have instead be released to tight markets. The Administration argued that the volumes involved, varying between 65,000-200,000 barrels per day of deliveries to the SPR, were too small to have any discernible effect on crude and product prices.

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<sup>1</sup> In the wake of Hurricanes Katrina and Rita, modest amounts of SPR crude were loaned or sold. The borrowed oil will be fully restored by May 2006, and the oil sold was 11 million barrels. At the conclusion of these transactions, the SPR should be restored to roughly 690 million barrels.

<sup>2</sup> The capacity of the SPR is measured at 727 million barrels; however, the President's order was issued when the capacity was 700 million barrels and it specified fill to that level.

The current program costs for the SPR are almost exclusively dedicated to maintaining SPR facilities and keeping the SPR in readiness should it be needed. Congress agreed to a funding level of \$207.3 million for the program in FY2006. The Administration request for FY2007 for the SPR was \$155.4 million.

**Science.** The DOE Office of Science conducts basic research in six program areas: basic energy sciences, high-energy physics, biological and environmental research, nuclear physics, fusion energy sciences, and advanced scientific computing research. Through these programs, DOE is the third-largest federal funder of basic research and the largest federal funder of research in the physical sciences.<sup>3</sup> For FY2007, DOE has requested \$4.102 billion for Science, an increase of 14% from the FY2006 appropriation of \$3.596 billion. This unusually large increase reflects the American Competitiveness Initiative (ACI), which the President announced in February 2006 in his State of the Union address. Over the next 10 years, the ACI would double R&D funding for the DOE Office of Science and two other agencies.

The requested funding for the largest Office of Science program, basic energy sciences, is \$1.421 billion, a 25% increase from FY2006. About \$200 million of the requested increase would support expanded facility operating time. The House and Senate appropriations reports for FY2006 both called for increased funding for this purpose.

The request for fusion energy sciences is \$319 million, an 11% increase. Included is \$60 million for U.S. participation in the International Thermonuclear Experimental Reactor (ITER), a fusion facility whose other participants include China, the European Union, India, Japan, Russia, and South Korea. The estimated total U.S. share of the cost of ITER is \$1.2 billion through FY2014. The House and conference appropriations reports for FY2006 both directed DOE to fund ITER out of additional resources, not through reductions in the domestic fusion program. Although the overall increase requested for Science as part of the American Competitiveness Initiative may take some of the pressure off the fusion program in FY2007, the impact of ITER on the domestic program is likely to remain an issue for future years.

Three of the other four Office of Science programs would also receive increases under the FY2007 request. High-energy physics would receive \$775 million, up 8% from FY2006. Nuclear physics would receive \$454 million, up 24%. Advanced scientific computing research would receive \$319 million, up 36%. Only biological and environmental research would receive less than in FY2006: \$510 million, down 12%. The requested decrease for biological and environmental research results from the requested termination of 161 congressionally directed projects, totaling \$130 million, that were specified in the FY2006 appropriations conference report.

**Nuclear Waste Disposal.** DOE's Office of Civilian Radioactive Waste Management (OCRWM) is responsible for developing a nuclear waste repository at

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<sup>3</sup> Based on 2004 data from Tables C-29 and C-22 of National Science Foundation, Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2002, 2003, and 2004*, NSF 05-307 (February 2005).

Yucca Mountain, Nevada, for disposal of nuclear reactor spent fuel and defense-related high-level radioactive waste. OCRWM's funding comes from two appropriations accounts: the Nuclear Waste Disposal account, for which DOE is requesting \$156.4 million for FY2007, and Defense Nuclear Waste Disposal, with a request of \$388.1 million. Appropriations under the Nuclear Waste Disposal account come from the Nuclear Waste Fund, which holds disposal fees paid by nuclear utilities.

The total FY2007 nuclear waste budget request of \$544.5 million is \$50 million above the FY2006 appropriation. The Administration said in the FY2007 request that it would submit legislation to Congress dealing with nuclear waste regulation and funding, but provided no details.

DOE announced on October 25, 2005, that it would require most spent fuel to be sealed in standardized canisters before shipment to Yucca Mountain, a change that would largely eliminate the handling of individual fuel assemblies at the site. DOE subsequently informed the Nuclear Regulatory Commission (NRC) that making those changes to the repository's operational plans would further delay submission of a Yucca Mountain license application to NRC. DOE currently has no announced schedule for the license application, which previously had been planned by 2005.

The FY2006 energy and water bill provided \$500 million for nuclear waste disposal — \$150 million from the Nuclear Waste Fund and \$350 million from the Defense Nuclear Waste Disposal Account. Of the defense waste funding, \$50 million was provided for DOE to develop an integrated spent nuclear fuel recycling plan, in conjunction with the technology development plan required under the Advanced Fuel Cycle Initiative. A reprocessing site is to be selected in FY2007 and construction to begin in FY2010. "The site competition should not be limited to DOE sites, but should be open to a wide range of other possible federal and nonfederal sites on a strictly voluntary basis," according to the conference report. Applicants for a reprocessing facility can receive up to \$5 million per site, up to a total of \$20 million, to prepare detailed proposals.

No funding is being sought for the integrated recycling program for FY2007. However, \$250 million for nuclear fuel recycling research is included in the request for DOE nuclear energy R&D as part of a new Global Nuclear Energy Partnership (GNEP).

The Nuclear Waste Policy Act of 1982 (NWPA, P.L. 97-425), as amended, names Yucca Mountain as the sole candidate site for a national geologic repository. Congress passed an approval resolution in July 2002 (H.J.Res. 87, P.L. 107-200) that authorized the Yucca Mountain project to proceed to the licensing phase.

NWPA required DOE to begin taking waste from nuclear plant sites by January 31, 1998. Nuclear utilities, upset over DOE's failure to meet that deadline, have won two federal court decisions upholding the department's obligation to meet the deadline and to compensate utilities for any resulting damages. Utilities have also won several cases in the U.S. Court of Federal Claims. The nation's largest nuclear utility, Exelon Corporation, reached a breach-of-contract settlement with the federal

government in August 2004 that may total \$600 million if DOE does not begin taking spent fuel before 2015.

Further delays in the Yucca Mountain program could result from a July 2004 court decision that overturned a key aspect of the Environmental Protection Agency's (EPA's) regulations for the repository. A three-judge panel of the U.S. Court of Appeals for the District of Columbia Circuit ruled that EPA's 10,000-year compliance period was too short, but it rejected several other challenges to the standards. EPA proposed revised Yucca Mountain standards on August 9, 2005.

More controversy erupted in March 2005 with the release of e-mail messages from Yucca Mountain scientists that indicated that some of their data and documentation may have been fabricated. The House Appropriations Committee report cited all those problems as reasons for establishing a DOE interim storage program.

According to DOE, the FY2007 funding request will allow OCRWM to continue revising the Yucca Mountain license application to reflect the new canistered fuel concept, correct quality assurance problems, and meet the new EPA environmental standards. A significant funding increase for transportation would allow completion of an environmental impact statement and record of decision on a proposed 320-mile rail spur to Yucca Mountain.<sup>4</sup> (For more information, see CRS Issue Brief IB92059, *Civilian Nuclear Waste Disposal*, by Mark Holt.)

**Nuclear Weapons Stockpile Stewardship.** Congress established the Stockpile Stewardship Program in the FY1994 National Defense Authorization Act (P.L. 103-160) "to ensure the preservation of the core intellectual and technical competencies of the United States in nuclear weapons." The program is operated by the National Nuclear Security Administration (NNSA), a semiautonomous agency within DOE that Congress established in the FY2000 National Defense Authorization Act (P.L. 106-65, Title XXXII). It seeks to maintain the safety and reliability of the U.S. nuclear stockpile.

Stockpile stewardship consists of all activities in NNSA's Weapons Activities account. The three main elements of stockpile stewardship, described below, are Directed Stockpile Work (DSW), Campaigns, and Readiness in Technical Base and Facilities (RTBF). **Table 10** presents funding for these elements. NNSA manages two programs outside of Weapons Activities: Defense Nuclear Nonproliferation, discussed later in this report, and Naval Reactors.

Most stewardship activities take place at the nuclear weapons complex, which consists of three laboratories (Los Alamos National Laboratory, NM; Lawrence Livermore National Laboratory, CA; and Sandia National Laboratories, NM and CA); four production sites (Kansas City Plant, MO; Pantex Plant, TX; Savannah River Site, SC; and Y-12 Plant, TN); and the Nevada Test Site. NNSA manages and sets policy for the complex; contractors to NNSA operate the eight sites.

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<sup>4</sup> DOE, *FY2007 Congressional Budget*, vol. 4, p. 566.

**Table 10. Funding for Weapons Activities**  
(\$ millions)

Program	FY2006	FY2007 Request	House	Senate	P.L.
DSW	\$1,372.3	\$1,410.3			
Campaigns	2,123.2	1,937.4			
RTBF	1,644.8	1,685.8			
Other <sup>a</sup>	1,229.4	1,374.5			
<b>Total</b>	<b>6,369.6</b>	<b>6,407.9</b>			

**Sources:** DOE FY2007 Congressional Budget Request, vol. 1 (NNSA), p. 55.

**Note:** Details may not add to totals due to rounding.

- a. Includes Secure Transportation Asset, Nuclear Weapons Incident Response, Facilities and Infrastructure Recapitalization Program, Environmental Projects and Operations, Safeguards and Security, and several adjustments.

The FY2007 request document includes data from NNSA's Future Years Nuclear Security Program (FYNSP), which projects the budget and components through FY2011 (see **Table 11**).

**Table 11. NNSA Future Years Nuclear Security Program**  
(\$ millions)

	FY2007	FY2008	FY2009	FY2010	FY2011
DSW	\$1,410.3	\$1,381.9	\$1,431.4	\$1,462.3	\$1,495.0
Campaigns	1,937.4	1,961.6	1,920.9	1,899.0	1,853.3
RTBF	1,685.8	1,767.6	1,833.8	1,907.5	2,008.9
Other <sup>a</sup>	1,374.5	1,425.0	1,480.7	1,531.3	1,578.9
Total	6,407.9	6,536.0	6,666.8	6,800.1	6,936.1

**Source:** DOE FY2007 Congressional Budget Request, vol. 1 (NNSA), pp. 55, 56.

**Note:** Details may not add to totals because of rounding.

- a. Includes Secure Transportation Asset, Nuclear Weapons Incident Response, Facilities and Infrastructure Recapitalization Program, Environmental Projects and Operations, Safeguards and Security, and several adjustments.

**Directed Stockpile Work (DSW).** This program involves work directly on nuclear weapons in the stockpile, such as monitoring their condition; maintaining them through repairs, refurbishment, life extension, and modifications; R&D in support of specific warheads; and dismantlement. The FY2007 DSW request would support life extension programs for three nuclear warheads: B61 (gravity bomb), W76 (for Trident II submarine-launched ballistic missiles), and W80 (for cruise missiles). It would fund surveillance and maintenance for nine warhead types,

dismantlement and disposition of retired warheads and components, and management and technology work linked to multiple warhead types or to no specific warhead type. It also includes funds for the Reliable Replacement Warhead (RRW) program.

RRW originated as a funded program in the FY2005 Consolidated Appropriations Act, P.L. 108-447, where it was described as a “program to improve the reliability, longevity, and certifiability of existing weapons and their components.” NNSA had requested no funds for it, and no committee report had mentioned it. Instead, the legislation transferred \$9.0 million to RRW from the Advanced Concepts Initiative, a weapons-related research program. NNSA requested \$9.4 million for RRW for FY2006. It stated that the program “is to demonstrate the feasibility of developing reliable replacement components that are producible and certifiable for the existing stockpile” and to initially provide replacement pits (first-stage cores) “that can be certified without Underground Tests.” For FY2006, Congress appropriated \$25.0 million (subsequently reduced to \$24.75 million by a 1% across-the-board rescission). The FY2007 request is \$27.7 million, and outyear projections are FY2008, \$14.6 million; FY2009, \$29.7 million; FY2010, \$29.6 million; and FY2011, \$28.7 million. (See CRS Report RL32929, *Nuclear Weapons: The Reliable Replacement Warhead Program*, by Jonathan Medalia.)

Although RRW is a small program in relation to the total NNSA budget, the House Appropriations Committee, in its FY2006 report on the energy and water bill (H.Rept. 109-86), viewed RRW as enabling large changes: transitioning the nuclear weapons complex “from a large, expensive Cold War relic into a smaller, more efficient modern complex”; allowing “long-term savings by phasing out the multiple redundant Cold War warhead designs that require maintaining multiple obsolete production technologies”; “obviat[ing] any reason to move to a provocative 18-month test readiness posture” by increasing warhead reliability and reducing the need to test; permitting a reduction in Advanced Simulation and Computing funds by redirecting them to current warhead maintenance programs pending initiation of RRW; and supporting other changes and budget decisions. The Senate Appropriations Committee’s report (S.Rept. 109-84) stated that the recommended funding increase for RRW is “to accelerate the planning, development and design for a comprehensive RRW strategy that improves the reliability, longevity and certifiability of existing weapons and their components.” The conference report (H.Rept. 109-275) emphasized that RRW design work “must stay within the military requirements of the existing deployed stockpile” and that any design “must stay within the design parameters validated by past nuclear tests.” Other goals that the conference report set for RRW were improving manufacturing practices, reducing cost, and increasing performance margins to support a reduction in stockpile size. Further, P.L. 109-163, the FY2006 National Defense Authorization Act, section 3111, set seven objectives for the RRW program, including “[t]o increase the reliability, safety, and security of the United States nuclear weapons stockpile” and “[t]o further reduce the likelihood of the resumption of underground nuclear weapons testing.”

In the FY2004-FY2006 budget cycles, the Robust Nuclear Earth Penetrator (RNEP) was highly controversial. RNEP was to be a study of the cost and feasibility of modifying existing nuclear bombs to enable them to penetrate the ground before

detonating, thereby magnifying their effect on a buried target. (See CRS Report RL32130, *Nuclear Weapon Initiatives: Low-Yield R&D, Advanced Concepts, Earth Penetrators, Test Readiness*, by Jonathan Medalia, and CRS Report RL32347, *“Bunker Busters”: Robust Nuclear Earth Penetrator Issues, FY2005 and FY2006*, by Jonathan Medalia.) The FY2005 and FY2006 Energy and Water Development Appropriations Acts deleted all funds for RNEP. For FY2007, NNSA requested no funds for the program.

**Campaigns.** These are “multi-year, multi-functional efforts” that “provide specialized scientific knowledge and technical support to the directed stockpile work on the nuclear weapons stockpile.” For FY2007, there are six Campaigns, each with multiple components: Science, Engineering, Inertial Confinement Fusion and High Yield, Advanced Simulation and Computing, Pit Manufacturing and Certification, and Readiness. For FY2006, NNSA requested \$2,080.4 million; the final appropriation was \$2,123.2 million. The FY2007 request is \$1,937.4 million.

Many items within Campaigns have significance for policy decisions. As one example, the Science Campaign’s goals include improving the ability to assess warhead performance without nuclear testing, improving readiness to conduct tests should the need arise, and maintaining the scientific infrastructure of the nuclear weapons laboratories.

NNSA’s proposal to build a Modern Pit Facility (MPF) had been controversial for a number of years. A pit is the fissile core of a nuclear weapon that is used to trigger a thermonuclear explosion. The United States has been unable to manufacture pits that can be certified for use in the stockpile since 1989. Los Alamos has a small-scale pit manufacturing facility, called TA-55; NNSA’s plan is that TA-55 would be able to manufacture 10 pits per year by the end of FY2007 and 30-40 by FY2012, but NNSA saw that capacity as insufficient to maintain the stockpile and has favored building MPF, with a capacity of perhaps 125 pits per year. H.R. 2419, the FY2006 Energy and Water Development Appropriations Bill, as passed by the House, eliminated MPF funds until “capacity requirements tied to the long-term stockpile size are determined” and “until the long-term strategy for the physical infrastructure of the weapons complex has incorporated the Reliable Replacement Warhead strategy.” The bill as passed by the Senate provided the amount requested for MPF, \$7.7 million. The appropriation bill, as passed, provided no funds for MPF. Conferees on the energy and water bill directed NNSA to focus instead on improving manufacturing capability at TA-55. In response, NNSA requested no funds for MPF for FY2007 and instead plans to increase capacity at TA-55.

The test readiness posture — the time between a presidential order to resume testing and the conduct of the test — has been contentious. The posture was at 24 to 36 months several years ago, with fears that it was in actuality 36 months or more. The Administration and Congress sought to shorten it, but there was a dispute. NNSA and the Armed Services Committees favored an 18-month posture on grounds that it would take that long to prepare a test but that any testing should not be delayed beyond that time. In contrast, the Appropriations Committees favored a 24-month posture on grounds that an 18-month posture would be provocative and significantly more costly. (See CRS Issue Brief IB92099, *Nuclear Weapons: Comprehensive Test Ban Treaty*, by Jonathan Medalia.) The FY2006 request was \$25.0 million; the

appropriation was \$19.8 million. In its FY2007 request, NNSA states that it achieved a 24-month readiness posture in FY2005 and plans to maintain that posture at least through FY2011. It further states that the posture is 18 months “under current law” but that it “has thus far been limited to 24 months by Congressional funding.” The FY2007 test readiness request is \$14.8 million.

The Engineering Campaign includes the Enhanced Surveillance Program (ESP), which seeks to develop “predictive capabilities for early identification and assessment of stockpile aging concerns ... to give NNSA a firm basis for determining when systems must be refurbished.” Of particular interest to Congress, it is conducting experiments to determine the service life of pits based on plutonium aging characteristics. The result will bear on decisions to build MPF and to pursue RRW. NNSA requested \$96.2 million for ESP for FY2006; the appropriation was \$99.2 million. The FY2007 request is \$86.5 million.

According to NNSA, the Inertial Confinement Fusion and High Yield Campaign “is to develop laboratory capabilities to create and measure extreme conditions ... approaching those in a nuclear explosion, and conduct weapons-related research in these environments.” A key part of this Campaign is the National Ignition Facility (NIF), a partly completed facility at Lawrence Livermore National Laboratory that is already the world’s most powerful laser. For FY2006, NNSA requested \$141.9 million for NIF construction, and H.R. 2419, the Energy and Water Development Appropriations Bill, as passed by the House, contained that sum. The Senate Appropriations Committee noted that the planned five-year budget projection for Weapons Activities in the FY2006 request was reduced by \$3.0 billion, compared with the FY2005 request, and directed that no funds be expended on NIF construction “in order to focus on supporting a comprehensive stewardship program.” The appropriation was \$140.5 million. The FY2007 request is \$111.4 million. NNSA plans to complete the NIF project on March 30, 2009.

**Readiness in Technical Base and Facilities (RTBF).** This program provides infrastructure and operations at the nuclear weapons complex sites. The FY2006 appropriation was \$1,644.8 million; the FY2007 request is \$1,685.8 million. RTBF has six subprograms. By far the largest is Operations of Facilities (\$1,166.2 million appropriated for FY2006; \$1,203.8 million requested for FY2007). Others include Program Readiness, which supports activities occurring at multiple sites or in multiple programs (\$104.7 million appropriated for FY2006; \$75.2 million requested for FY2007), and Material Recycle and Recovery, which recovers plutonium, enriched uranium, and tritium from weapons production and disassembly (\$72.0 million appropriated for FY2006; \$70.0 million requested for FY2007). Construction is a separate category within RTBF; the FY2006 appropriation was \$259.9 million, and the FY2007 request is \$281.4 million.

**Other Programs.** Weapons Activities includes four smaller programs in addition to DSW, Campaigns, and RTBF.

- Secure Transportation Asset provides for the transport of nuclear weapons, components, and materials safely and securely. It includes special vehicles used for this purpose, communications and other supporting infrastructure, and threat response. The FY2006

appropriation was \$210.0 million, and the FY2007 request is \$209.3 million.

- Nuclear Weapons Incident Response provides for use of DOE assets to manage and respond to a nuclear or radiological emergency within DOE, in the United States, or abroad. The FY2006 appropriation was \$117.6 million, and the FY2007 request is \$135.4 million.
- Facilities and Infrastructure Recapitalization Program provides for deferred maintenance and infrastructure improvements for the nuclear weapons complex. In contrast, RTBF “ensure[s] that facilities necessary for immediate programmatic workload activities are maintained sufficiently,” according to NNSA. The FY2006 appropriation was \$149.4 million, and the FY2006 request is \$291.2 million.
- Safeguards and Security provides operations and maintenance funds for physical and cyber security, and related construction, to protect NNSA personnel and assets from terrorist and other threats. Safeguards and Security is a major concern for NNSA. Ambassador Linton Brooks, Administrator of NNSA, stated to the Senate Armed Services Committee on April 4, 2005, “We must now consider the distinct possibility of well-armed and competent terrorist suicide teams seeking to gain access to a warhead in order to detonate it in place. This has driven our site security posture from one of ‘containment and recovery’ of stolen warheads to one of ‘denial of any access’ to warheads. This change has dramatically increased security costs for ‘gates, guns, guards’ at our nuclear weapons sites.” The FY2006 appropriation was \$797.8 million, and the FY2007 request is \$754.4 million.

**Nonproliferation and National Security Programs.** DOE’s nonproliferation and national security programs provide technical capabilities to support U.S. efforts to prevent, detect, and counter the spread of nuclear weapons worldwide. These nonproliferation and national security programs are included in the National Nuclear Security Administration (NNSA).

Funding for these programs in FY2006 was \$1.615 billion. For FY2007, the Administration requested \$1.726 billion.

**Table 12. DOE Defense Nuclear Nonproliferation Programs**  
(\$ millions)

Program	FY2006	FY2007 Request	House	Senate	Conf.
Nonproliferation & Verification R&D	\$318.8	\$268.9			
Nonproliferation & International Security	74.3	127.4 <sup>b</sup>			

<b>Program</b>	<b>FY2006</b>	<b>FY2007 Request</b>	<b>House</b>	<b>Senate</b>	<b>Conf.</b>
International Materials Protection, Control and Accounting (MPC&A)	422.7	413.2			
Russian Transition Initiatives <sup>a</sup>	39.6	— <sup>b</sup>			
Elimination of Weapons-Grade Plutonium Production	174.4	206.7			
HEU Transparency Implementation	19.3	— <sup>b</sup>			
Fissile Materials Disposition	468.8	638.0			
Global Threat Reduction Initiative	97.0	106.8			
Adjustment	—	(34.7)			
<b>Total</b>	<b>1,614.8</b>	<b>1,726.2</b>			

**Source:** DOE FY2007 Congressional Budget Request.

**Note:** Numbers may not add due to rounding.

- a. As it did last year, DOE proposes changing the program name to Global Initiatives for Proliferation Prevention. The final FY2006 appropriations bill kept the previous name.
- b. Funding for Russian Transition Initiatives (\$28.140 million) and HEU Transparency Implementation (\$17.531 million) was included in Nonproliferation & International Security.

The Nonproliferation and Verification R&D program received \$318.78 million for FY2006; for FY2007, the Administration requested \$268.89 million. Nonproliferation and International Security programs would receive \$127.41 million in the FY2007 request, compared with \$74.25 million in FY2006. These programs include international safeguards, export controls, and treaties and agreements.

International Materials Protection, Control and Accounting (MPC&A), which is concerned with reducing the threat posed by unsecured Russian weapons and weapons-usable material, would receive \$413.18 million under the President's request, compared with \$422.73 million appropriated for FY2006.

Two programs in the former Soviet Union, Initiatives for Proliferation Prevention (IPP) and the Nuclear Cities Initiatives (NCI), were combined for FY2005 into a single program called "Russian Transition Initiative," aimed at finding nonweapons employment for roughly 35,000 underemployed nuclear scientists from the former Soviet weapons complex. The FY2006 appropriation for the program was \$39.6 million. For FY2007, the program was included in Nonproliferation and International Security, with \$28.14 million allotted for it in the request.

Requested funding for the Fissile Materials Disposition program for FY2006 was \$653.1 million, but the Congress appropriated \$468.8 million. The program's goal is disposal of U.S. surplus weapons plutonium by converting it into fuel for commercial power reactors, including construction of a facility to convert the plutonium to reactor fuel at Savannah River, SC, and a similar program in Russia. The House Appropriations Committee cut funding for the Savannah River facility

sharply, citing delays in agreement with Russia over the program. Total funding for fissile materials disposition in H.R. 2419 as passed by the House would have been \$301.7 million. The Senate version of the bill would have funded the program at the requested \$653.1 million level. For FY2007, the Administration, noting that the issue that had delayed the program in Russia had been resolved, requested \$638 million.

**Environmental Management.** The adequacy of funding to address human health and environmental risks resulting from the past production of nuclear weapons has been a long-standing issue. DOE established an Environmental Management program in 1989 to consolidate its efforts to administer the cleanup of former nuclear weapons sites. These efforts include the disposal of radioactive and hazardous wastes and the remediation of soil and groundwater contaminated from such wastes. Through this program, DOE also administers the disposal of wastes and remediation of contamination at sites where the federal government conducted civilian nuclear energy research. Altogether, there are 114 “geographic”<sup>5</sup> sites in 30 states where these activities resulted in the generation of wastes and contamination. Some of the ongoing issues associated with efforts to clean up these sites have been the adequacy of risk-based approaches to cleanup, the technical soundness of waste treatment facility designs, how to safely dispose of high-level radioactive wastes stored in underground tanks, the effectiveness and cost-savings of incentive-based cleanup contracts, and the pace and adequacy of cleanup overall.

The challenges of the Environmental Management program to clean up nuclear waste and contamination are substantial and require significant resources. As such, the program is the largest single function within DOE, representing approximately one-fourth of the Department’s total budget. The President’s FY2007 budget includes \$5.83 billion for this program. Overall, the request is \$762 million less than the FY2006 appropriation of \$6.59 billion. Most of this reduction can be attributed to progress at defense sites where cleanup is scheduled to be complete in 2006.<sup>6</sup> However, decreases also are proposed for certain other sites where cleanup is not expected to be complete until much later, including the Oak Ridge Reservation, Idaho National Laboratory, and Savannah River site. Despite these decreases, the President’s FY2007 budget would increase funding for some sites, such as Hanford, and for certain program activities. **Table 13** below indicates the FY2006 appropriation and the FY2007 request for each of the three accounts that fund the Environmental Management program, and for selected sites and program activities within these accounts in which there has been broad congressional interest.

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<sup>5</sup> DOE makes a distinction between its “geographic” sites that represent entire facilities and the lands they occupy, and the thousands of discrete contaminated sites located on each facility that have been, or need to be, cleaned up.

<sup>6</sup> These sites include Ashtabula, Columbus, Fernald, Miamisburg, and Rocky Flats. The contractor for Rocky Flats reported that physical work for cleanup was completed in October 2005. DOE expects to complete cleanup at the four remaining sites by the end of calendar year 2006. However, long-term maintenance of remedial actions and monitoring may continue for many years, necessitating some continued funding in the future.

**Table 13. Environmental Management Program Appropriations:  
FY2006 Enacted and FY2007 Requested**  
(\$ millions)

<b>Environmental Management Program Accounts</b>	<b>FY2006 Enacted</b>	<b>FY2007 Requested</b>
<b>Defense Environmental Cleanup</b>		
2006 Closure Sites	\$1,018.3	\$320.9
Ashtabula	\$15.8	\$0.3
Columbus	\$9.4	\$0.0
Fernald	\$324.3	\$258.9
Miamisburg	\$104.5	\$34.9
Rocky Flats	\$564.3	\$1.0
Closure Sites Administration	\$0.0	\$25.9
Hanford	\$1,619.8	\$1,768.8
Office of River Protection	\$846.9	\$964.1
Waste Treatment Plant	\$520.8	\$690.0
Tank Farm Activities	\$326.2	\$274.1
Other Site Cleanup	\$772.9	\$804.7
Savannah River Site	\$1,178.7	\$1,084.4
Idaho National Laboratory	\$532.9	\$512.6
Oak Ridge Reservation	\$238.4	\$159.9
Waste Isolation Pilot Plant	\$228.3	\$213.3
National Nuclear Security Administration (NNSA) Sites	\$299.4	\$232.1
Technology Development and Deployment	\$29.8	\$21.4
Safeguards and Security	\$284.4	\$295.8
Program Direction	\$241.4	\$291.2
Program Support	\$32.5	\$37.9
Federal Payment to Uranium Enrichment D&D Fund <sup>a</sup>	\$446.5	\$452.0
<b>Total Defense Environmental Cleanup</b>	<b>\$6,150.4</b>	<b>\$5,390.3</b>
<b>Non-Defense Environmental Cleanup</b>	<b>\$349.7</b>	<b>\$310.4</b>
<b>Uranium Enrichment D&amp;D Fund <sup>a</sup></b>	<b>\$556.6</b>	<b>\$579.4</b>
Uranium Enrichment D&D Fund Offset <sup>a</sup>	\$-446.5	\$-452.0
Uncosted Balance	\$-20.0	\$0.0
<b>Total Environmental Management</b>	<b>\$6,590.3</b>	<b>\$5,828.0</b>

**Source:** Prepared by CRS with information from DOE's FY2007 budget justification, vol. 5: Environmental Management, pp.5-7.

**Note:** Numbers may not add as a result of rounding.

a. D&D = Decontamination and Decommissioning. Federal payment to the Uranium Enrichment D&D Fund is traditionally treated as an offset to the total for the Environmental Management Program.

**Estimated Future Funding Needs.** The need for annual appropriations of several billion dollars to clean up nuclear waste sites has motivated ongoing concern within Congress about the long-term financial liability of the United States to meet these needs. Accordingly, there has been much debate about how to ensure public health and safety, and the protection of the environment, in the most expedient and cost-effective manner. DOE reports that it had cleaned up 78 of the 114 sites as of the end of FY2005.<sup>7</sup> Although DOE has disposed of substantial quantities of waste and remediated many areas of contamination, much work remains to be done to complete cleanup at all sites. DOE expects to complete cleanup at many additional sites within the next few years, but projects cleanup to continue for decades at the larger and more complex sites.

Assessing the total time and funding that will be needed to complete cleanup is difficult, especially for the larger, more complex sites where many final decisions have yet to be made because of technical limitations and uncertainties. In its FY2007 budget justification, DOE estimates that \$160 billion would be needed from FY2005 through FY2035 to complete cleanup at the 36 remaining sites.<sup>8</sup> In comparison with funding provided prior to this time frame, Congress appropriated a total of \$77 billion for cleanup through FY2004. DOE's most recent estimate of future costs is substantially higher than its previous estimate of \$95 billion, reported to CRS in 2005.<sup>9</sup> DOE had reported that its lower estimate was based on numerous assumptions, such as the greater use of competitive contracting practices and performance-based incentives, agreement with regulators on more efficient cleanup approaches, the deployment of innovative technologies, and better defined "end states" for individual sites.<sup>10</sup> DOE's FY2007 budget justification does not explain the change in assumptions upon which the substantially higher cost estimate of \$160 billion is based.

Whether DOE's revised estimate may be a more reliable indicator of actual cleanup costs in the future depends on many variables. For example, actual costs could differ depending on whether federal and state regulators may require more stringent and costlier cleanup actions than DOE plans to take. Whether cleanup

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<sup>7</sup> See DOE's FY2007 budget justification, volume 5: Environmental Management, p. 30.

<sup>8</sup> DOE's FY2007 budget justification, volume 5: Environmental Management, pp. 48-49, provides a table that lists the 36 sites where cleanup is not complete and indicates the estimated year of completion and associated costs from FY2005 through FY2035. DOE did not provide the aggregate of these costs for all 36 sites. Therefore, CRS added the individual site cost estimates, which totaled approximately \$160 billion.

<sup>9</sup> In 2005, DOE reported to CRS an estimate of \$95 billion to complete cleanup from FY2004 through FY2035. DOE indicated to CRS that it had substantially lowered its prior estimate of \$145 billion reported to Congress in its FY2006 budget justification, based on the assumptions noted above.

<sup>10</sup> DOE uses the term "end state" to denote the intended condition or land use of a contaminated site once cleanup is complete. Determining the end state is critical to making cleanup decisions, as the degree of cleanup required, and the specific action to achieve that degree of cleanup, are dependent on the potential pathways of human exposure that would occur as a result of how the land will be used in the future. Land uses resulting in greater potential for human exposure require a greater degree of cleanup.

actions are adequate over the long-term to protect human health and the environment also could affect costs. Long-term performance of cleanup actions is especially critical for nuclear waste sites because of the rate of radioactive decay, which can be thousands of years, depending on the particular radionuclide. Additional funding could be needed at sites where cleanup was thought to be complete, if the initial cleanup proves inadequate over time. DOE's \$160 billion estimate also does not take into account the costs of long-term maintenance of cleanup remedies and monitoring to ensure the protection of human health and the environment into the future, as discussed below.

**Long-Term Site Care.** Once a site is cleaned up, responsibility for long-term maintenance and monitoring is transferred to DOE's Office of Legacy Management. This office also manages the pensions and benefits of former contractor personnel who cleaned up the sites. The President's FY2007 budget includes \$201 million for the Office of Legacy Management, \$123 million more than the FY2006 appropriation of \$78 million. The proposed increase is for the long-term care of additional defense sites that are expected to be cleaned up and transferred to this office. The proposed increase is indicative of higher funding needs in the future, as cleanup is completed at other sites over time and long-term care responsibilities are transferred to this office. Although DOE has estimated the costs to complete cleanup under the Environmental Management program, it has not released estimates for the long-term care of sites under the Office of Legacy Management once the physical work of cleanup is complete.

**Power Marketing Administrations.** DOE's four Power Marketing Administrations (PMAs) — Bonneville Power Administration (BPA), Southeastern Power Administration (SEPA), Southwestern Power Administration (SWPA), and Western Area Power Administration (WAPA) — were established in response to the construction of dams and multipurpose water projects operated by the Bureau of Reclamation and the Army Corps of Engineers. In many cases, conservation and management of water resources — including irrigation, flood control, recreation or other objectives — were the primary purpose of federal projects. However, these facilities often generated electricity to meet project needs; PMAs were established to market the excess power.

Priority for PMA power is extended to "preference customers," which include municipal utilities, co-ops, and other "public" bodies. The PMAs sell power to these entities "at the lowest possible rates" consistent with what they describe as "sound business practice." The PMAs are responsible for covering their expenses and for repaying debt and the federal investment in the generating facilities. Their rates are the focus of considerable discussion, and in its FY2006 budget request, the Administration included a recommendation that Congress raise PMA rates to "market rates." The House rejected this proposal in its Energy and Water appropriations bill. It was not mentioned in the conference report, and no related legislation has been introduced in the 109<sup>th</sup> Congress. (For more information, see CRS Report RL32798, *Power Marketing Administrations: Proposals for Market-Based Rates*, by Kyna Powers.)

The Administration's net FY2007 request for the PMAs of \$249.4 million is a reduction of 6.6% from the FY2006 appropriation of \$267.1 million. This reflects

a reduction of \$19.4 million for WAPA, with slight increases of \$1.6 million for Southwestern and \$180,000 for Southeastern.

In FY2007 WAPA, SEPA, and SWPA propose to assign “Agency Rates” to new obligations. The Agency Rate is the rate at which federal corporations and BPA borrow. This change is expected to have a rate impact of less than 1% (the Agency Rate was 0.4% higher on average than PMA rates from 1997-2005) and will generate \$11.8 million in additional Treasury revenue from 2007 to 2011.

BPA receives no annual appropriation but funds some of its activities from permanent borrowing authority, which was increased in FY2003 from \$3.75 billion to \$4.45 billion (a \$700 million increase). BPA did not request additional borrowing authority in FY2007. BPA intends to use \$477 million of its borrowing authority in FY2007, down from \$487 million proposed in FY2006, for generation and transmission services, conservation, energy efficiency, fish and wildlife, and capital equipment programs.

Beginning in FY2007 BPA is proposing to use secondary net revenues beyond \$500 million to make advance amortization payments to the Treasury on BPA’s bond obligations. BPA is expecting this additional revenue to be \$169 million in FY2007.

BPA’s FY2007 budget also assumes that Energy Northwest will refinance a portion of its debt in calendar years 2006 and 2007, and that the effects of this debt optimization will be realized in fiscal years 2006 and 2007. The additional cash made available by this refinancing, expected to be \$312 million in FY2007, will be used to pay down BPA’s federal bond debt.

## Title IV: Independent Agencies

Independent agencies that receive funding from the Energy and Water Development bill include the Nuclear Regulatory Commission (NRC), the Appalachian Regional Commission (ARC), and the Denali Commission.

**Table 14. Energy and Water Development Appropriations**  
**Title IV: Independent Agencies**  
(\$ millions)

Program	FY2006	FY2007 Request	House	Senate	Conf.
Appalachian Regional Commission	\$65.0	\$65.0			
Nuclear Regulatory Commission (Revenues)	741.5	776.0			
Net NRC	(624.7)	(627.7)			
	116.8	148.9			
Defense Nuclear Facilities Safety Board	22.0	22.0			

Program	FY2006	FY2007 Request	House	Senate	Conf.
Nuclear Waste Technical Review Board	4.0	4.0			
Denali Commission	50.0	3.0			
Delta Regional Authority	12.0	6.0			
<b>Total</b>	<b>269.8</b>	<b>248.9</b>			

Source: FY2007 Budget Request.

## Key Policy Issues — Independent Agencies

**Nuclear Regulatory Commission.** The Nuclear Regulatory Commission (NRC) requested a total budget of \$776.6 million for FY2007, including \$8.1 million for the NRC inspector general's office. The request is 4.5% above the FY2006 appropriation of \$741.5 million. Major activities conducted by NRC include safety regulation and licensing of commercial nuclear reactors, licensing of nuclear waste facilities, and oversight of nuclear materials users.

The NRC budget request includes a \$22 million increase in the Nuclear Reactor Safety program, largely to handle anticipated new nuclear power plant license applications. No commercial reactor license applications have been submitted to NRC since the 1970s, but higher fossil fuel prices and incentives provided by the Energy Policy Act of 2005 (P.L. 109-58) have prompted electric utilities to announce plans for about a dozen reactor license applications over the next few years.

NRC is proposing a 10% reduction in funding for licensing DOE's planned national nuclear waste repository at Yucca Mountain, Nevada, to \$41.0 million, reflecting delays in the program. The budget request assumes that DOE will submit a repository license application in FY2008, although no schedule has been announced.

For all homeland security activities, NRC's FY2007 budget request includes \$70.3 million, an 11% decrease from FY2006. NRC oversees force-on-force security exercises at nuclear plants and is requiring revised reactor security plans to reflect increased baseline threats. (For more information on protecting licensed nuclear facilities, see CRS Report RS21131, *Nuclear Power Plants: Vulnerability to Terrorist Attack*, by Carl E. Behrens and Mark Holt.)

The Energy Policy Act of 2005 permanently extended a requirement that 90% of NRC's budget be offset by fees on licensees. Not subject to the offset is the \$41 million from the Nuclear Waste Fund to pay for waste repository licensing, \$35.3 million for generic homeland security, and another \$2.9 million for DOE defense waste oversight. That amount plus 10% of the remaining \$698 million leaves a net appropriation of \$148.9 million.

**Denali Commission.** The main difference between the FY2007 request for Title IV programs and the amount appropriated for FY2006 is a sharp reduction in funding for the Denali Commission, a regional economic development agency established in 1998. The Administration's proposed reduction is a repeat of previous proposals. FY2005 funding for the commission was \$66.5 million. For FY2006, the Administration requested \$2.6 million, and the House bill, H.R. 2419, included that amount. The Senate bill would have appropriated \$67 million. The final FY2006 bill, P.L. 109-103, appropriated \$50 million.

## For Additional Reading

### CRS Issue Briefs

CRS Issue Brief IB10041, *Renewable Energy: Tax Credit, Budget, and Electricity Production Issues*, by Fred Sissine.

CRS Issue Brief IB10020, *Energy Efficiency: Budget, Oil Conservation, and Electricity Conservation Issues*, by Fred Sissine.

CRS Issue Brief IB92059, *Civilian Nuclear Waste Disposal*, by Mark Holt.

CRS Issue Brief IB88090, *Nuclear Energy Policy*, by Mark Holt and Carl Behrens.

### CRS Reports

CRS Report RS21331, *Everglades Restoration: Modified Water Deliveries Project*, by Pervaze A. Sheikh.

CRS Report RL33298, *FY2006 Supplemental Appropriations: Iraq and Other International Activities; Additional Hurricane Katrina Relief*, coordinated by Paul M. Irwin and Larry Nowels.

CRS Report RS20569, *Water Resource Issues in the 109<sup>th</sup> Congress*, by Betsy A. Cody and H. Steven Hughes.

CRS Report RS20866, *The Civil Works Program of the Army Corps of Engineers: A Primer*, by Nicole T. Carter and Betsy A. Cody.

CRS Report RL30478, *Federally Supported Water Supply and Wastewater Treatment Programs*, by the Resources, Science, and Industry Division.

CRS Report RL32189, *Terrorism and Security Issues Facing the Water Infrastructure Sector*, by Claudia Copeland and Betsy A. Cody.

CRS Report RL31098, *Klamath River Basin Issues: An Overview of Water Use Conflicts*, coordinated by Betsy A. Cody.

CRS Report RL32131, *Phosphorus Mitigation in the Everglades*, by Pervaze A. Sheikh and Barbara Johnson.

CRS Report RL31975, *CALFED Bay-Delta Program: Overview of Institutional and Water Use Issues*, by Betsy A. Cody and Pervaze Sheikh.

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