

CRS Report for Congress

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Appropriations for FY2005: Energy and Water Development

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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 one of the 13 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 [\[http://www.crs.gov/products/appropriations/apppage.shtml\]](http://www.crs.gov/products/appropriations/apppage.shtml).

Appropriations for FY2005: Energy and Water Development

Summary

The Energy and Water Development appropriations bill includes funding for civil works projects of the Army Corps of Engineers, the Department of the Interior's Bureau of Reclamation (BOR), most of the Department of Energy (DOE), and a number of independent agencies. The Bush Administration requested \$27.94 billion for these programs for FY2005, compared with \$27.26 billion appropriated for FY2004 (P.L. 108-137, and rescissions included in P.L. 108-199). On June 16 the House Appropriations Committee reported out its bill (H.R. 4614) with \$27.99 billion, and the bill passed the House on June 25.

Key issues involving these programs include:

- funding and progress of major water/ecosystem restoration initiatives such as Florida Everglades and California "Bay-Delta" (CALFED);
- funding for the proposed national nuclear waste repository at Yucca Mountain, Nevada;
- funding for developing a new nuclear warhead, the Robust Nuclear Earth Penetrator and for a "Modern Pit Facility" to build nuclear weapons components, and plans to increase readiness to resume underground nuclear testing; and
- plans to reduce the time necessary to prepare the Nevada Test Site to resume nuclear weapons testing.

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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Appropriations for FY2005: Energy and Water Development

Most Recent Developments

The Bush Administration's FY2005 budget request, released February 2, 2004, budgeted Energy and Water Development Programs at \$27.94 billion, compared to \$27.26 billion appropriated for the same programs for FY2004. On June 16 the House Appropriations Committee reported its bill with \$27.99 billion.

Status

Table 1. Status of Energy and Water Development Appropriations, FY2005

Subcommittee Markup		House Report	House Passage	Senate Report	Senate Passage	Conf. Report	Conference Report Approval		Public Law
House	Senate						House	Senate	
6-9-04		108-554	6-25-04						

Overview

The Energy and Water Development bill includes funding for civil works projects of the Army Corps of Engineers, the Department of the Interior's Bureau of Reclamation (BOR), most of the Department of Energy (DOE), and a number of independent agencies, including the Nuclear Regulatory Commission (NRC) and the Appalachian Regional Commission (ARC). The Bush Administration's request was \$27.938 billion for these programs for FY2005, compared with \$27.253 billion appropriated for FY2004. The House bill (H.R. 4614) reported by the Appropriations Committee, and passed by the House June 25, contains funding at \$27.988 billion.

For the Corps of Engineers in FY2005, the Administration requested \$4.12 billion, a decrease of \$460 million from the enacted appropriation for FY2004. The Administration's request focused funding on construction projects that could be completed in FY2005 and eight projects considered priorities by the Administration, including the Florida Everglades. The House bill (H.R. 4614) increased the funding to \$4.83 billion.

The Administration asked for \$970 million for FY2005 for the Department of the Interior programs included in the Energy and Water Development bill — the Bureau of Reclamation and the Central Utah Project. This would be a decrease of

\$11 million from the FY2004 funding level. The House bill (H.R. 4614) would appropriate \$1.016 billion.

The FY2005 request for DOE programs in the bill was \$23.148 billion, about \$1.18 billion more than the previous year. The major activities in the DOE budget are energy research and development, general science, environmental cleanup, and nuclear weapons programs. (Funding of DOE's programs for fossil fuels, energy efficiency, and energy statistics is included in the Interior and Related Agencies appropriations bill. The FY2005 net request for these programs was \$1.7 billion.) The House bill (H.R. 4614) would appropriate \$22.478 billion.

The FY2005 request for funding the independent agencies in Title IV of the bill was \$232 million, compared with \$228 million in FY2004. The House bill (H.R. 4614) would appropriate \$193 million for these programs.

Table 2 includes budget totals for energy and water development appropriations enacted for FY1998 to FY2004 and the Administration's request for FY2005.

Table 2. Energy and Water Development Appropriations, FY1998 to FY2005

(budget authority in billions of current dollars)^a

FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05 (Req.)
21.2	21.2	21.2	23.9	25.2	26.1	26.7	27.94

^a These figures represent current dollars, exclude permanent budget authorities, and reflect rescissions.

Tables 3 through 10 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 FY2004-FY2005.

Title I: Corps of Engineers

The President's request for FY2005 for the civil works program of the U.S. Army Corps of Engineers was \$4.12 billion, a decrease of \$466 million from the enacted appropriation for FY2004.

Table 3. Energy and Water Development Appropriations
Title I: Corps of Engineers
(\$ millions)

Program	FY2004 ^a	FY2005 Request	House H.R. 4614	Senate S.
Investigations and Planning	116.3	90.5	145.0	
Construction	1,748.1 ^b	1,327.5 ^c	1,871.7	
Flood Control, Mississippi River	322.3	265.0 ^c	325.0	
Operation and Maintenance	1,956.3	1,931.0	1,982.0	
Regulatory	139.2	150.0	140.0	
General Expenses	159.1	167.0	167.0	
FUSRAP ^d	139.2	140.0	190.0	
Flood Control and Coastal Emergencies	— ^e	49.0 ^c	—	
Office of the Asst. Secretary or the Army	0.0	0.0	2.6	
Total	4,580.4	4,120.0	4,823.3	

Source: Administration budget request for FY2005 and H.Rept. 108-554. Budget justifications for FY2005 from the Corps of Engineers.

- a. Includes an across-the-board rescission of .59% included in the FY2004 Consolidated Appropriations Act, P.L. 108-199, enacted on January 23, 2004.
- b. This figure reflects amounts provided by the House Appropriations Committee; the Committee showed \$35.9 million added by P.L. 108-199. Other sources indicate that the supplemental appropriation was less and that the total construction appropriation was \$1731.3.
- c. This amount includes the Administration's proposed cancellation of \$100 million (\$94 million in construction, \$5 million in Mississippi River flood control, \$1 million in flood control and coastal emergencies) in unobligated FY2004 balances for work on 41 projects that are "inconsistent with current policy."
- d. "Formerly Utilized Sites Remedial Action Program."
- e. The conference committee for FY2004 appropriations removed all funding for the Flood Control and Coastal Emergencies account because the account was replenished with \$60 million through the Legislative Branch Appropriations Act for FY2004, P.L. 108-83.

The President's FY2005 budget request is similar in many ways to the President's FY2004 request. Again for FY2005, the President's request funds construction projects that can be completed in FY2005 and projects considered by the Administration to be priorities. The eight priority projects included the New York and New Jersey Harbor Deepening project, restoration projects in the Florida

Everglades and the side channels of the Upper Mississippi River system, and projects to meet environmental requirements in the Columbia River Basin and the Missouri River basin. The President's budget also funds three new projects that were determined to have high economic and environmental return. Outside of these three projects, there are no other new construction starts, because of the Administration's concern with the funding needed to complete projects budgeted for construction. In keeping with the Administration's approach to reducing the construction backlog, the President's budget limits funding for planning to five new projects. The request also focuses the operation and maintenance funds for the inland waterways and harbors on projects supporting a high volume of traffic.

The Corps announced in its budget briefing on February 2, 2004, that it is not budgeting for the continued renourishment of beach storm damage reduction projects, indicating that these costs are maintenance costs that should be borne by the non-federal project sponsors. This represents a change from the Corps' past involvement with renourishment, often at a 50% federal cost share. The budget also generally deemphasizes shallow draft harbors and low commercial use waterways.

The President requested no funds for studies and "environmental infrastructure" projects in the following non-traditional mission areas: wastewater treatment, irrigation water supply, and municipal and industrial water supply treatment and distribution. By not seeking funding for these activities, the Administration was reinforcing its interest in focusing available federal funding on navigation, flood control, storm damage reduction, and ecosystem restoration projects.

H.R. 4614 increases the Corps' appropriations by \$243 million over FY2004 and by \$703 million above the President's FY2005 request. H.R. 4614 funds some environmental infrastructure projects and funds some beach renourishment activities. It does not fund any new study or construction starts, including any that had been requested by the President. The accompanying report (H.Rept. 108-554) set four priorities for guiding funding decisions for FY2005:

- protect the investment already made in major water infrastructure;
- complete projects that are already under construction;
- move forward with completing ongoing studies that appear justified by their economic or environmental benefits; and
- fulfill prior commitments made to lock sponsors (including beach renourishment).

The House Appropriations Committee also directs the Corps to annually prepare and submit a five-year plan for the civil works program. The Committee rejected the proposed cancellation of \$100 million in FY2004 unobligated balances that had been part of the President's request.

Key Policy Issues — Corps of Engineers

Funding Level. Funding for the Corps' civil works program often has been 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. The FY2003 and FY2004 appropriations bills added funds above the Administration's request; they were, respectively, \$466 million (11%) and \$370 million (9%) above the requested amounts. The FY2005 budget request proposed a 10% cut from the enacted FY2004 appropriations.

The House Transportation and Infrastructure Subcommittee on Water Resources and Environment held a hearing on the Corps' FY2005 budget on February 26, 2004. On March 10, 2004, the House Appropriations Subcommittee on Energy and Water Development held its hearing. The Senate Appropriations Subcommittee on Energy and Water held a hearing on April 20, 2004. At these hearings, some Members of Congress raised concerns that the Administration's request represented a reduction in each of the major Corps accounts. At these hearings, Assistant Secretary of the Army Woodley mentioned the Corps' use of a performance-based approach in developing the budget request (i.e., providing funding to the projects that it identifies as having the highest economic and environmental returns). Some Members expressed particular concern about the application of performance-based budgeting and OMB's role in delayed use of FY2004 funds for congressionally added projects.

The Administration's FY2005 funding levels for navigation operation and maintenance and beach renourishment policy changes have drawn criticism from some stakeholders and support from others. House and Senate Waterways Caucuses announced their formation at a kick-off meeting on May 21, 2004. Caucus members spoke on the importance of the nation's waterways to trade, tourism, and recreation; they also asserted a need for increased funding for the civil works program. H.R. 4614 increased funding for beach construction projects from \$62 million in the President's request to \$94 million; some of the increase went to beach renourishment activities.

Savings and Slippage and Reprogramming. Corps appropriations include a reduction for *Saving and Slippage* (S&S) to account for the *slip* of spending on projects due to delays caused by weather, non-federal sponsor financing, or a decision not to proceed — or to account for *savings* from a project costing less than estimated. The Administration in its budget estimate proposes an S&S rate for various Corps accounts; Congress maintains or modifies these rates during the appropriations process. The enacted S&S rates are normally applied across the board to all projects in an account, except for those activities specifically set forth in act language. Over the course of the fiscal year, the Corps reprograms funds within an account from the projects that are not proceeding as planned to those that are moving forward. S&S rates that exceed the actual saving and slippage experienced could contribute to appropriations constraints on the progress of projects. There is no statutory language permitting or prohibiting reprogramming of funds; however, Congress has provided specific guidance in the past with regard to reprogramming of the construction account in report language. The conference report for the enacted appropriations for FY2004 identified numerous areas of dissatisfaction with the

Corps' reprogramming procedures.¹ H.Rept. 108-554 for H.R. 4614 provides guidance to the Corps regarding its reprogramming policies.

Proposed "Reforms" of Corps Processes and Procedures. During the 107th Congress, the Corps came under criticism for the way it evaluates and undertakes projects. Although the issue received media attention, it was not directly addressed through legislation. (For more information, see CRS Report RL30928, *Army Corps of Engineers: Reform Issues for the 107th Congress*, by Nicole T. Carter, and CRS Issue Brief IB10120, *Army Corps of Engineers Civil Works Program: Issues for Congress*, by Nicole T. Carter and Pervaze A. Sheikh.)

Everglades. A significant addition to the Corps' mission in recent years is its growing role in large environmental restoration programs, raising concerns that funding for these programs could displace the funding for other water resources activities. (See CRS Issue Brief IB10120, *Army Corps of Engineers Civil Works Program: Issues for Congress*, by Nicole T. Carter and Pervaze A. Sheikh, for more information.) The Corps plays a significant coordination role in the restoration of the Central and Southern Florida ecosystem. The Corps is particularly involved in the planning, construction, and operation of facilities under the Comprehensive Everglades Restoration Plan (CERP) that was authorized by Title VI of the Water Resources Development Act of 2000 (P.L. 106-541). The annual Energy and Water Development Appropriations bill provides funding for the Corps' participation in these efforts.²

The President's request for FY2005 included a total of \$130 million for the Corps' construction projects in the region. The FY2005 request for the Kissimmee River restoration project and the Everglades and South Florida ecosystem restoration project was \$18.0 million and \$27.0 million, respectively. For the Central and Southern Florida project, the Administration requested \$85.6 million; \$67 million of this is for CERP. H.R. 4614 would provide less — \$123 million — for Everglades restoration than requested by the Administration. The Everglades and South Florida ecosystem restoration project would receive \$25 million, and the Central and Southern Florida project would receive \$80 million.

In 2003, the quality of water entering the Everglades received much attention because of the passage of a state law in Florida that may affect phosphorous mitigation deadlines and goals. This concern was reflected in the Energy and Water Development Appropriations Act of FY2004; it conditions funding for Everglades restoration in FY2004 on the quality of water entering the Loxahatchee National Wildlife Refuge (LNWR) and Everglades National Park (ENP). Federal funding for Florida Everglades restoration is available for expenditure unless all four conditions are satisfied: (1) the Secretary of the Army finds that water entering the LNWR and

¹ The Corps' policies on reprogramming are outlined in its Engineer Regulation *Civil Works Activities — Funding, Work Allowances, and Reprogramming* (ER 11-2-201), available at [<http://www.usace.army.mil/publications/eng-regs/er11-2-201/entire.pdf>].

² Everglades restoration also receives funding through the Department of the Interior appropriations bills. (See CRS Report RL31806, *Appropriations for FY2004: Interior and Related Agencies*, coordinated by Carol Hardy-Vincent and Susan Boren.)

ENP does not meet water quality requirements in a 1992 consent decree;³ (2) the state fails to submit a plan for compliance within 45 days; (3) failure to submit the plan is reported; and (4) either the Senate or House Committee on Appropriations disapproves further expenditure of funds. The Interior and Related Agencies Appropriations Act for FY2004 (P.L. 108-108) enacted similar conditions for some of its Everglades-related appropriations. (See CRS Report RL32131, *Phosphorus Mitigation in the Everglades*, by Pervaze A. Sheikh and Barbara Johnson.) H.Rept. 108-554 for H.R. 4614 directs the Corps to submit to the appropriations committees a report on the progress made toward meeting water quality requirements.

Missouri River Management. In late February 2004 the Corps released a Final Environmental Impact Statement for the Missouri River Master Water Control Manual. The President's FY2005 budget request included \$69 million for environmental measures to comply with the U.S. Fish and Wildlife Service's Biological Opinion to protect three endangered species pursuant to the released Master Manual. H.R. 4614 provides \$18 million.

The measures that would be covered by the President's request would include shallow water habitat for the pallid sturgeon and sandbar habitat for two shorebirds. Some stakeholders reportedly are concerned that the measures to comply with the BiOp will benefit primarily the pallid sturgeon, while previous Missouri River mitigation efforts were not so narrowly focused. They argue that previous environmental mitigation funds were used to mitigate for lost fish and wildlife habitat generally, with benefits accruing to many species, including the three federally protected species. The Corps counters this argument by saying that the shallow water habitat it creates will benefit the pallid sturgeon while also benefitting other species. Another difference is that previous mitigation funds were restricted to river segments used for navigation; the FY2005 request is for activities along the length of the Missouri River from the reservoir at Fort Peck to the confluence of the Missouri River and Mississippi River at St. Louis. The amount appropriated for mitigation in the Energy and Water Development Appropriations Act of FY2004 had been \$18 million. (The President's FY2004 request had been for \$22 million.) The Corps is reprogramming \$23 million in FY2004 funds to provide for the environmental measures needed to implement the Master Manual in the 2004 navigation season. (See CRS Issue Brief IB10120, *Army Corps of Engineers Civil Works Program: Issues for Congress*, by Nicole T. Carter and Pervaze A. Sheikh.)

³ For details on the consent decree, see CRS Report RL32131, *Phosphorus Mitigation in the Everglades*, by Pervaze A. Sheikh and Barbara Johnson.

Title II: Department of the Interior

For the Department of the Interior, the Energy and Water Development bill provides funding for the Bureau of Reclamation (BOR) and the Central Utah Project Completion Account.

Table 4. Energy and Water Development Appropriations
Title II: Central Utah Project Completion Account
(\$ millions)

Program	FY2004	FY2005 Request	House H.R. 4614	Senate S.
Central Utah Project Construction	26.9	30.8	30.8 ^a	
Mitigation and Conservation Activities	9.4	15.5	15.5	
Oversight & Administration	1.7	1.7	1.7	
Total, Central Utah Project	38.0	48.0	48.0	

a. Calculated from text of H.Rept. 108-554. House does not give a figure for Central Utah Project Construction.

Central Utah Project

For FY2005, the President requested \$48.0 million for the Central Utah Project (CUP) Completion Account, an increase of \$10.0 million over the FY2004 enacted amount.

**Table 5. Energy and Water Development Appropriations
Title II: Bureau of Reclamation**

(\$ millions)

Program	FY2004	FY2005 Request	House H.R. 4614	Senate S.
Water and Related Resources ^a	852.4	794.5	855.3	
Loan Program Account ^a	0.2	—	—	
Policy & Administration ^a	55.2	58.2	58.2	
CVP Restoration Fund ^a	39.6	54.7	54.7	
Calif. Bay-Delta (CALFED)	—	15.0	—	
Working Capital Fund	(4.5)	—	—	
Gross Current Authority	942.7	922.3	968.2	
CVP Collections ^b	(30.8)	(46.0)	(46.0)	
Hydropower Direct Financing Offset ^c	—	(30.0)	—	
Indian Water Rights	2.1	—	—	
Net Current Authority ^d	913.8	906.3	922.2	
Total, Title II	980.7	970.3	1,016.2	

Source: H.Rept. 108-554. Budget justifications for FY2005 from the Bureau of Reclamation.

- a. Includes an across-the-board rescission of .59% included in the FY2004 Consolidated Appropriations Act, P.L. 108-199, enacted on January 23, 2004.
- b. In its request, the Bureau lists this as an “offset”; the House bill does not treat the CVP collections as an offset.
- c. The FY2005 request includes a proposal that funds be transferred to the Water and Related Resources account of the Bureau of Reclamation from the Western Area Power Administration (WAPA) account in Title III. The House bill does not include such a transfer.
- d. Calculated by CRS.

Bureau of Reclamation Budget In Brief

The FY2005 request for BOR totals \$922.3 million in gross current budget authority.⁴ This amount is \$20.4 million less than enacted for FY2004 in P.L. 108-137, including the rescission of \$5.1 million included in the FY2004 Consolidated Appropriations Act (PL. 108-199). The FY2005 request includes a \$46 million “offset” for the Central Valley Project (CVP) Restoration Fund, and a Hydropower Direct Financing offset of \$30.0 million (transferred from the Western Area Power Administration (WAPA) account in Title III), yielding a “net” current authority of \$846.3 million for BOR. The House bill (H.R. 4614) includes \$968.2 million in gross current authority. It does not include the transfer from the WAPA account.

⁴ The BOR budget also includes several permanent appropriations.

BOR's single largest account, Water and Related Resources, encompasses the agency's traditional programs and projects, including operations and maintenance, the Dam Safety Program, Water and Energy Management Development, and Fish and Wildlife Management and Development, among others. BOR requested \$828.5 million for this account for FY2005, \$24.0 million less than appropriated in P.L. 108-137 for FY2004. The House bill, H.R. 4614, includes \$860 million for the Water and Related Resources account.

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 348 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. Funds have not been appropriated for the California Bay-Delta Restoration Account (Bay-Delta, or CALFED) since FY2000, when the authorization for appropriations expired. However, funds were provided for FY2002, FY2003, and FY2004 for activities that support the CALFED program. The Administration has requested \$15 million for this account for FY2005. For FY2005, the House Committee on Appropriations recommends that no funds be appropriated for CALFED. For FY2004, the House and Senate Appropriations Committees also recommended that no funds be appropriated for CALFED since the program has not been authorized for appropriations — a position reiterated in the conference report for the final bill. However, conferees note a total of \$9 million is included in the Water and Related Resources account for certain activities supporting the CALFED program (see H.Rept. 108-357 (conference report) and S.Rept. 108-105). Additionally, §211 of P.L. 108-137 permanently authorizes the Secretary of the Interior to undertake feasibility studies for the Sites Reservoir, Los Vaqueros Reservoir Enlargement, and Upper San Joaquin Storage projects. Section 211 further notes these studies “should be pursued along with ongoing environmental and other projects in a balanced manner.” The three site-specific projects referenced above are proposed components of the water supply and water management functions of the CALFED program. (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. BOR requested \$43.2 million for FY2005 for continued heightened safety and security efforts at BOR facilities. 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), anti-terrorism activities, and

physical emergency security upgrades. (For more information on terrorism and security issues involving the water infrastructure sector, see CRS Report RL32189, *Terrorism and Security Issues Facing the Water Infrastructure Sector*, by Claudia Copeland and Betsy A. Cody.) Beginning in FY2005, BOR will assign a portion of site security costs to water users for repayment based on existing project cost allocations for operations and maintenance activities. The House Committee on Appropriations, in H.R. 4614, recommends \$43.2 million for site security.

Title III: Department of Energy

The Energy and Water Development bill includes funding for most of DOE's programs. Major DOE activities in the bill include research and development on renewable energy and nuclear power, general science, environmental cleanup, and nuclear weapons programs. The Administration's FY2005 request for DOE programs in the Energy and Water Development bill is \$23.148 billion, about \$1.63 billion more than the amount appropriated for FY2004. (The FY2005 request for DOE's programs for fossil fuels, energy efficiency, the Strategic Petroleum Reserve, and energy statistics, included in the Interior and Related Agencies appropriations bill, was \$1.7 billion.) The House bill (H.R. 4614) would appropriate \$22.478 billion.

Table 6. Energy and Water Development Appropriations
Title III: Department of Energy
(\$ millions)

Program	FY2004 ^a	FY2005 Request	House H.R. 4614	Senate S.	Final
Energy Supply R&D					
Solar and Renewable ^b	342.4	374.8	343.2		
Electricity Transmission & Distribution	81.9	90.9	75.4		
Nuclear Energy ^c	299.0	299.8	339.5		
Environment, Safety, Health	22.9	30.5	28.0		
Other	—	39.4	31.1		
Adjustments	(8.0)	—			
Total, Energy Supply	738.2	835.3	817.1		
Non-Defense Site Acceleration Completion	162.4	151.9	151.9		
Non-Defense Environmental Services	337.5	291.3	291.3		
Uranium Decontamination and Decommissioning Fund	414.0 (452.0)	500.2 (463.0)	500.2 (463.0)		
Science					
High Energy Physics	733.6	737.4	753.4		
Nuclear Physics	389.6	401.0	415.0		
Basic Energy Sciences	1,010.6	1,063.5	1,076.5		
Bio. & Env. R&D	588.5	501.6	571.6		
Fusion	262.6	264.1	276.1		
Advanced Scientific Computing	202.3	204.3	234.3		

Program	FY2004^a	FY2005 Request	House H.R. 4614	Senate S.	Final
Other	308.4	265.3	278.6		
Adjustments	(14.3)	(5.6)	(5.6)		
Total, Science	3,482.3	3,431.7	3,600.0		
National Nuclear Security Administration (NNSA)					
Weapons	6,235.5	6,568.5	6,514.4		
Nuclear Nonproliferation	1,319.8	1,348.6	1,348.6		
Naval Reactors	761.9	797.9	807.9		
Office of Administrator	338.0	333.7	356.2		
Total, NNSA	8,655.1	9,048.7	9,027.2		
Defense Environmental Management					
Environ. Restoration Privatization	(15.3)	—	—		
Defense Site Acceleration Completion	5,617.7	5,970.8	5,930.8		
Defense Environmental Services	985.3	982.5	958.0		
Total, Defense Env. Man.	6,587.7	6,953.3	6,888.8		
Other Defense Activities	670.5	663.6	697.1		
Defense Nuclear Waste	387.7	131.0	131.0		
Total, Defense Activities	16,301.0	16,796.6	16,744.0		
Departmental Admin. (net)	92.2	139.9	121.9		
Office of Inspector General	39.2	41.5	41.5		
Power Marketing Administrations (PMAs)					
Southeastern	4.9	5.2	5.2		
Southwestern	28.4	29.4	29.4		
Western	175.8	173.1	173.1		
Power Marketing Fund (WAPA)	(22.0)	(23.0)	(23.0)		
Falcon & Armistad O&M	2.6	2.8	2.8		
Total, PMAs	189.7	187.5	187.5		
FERC (revenues)	203.2 -203.2	210.0 -210.0	210.0 -210.0		
Civilian Nuclear Waste^d	188.9	749.0	—		
Adjustments	474.0	486.0	486.0		
Total, Title III	21,967.4	23,147.8	22,478.3		

Source: Department of Energy budget justifications for FY2005 and H.Rept. 108-554.

- a. Includes an across-the-board rescission of .59% included in the FY2004 Consolidated Appropriations Act, P.L. 108-199, enacted on January 23, 2004.
- b. Includes \$26.1 million added to the Solar R&D account by the FY2004 Consolidated Appropriations Act, P.L. 108-199, enacted on January 23, 2004.
- c. Includes transfer of programs funded at \$113.4 million from Energy Supply — Nuclear Energy to Other Defense Activities.
- d. DOE proposes to offset FY2005 appropriations with Nuclear Waste Fee collections, for a net appropriation of zero.

Key Policy Issues — Department of Energy

Renewable Energy. The FY2005 budget request aims to promote “breakthroughs in hydrogen fuel cells,” develop advanced technologies for cellulosic biomass as an energy source, and generally lower the cost of various renewable energy systems, while improving equipment performance and efficiency. The request also proposes competitive solicitations for applied research on technologies that would help curb greenhouse gas emissions.

The request seeks \$374.8 million for renewables, which is \$4.3 million, or 1%, more than the FY2004 appropriation. This comparison includes the use of \$13.0 million in prior year balances for FY2004. The funding request includes \$13.3 million more for Hydrogen (due to increases of \$12.1 million for safety and \$2.7 million for renewable hydrogen), \$8.3 million more for Program Direction, and \$3.0 million for a new National Climate Change Technology program. However, it would terminate Program Support (a cut of \$4.9 million) and cut Biomass Utilization by \$15.2 million (to terminate Small Modular Biopower and discontinue congressional earmarks) and cut Concentrating Solar Power by \$3.4 million. Also, the request includes \$90.9 million for the Office of Electricity Transmission and Distribution (OETD), an increase of \$10.5 million, or 14%. The primary increase in OETD is for High Temperature Superconductivity.

For FY2005, the House Appropriation Committee approved \$343.2 million for Renewable Energy, which is \$31.6 million, or 8%, less than the request. The major part of this reduction is a decrease of \$31.0 million, or 33%, for Hydrogen. Most of the decrease for Hydrogen would eliminate support for hydrogen storage “centers of excellence,” which the Committee states DOE awarded “without full and open competition.” Further, the Committee cuts \$7.0 million (zero appropriation) for DOE’s proposed hydrogen education initiative. Also, there is a cut of \$3.0 million (zero appropriation) for the National Climate Change Technology Initiative and an increase of \$2.4 million for Concentrating Solar Power.

Relative to the FY2005 request, the Committee provides \$15.5 million, or 17%, less for OETD. The Committee’s reduction includes cuts of \$10.5 million for Research and Development (R&D) and \$5.8 million, or 57%, for Program Direction. Most of the reduction for R&D involves the DOE request for two new initiatives, Gridwise and Gridworks. These programs would focus on software (Gridwise) and hardware (Gridworks) aspects of a modernized electricity transmission system. The Committee directs that funding for these two programs will not be provided here, but

instead will be provided under the Energy Assurance program within Other Defense Activities.

Relative to the FY2004 appropriation, the Committee approved \$14.3 million, or 4%, less for renewables and \$6.5 million, or 8%, less for OETD. The reduction for renewables includes a cut of \$17.7 million, or 22%, for hydrogen, \$2.6 million, or 12%, for Intergovernmental Activities, and \$1.5 million for Facilities and Infrastructure. Also, there is an increase of \$8.3 million for Program Direction. For OETD, the Committee approved cuts of \$5.2 million for R&D and \$2.0 million for Electricity Restructuring. However, it also proposed an increase of \$0.7 million for Program Direction.

Nuclear Energy. For nuclear energy research and development — including advanced reactors, fuel cycle technology, and nuclear hydrogen production — the Administration is requesting \$299.8 million for FY2005. An additional \$112.8 million is being requested under Other Defense Activities for management of the Idaho National Engineering and Environmental Laboratory (INEEL), which is being transferred to the nuclear energy program from DOE's environmental management program, for a total of \$412.6 million. That total request is about \$2 million above the FY2004 appropriation.

However, the House Appropriations Committee declared the Administration's request inadequate to achieve DOE's stated goal of transforming INEEL — to be renamed Idaho National Laboratory — into the nation's leading center for nuclear power research. The committee recommended a funding increase of \$51.2 million, for a total of \$463.8 million. That total includes \$114.3 million funded under Other Defense Activities and \$10 million under Naval Reactors.

“The benefits of nuclear power as a clean, reliable, and affordable source of energy are a key to economic and environmental underpinnings of the U.S.,” according to DOE's budget justification. 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.

Within the nuclear energy budget, the Administration is seeking \$10.2 million for the Nuclear Power 2010 program, which “is focused on resolving the technical, institutional, and regulatory barriers to the deployment of new nuclear power plants by 2010,” according to the DOE budget justification. The budget request for Nuclear Power 2010 is about half the FY2004 appropriation and a third of the FY2003 level.

According to the DOE budget justification, the Nuclear Power 2010 program “will enable an industry decision by 2005 to deploy at least one new advanced nuclear power plant in the U.S.” The current phase of the initiative includes site approval, reactor design certification, license applications, detailed design work, and development of improved construction techniques. DOE will pay up to half the cost of these activities. The program is currently helping three utilities seek NRC approval for potential nuclear reactor sites in Illinois, Mississippi, and Virginia. In March and April of 2004, three industry consortia filed applications seeking a total of \$650 million over the next several years to design and license new nuclear power

plants. The nuclear plant licenses under the program would test the “one step” licensing process established by the Energy Policy Act of 1992 (P.L. 102-486).

The House Appropriations Committee voted to cut the Nuclear Power 2010 program to \$5.0 million in FY2005, contending that NRC should not issue new reactor licenses “in the absence of a repository for spent nuclear fuel.” As discussed in a later section, the Administration’s funding request for DOE’s waste repository program has created considerable friction with the Appropriations panel.

However, funding would be increased for the Generation IV Nuclear Energy Systems Initiative, which focuses on more advanced reactors that could be deployed in the longer term. DOE requested a boost of about 10%, to \$30.5 million, while the House panel recommended a further increase of \$10 million.

The Generation IV program is focusing on six advanced designs that could be deployed after 2010: 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. The Administration’s May 2001 *National Energy Policy* report contends that plutonium recovery could reduce the long-term environmental impact of nuclear waste disposal and increase domestic energy supplies. However, opponents contend that the separation of plutonium from spent fuel poses unacceptable environmental risks and, because of plutonium’s potential use in nuclear bombs, undermines U.S. policy on nuclear weapons proliferation.

The development of plutonium-fueled reactors in the Generation IV program is closely related to the nuclear energy program’s Advanced Fuel Cycle Initiative (AFCI), for which \$46.3 million is being requested for FY2005 — about \$20 million below the FY2004 appropriation. According to the budget justification, AFCI will “develop advanced, proliferation-resistant nuclear fuel cycle technologies” 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 re-use in a nuclear reactor or for transmutation in a particle accelerator. The program includes longstanding DOE work on electrometallurgical treatment of spent fuel from the Experimental Breeder Reactor II (EBR-II) at INEEL. The House Appropriations Committee rejected the Administration’s proposed cut in the program, providing a total of \$68.0 million.

In support of President Bush’s program to develop hydrogen-fueled vehicles, DOE is requesting \$9.0 million in FY2005 for the Nuclear Hydrogen Initiative, nearly a 50% increase from the FY2004 level. The House panel approved the full funding request. According to DOE’s budget justification, the program would investigate the use of high-temperature nuclear reactors to make hydrogen from water in a thermochemical process. According to DOE, “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. Even if the technology is successful, however, DOE

officials have predicted that significant quantities of nuclear-produced hydrogen would not become available until 2020-2030.⁵

DOE is seeking no new funding specifically for the Nuclear Energy Research Initiative (NERI), which provides grants for research on innovative nuclear energy technologies. Instead, according to the budget justification, NERI projects will be pursued at the discretion of individual nuclear R&D programs. NERI received an appropriation of \$11 million for FY2004. No new funding also is being requested for the Nuclear Energy Plant Optimization program (NEPO), which received \$2.9 million in FY2004. The program supports cost-shared research by the nuclear power industry on ways to improve the productivity of existing nuclear plants. The House Appropriations Committee agreed to provide no new funding for NERI and NEPO.

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 supporter of basic research and the largest federal supporter of research in the physical sciences.

For FY2005, DOE requested \$3.432 billion for Science. The FY2004 appropriation was \$3.482 billion.⁶ On this basis, the FY2005 request is a decrease of 1%. Some Administration statements assert that the request reflects a 2% increase, if the FY2004 baseline is taken to exclude funds provided for specific congressionally directed projects. The House bill would provide \$3.600 billion, an increase of 5% above the FY2004 appropriation.

The requested funding for the largest program, basic energy sciences, is \$1.064 billion, an increase of \$53 million above the comparable FY2004 appropriation. Nanoscience is a growth area in basic energy sciences. Along with other nanoscience funding, the FY2005 request includes \$99 million for construction of four Nanoscale Science Research Centers. The House bill would provide \$1.077 billion for basic energy sciences. Part of the \$13 million increase would fund additional nanoscience research, and nanoscience center construction would be fully funded at the requested level.

The FY2005 request for high-energy physics is \$737 million, an increase of \$4 million above the comparable FY2004 appropriation. The House bill would provide a further increase of \$16 million, for a total of \$753 million. The House report expressed support for DOE's collaboration with the National Aeronautics and Space Administration (NASA) on three scientific spacecraft, and encouraged NASA to

⁵ EnergyWashington.com Daily Updates, February 5, 2003.

⁶ DOE budget justification documents refer to a "comparable" FY2004 appropriation of \$3.500 billion. The difference of \$18 million reflects transferred activities that are included in the FY2005 request for Science but were funded in other accounts in FY2004.

maintain the planned schedules of these missions, which are in question following the President's announcement in January 2004 of a new vision for NASA.⁷

The requested funding for biological and environmental research is \$502 million, a decrease of \$140 million below the comparable FY2004 appropriation. The reduction corresponds to \$140 million provided in FY2004 for specific congressionally directed projects. The House bill would provide \$572 million, or \$75 million more than requested, but does not include \$5 million requested for a new laboratory facility. The House report states that such facilities should be procured in a more open competition that includes universities and others as well as DOE laboratories.

The request for nuclear physics is \$401 million, an increase of \$11 million above the comparable FY2004 appropriation. The House bill would provide \$415 million, a further increase of \$14 million.

The request for fusion energy sciences is \$264 million, a \$2 million increase above the comparable FY2004 appropriation. In 2003, the United States rejoined negotiations on construction of the International Thermonuclear Experimental Reactor (ITER), a fusion facility whose other participants include China, the European Union, Japan, Russia, and South Korea. The requested FY2005 budget for fusion energy sciences includes \$7 million devoted directly to ITER preparations, plus another \$31 million in supporting activities. The budget impact of ITER in future years, once construction begins, will depend on the outcome of the ongoing negotiations; the U.S. share is generally expected to be in the range of \$50 million to \$100 million per year. Appropriations conference report language in FY2004 cautioned DOE not to submit "any future budget requests for ITER that are funded at the expense of domestic research." The House bill would provide \$276 million for fusion energy sciences, \$12 million more than the request, even though site selection for ITER has been delayed, which the House report anticipated will result in DOE spending less than planned on ITER in FY2005.

The smallest Science program, advanced scientific computing research, is funded at \$204 million in the FY2005 request, an increase of \$2 million above the FY2004 appropriation. The House bill would provide \$234 million. The \$30 million increase recommended by the House would fund development of hardware, software, and applied mathematics for supercomputing, and the House report encouraged DOE to make time on the resulting supercomputer available to external users on a competitive basis.

The House report also included general discussion of three major issues. It expressed strong support for external regulation of the DOE Science laboratories and strong displeasure with DOE's "continued intransigence" in moving from self-regulation to external regulation. It advocated open competition for new research facilities, with particular mention of facilities proposed in the recent Office of

⁷ See CRS Report RS21720, *Space Exploration: Overview of President Bush's New Exploration Initiative for NASA, and Key Issues for Congress*, by Marcia S. Smith.

Science 20-year plan.⁸ (See paragraph on biological and environmental research, above.) It commended the Office of Science for its efforts in developing quantifiable performance measures, such as facility operating time, for which several individual Science programs received additional funding.

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 established by Congress in the FY2000 National Defense Authorization Act (P.L. 106-65, Title XXXII) within DOE. It seeks to maintain the safety and reliability of the U.S. nuclear stockpile.

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.

Stockpile stewardship consists of all activities in NNSA’s Weapons Activities account. Appropriations were \$4,908.7 million for FY2001, \$5,560.2 million for FY2002, and \$5,961.3 million for FY2003; Table 7 provides FY2004 and FY2005 data. The three main elements of stockpile stewardship, described next, are Directed Stockpile Work (DSW), Campaigns, and Readiness in Technical Base and Facilities (RTBF); Table 7 presents funding for these elements. NNSA also manages two major programs outside of Weapons Activities: Defense Nuclear Nonproliferation, discussed in a subsequent section of this report, and Naval Reactors.

Table 7. Funding for Weapons Activities
(\$ millions)

Program	FY2004^a	FY2005 Request	House Approp. Comm.	Senate	P.L.
DSW	1,326.7	1,406.4	1,324.9		
Campaigns	2,400.1	2,393.8	2,252.0		
RTBF	1,540.6	1,474.5	1,652.5		
Other ^b	966.1	1,293.7	1,285.0		
Total	6,233.5	6,568.5	6,514.4		

Source for FY2004 comparable appropriation and FY2005 request: U.S. Department of Energy, Office of Management, Budget, and Administration/ CFO. *FY 2005 Congressional Budget Request*, volume 1, National Nuclear Security Administration. DOE/ME-0032, February 2004, p. 49.

⁸ The facilities plan is available online at [http://www.sc.doe.gov/Sub/Facilities_for_future/facilities_future.htm].

Notes: Details may not add to totals due to rounding.

- a. Reflects distribution of a rescission from P.L. 108-199, FY2004 Consolidated Appropriations Act, and adjustments to make FY2004 appropriation categories comparable to those of the FY2005 request.
- b. Includes Secure Transportation Asset, Nuclear Weapons Incident Response, Facilities and Infrastructure Recapitalization Program, Safeguards and Security, Safeguards and Security Charge for Reimbursable Work (an offset), and (for FY2004) use of prior year balances.

On July 18, 2003, the House passed H.R. 2754, the FY2004 Energy and Water Development Appropriations Bill, 377-26, without amending the Weapons Activities section. Thus, the FY2004 amounts listed below that were recommended by the House Appropriations Committee were accepted by the House. The Senate passed its version of H.R. 2754, 92-0, on September 16; it adopted no amendments to the Senate Appropriations Committee's bill that changed Weapons Activities funding. The conference report, H.Rept. 108-357, was ordered to be printed on November 7. On November 18, the House agreed to the conference report, 387-36, and the Senate agreed to it by unanimous consent. The President signed the measure into law (P.L. 108-137) on December 1. The FY2004 Consolidated Appropriations Act imposed an across-the-board rescission of 0.59 percent; it was signed into law (P.L. 108-199) on January 23, 2004.

The FY2005 request includes data from NNSA's Future Years Nuclear Security Program (FYNSP), which projects the budget and components through FY2009:

Table 8. NNSA Future Years Nuclear Security Program
(\$ millions)

	FY2005	FY2006	FY2007	FY2008	FY2009
DSW	1,406.4	1,521.2	1,648.1	1,778.4	1,812.4
Campaigns	2,393.8	2,526.7	2,516.5	2,395.2	2,401.4
RTBF	1,474.5	1,600.2	1,753.2	1,839.3	1,915.8
Other ^a	1,293.7	1,232.9	1,298.2	1,340.1	1,362.4
Total	6,568.5	6,881.0	7,216.0	7,353.0	7,492.0

Source: Department of Energy, *FY 2005 Congressional Budget Request*, vol. 1, p. 50, 63. Figures for the Robust Nuclear Earth Penetrator (RNEP) for the outyears have changed from this budget document, as discussed below. They are in flux, so are not available. RNEP is funded under DSW; this table shows DSW funding as presented in the budget document.

Notes: Details may not add to totals because of rounding.

- a. Includes Secure Transportation Asset, Nuclear Weapons Incident Response, Facilities and Infrastructure Recapitalization Program, Safeguards and Security, and Security Charge for Reimbursable Work.

On June 16, 2004, the House Appropriations Committee approved its FY2005 Energy and Water Development Appropriations Bill (H.R. 4614, H.Rept. 108-554). Details are presented throughout the balance of this section.

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 FY2005 DSW request would support life extension programs for four nuclear warheads: B61 (gravity bomb), W76 (for Trident I and II submarine-launched ballistic missiles), W80 (for cruise missiles), and W87 (for Minuteman III and MX/Peacekeeper intercontinental ballistic missiles). It would fund surveillance and maintenance for nine warhead types, and some management and technology work not linked to a specific warhead.

The FY2004 energy and water development conference report directed DOD to prepare a report on the stockpile plan through 2012 so as to see how the stockpile would be adjusted to meet the requirements of the Strategic Offensive Reductions Treaty, which would reduce U.S. and Russian strategic nuclear warheads to 1,700 to 2,200 by December 2012. (See CRS Report RL31448, *Nuclear Arms Control: The Strategic Offensive Reductions Treaty*, for details on that treaty.) That classified report was delivered to Congress on June 1, 2005. In its FY2005 report on energy and water appropriations, the House Appropriations Committee stated that the new stockpile plan “obviates the need for any programmatic acceleration in the Life Extension Program activities for the B61, W76, and W80.” To this end, the committee recommended reducing DSW life extension programs by \$40.0 million, to \$437.4 million, with the reduction taken against the life extension program for the W80. Following up the stockpile report, the committee directed DOE to submit a report on requirements for the nuclear weapons complex over the next 25 years, due April 30, 2005. The committee recommended reducing DSW Stockpile Systems by \$40.0 million, to \$496.1 million, with the reduction taken against such activities for the W80 and W87 “to reduce the significant program increase over current year levels pending the recommendations of the weapons complex review.”

Robust Nuclear Earth Penetrator (RNEP). DSW also includes funds for a study of RNEP, for which \$15.0 million was appropriated for FY2003, \$15.0 million was requested and \$7.5 million appropriated for FY2004, and \$27.6 million is requested for FY2005. RNEP is part of the Advanced Concepts Initiative (ACI), which was established to explore future weapons concepts and technologies. Earth penetrators burrow into the ground before detonating in order to destroy underground targets with less explosive yield than a surface-burst weapon would require. (See CRS Report RL32130, *Nuclear Weapon Initiatives: Low-Yield R&D, Advanced Concepts, Earth Penetrators, Test Readiness*, and CRS Report RL32347, *Robust Nuclear Earth Penetrator Budget Request and Plan, FY2005-FY2009*.)

RNEP is controversial. Supporters argue that it is needed to attack hard and deeply buried targets (such as leadership bunkers or chemical weapons production facilities) in countries of concern, thereby deterring or defeating such nations; critics reply that RNEP would lower the threshold for use of nuclear weapons and prompt other nations to develop nuclear weapons to deter U.S. attack.

Secretary Rumsfeld said in 2003 that RNEP “is a study. It is nothing more and nothing less.”⁹ The study is examining feasibility and cost. Yet the FY2005 request

⁹ U.S. Department of Defense. “DoD News Briefing — Secretary Rumsfeld and Gen. Myers.” May 20, 2003. At [<http://www.defenselink.mil/transcripts/2003/tr20030520-secdef>]

seems to cast serious doubt on assertions that RNEP is only a study. Beginning with the FY2005 budget cycle, NNSA presented a detailed four-year projection along with the current request. For RNEP, the figures are: FY2005, \$27.6 million; FY2006, \$95.0 million; FY2007, \$145.4 million; FY2008, \$128.4 million; and FY2009, \$88.4 million, for a five-year total of \$484.7 million.¹⁰ Along with the increase, the plan shows RNEP starting — assuming congressional authorization — development engineering, in which the nuclear weapons laboratories produce a completed warhead design, in FY2007, and production engineering, in which the design is adapted for production and a system to manufacture the weapon is created, in FY2009.

An NNSA manager responsible for the program maintained that the budget increase beyond FY2005 is an artifact of the budget process.¹¹ He stated that the money was inserted in the out years as a “placeholder” to protect the option of proceeding with RNEP. Were this not done, it is argued that NNSA would face two choices that it deems unsatisfactory: (1) By the time the budget for one fiscal year is submitted, the budget for the next fiscal year is largely fixed; without the placeholder, a decision to proceed with RNEP could not be implemented until the second fiscal year. (2) Alternatively, without the placeholder, a decision to proceed with RNEP could be implemented promptly only by taking the needed funds out of other programs. Similarly, the move to development engineering and production engineering reflects how the program might be expected to advance if it proceeds. The official, however, indicated that no decision has been made on whether or not to proceed with RNEP pending completion of the study.

The RNEP study was initially projected to cost \$45 million — \$15 million a year for FY2003-FY2005 — but each year’s numbers have changed. For FY2003, delay in submission of a DOD study required by the FY2003 National Defense Authorization Act (P.L. 107-314, Sec. 3146) delayed the start of NNSA’s RNEP study; as a result, \$6.0 million was spent of the \$15.0 million appropriated. For FY2004, Congress cut the RNEP appropriation to \$7.5 million. The FY2005 request is \$27.6 million, vs. \$15.0 million originally planned. Finally, FY2006, not FY2005, will be the last year of the RNEP study; NNSA estimates the FY2006 request at \$30 million. The four-year total is about \$71 million. NNSA stated that a firm budget estimate for RNEP beyond FY2006 must await completion of the cost study.

According to NNSA, the study’s cost has grown for a number of reasons. The \$45 million did not take into account participation in the study by Y-12 Plant, which would make components of RNEP, or of Pantex Plant, which would convert existing weapons into RNEPs; their participation adds some \$2 million. DOE has imposed additional project management requirements that add \$2 million. The rest of the increase comes from a better definition of the requirements of the study, refinement

⁹ (...continued)
0207.html].

¹⁰ U.S. Department of Energy. Office of Management, Budget, and Administration/CFO. *FY 2005 Congressional Budget Request*. Volume 1, National Nuclear Security Administration. DOE/ME-0032, February 2004, p. 63. The RNEP budget is available under “Directed Stockpile Work” at [<http://www.mbe.doe.gov/budget/05budget/index.htm>].

¹¹ Telephone interview, February 10, 2004.

of cost estimates, and an increase in surety (safety, security, and use control) of the proposed weapon. On the latter point, DOE requires that any modifications of a nuclear weapon look for ways to increase its surety.¹² NNSA says it has found ways to increase RNEP surety, and plans to do so.

The two Armed Services Committees recommended providing the full amount requested for RNEP for FY2005, \$27.6 million, and House and Senate floor amendments to delete such funding were rejected. In contrast, the House Appropriations Committee eliminated RNEP funds for FY2005. It saw RNEP as a “diversion of resources ... from the most serious issues that confront the management of the nation’s nuclear deterrent” and “remain[ed] unconvinced” by DOE’s assurances that RNEP is only a study. It found that DOE actions “left little doubt that the objective of the program was to advance the most extreme new nuclear weapon goals irrespective of any reservations expressed by Congress.” Accordingly, “[t]he Committee directs the NNSA to focus wholly on its primary mission of maintaining the safety, security, and viability of the existing stockpile.”

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 FY2005, there are six campaigns, each of which has multiple components: Science; Engineering; Inertial Confinement Fusion and High Yield; Advanced Simulation and Computing; Pit Manufacturing and Certification, and Readiness.

The House Appropriations Committee commended NNSA for “great progress in budgeting by weapons type” (e.g., the amount requested for extending the life of the W80 warhead). On the other hand, it expressed its concern that NNSA’s accounting system still did not provide the full cost of weapon refurbishments because it did not assign the cost of campaigns to specific warhead types. Accordingly, “[t]he Committee directs the NNSA to assign the associated life extension costs by weapons type associated with each campaign.”

Pit Manufacturing and Certification Campaign. This is perhaps the most controversial campaign at present. It may remain so for some years because one component of it is a facility that may cost several billion dollars and is scheduled to start initial operations in FY2019, and other components of the campaign involve restoring U.S. ability to manufacture a critical nuclear weapon part. Pits are the fissile cores of nuclear warheads that trigger the thermonuclear secondary stage. DOE has had no facility to produce pits for use in stockpiled weapons since it suspended pit production at the Rocky Flats Plant (CO) in 1989. As a result, the United States has been unable to make all-new nuclear warheads of existing or advanced new designs. (See CRS Report RL31993, *Nuclear Warhead ‘Pit’ Production: Background and Issues for Congress.*) For FY2005, this campaign has five components.

- (1) W88 Pit Manufacturing: When Rocky Flats suspended production, it was making pits for the W88 warhead for the Trident

¹² U.S. Department of Energy. Order DOE O 452.1B, “Nuclear Explosive and Weapon Surety Program,” approved August 6, 2001, Section 4(f).

II missile. NNSA has established a facility at Los Alamos National Laboratory that is producing these pits at a low rate, with a target of 10 to 20 pits a year by FY2007.

- (2) W88 Pit Certification: Additional scientific work is underway to provide confidence, without nuclear testing, that the Los Alamos pits will work as intended. These pits cannot be certified for use in the stockpile until they meet the standards being developed.
- (3) Pit Manufacturing Capability. This component will establish technologies to manufacture pits other than for the W88.
- (4) Modern Pit Facility (MPF): NNSA maintains that pits will ultimately develop defects as a result of aging and other unanticipated problems, so that a higher capacity will be needed in the future. Further, it is argued, since it would take many years to complete a higher-capacity facility, work on it must begin promptly. Accordingly, it is planning for MPF, which would be a new facility, first operational in FY2019, with a capacity of at least 125 pits per year. It might cost \$2 billion to \$4 billion. Critics maintain that the plutonium component of a pit, which is by far the most difficult to fabricate, is likely to deteriorate very slowly, and perhaps in a way that would not impair weapon performance. They further state that the need for the facility is unclear, given anticipated reductions in nuclear weapons, and that MPF is proceeding at too rapid a pace. To address these questions, NNSA is conducting “accelerated aging experiments,” in which plutonium of the type used in a pit is mixed with a greater-than-usual amount of a more radioactive plutonium isotope to simulate more quickly the effects of aging.
- (5) Pit Campaign Support Activities at Nevada Test Site: NNSA plans to conduct certain experiments at Nevada Test Site to support W88 pit certification.

This campaign has attracted much congressional interest. For FY2002, the House Appropriations Committee asserted that DOE cannot show “that it has a viable plan to manufacture and certify pits on the schedule dictated by national security needs,” criticized the project as “years behind schedule and hundreds of millions of dollars over the original cost estimate,” and stated that it would judge NNSA’s success on how well the pit project succeeds (H.Rept. 107-112). The Senate Appropriations Committee viewed the then-current schedule, which would not certify a pit for use in the stockpile until FY2009, as “unacceptable” (S.Rept. 107-39).

In its FY2003 report, the Senate Appropriations Committee stated that it “remains greatly concerned about the NNSA’s refusal to request funds consistent with its own project plan submitted less than 1 year ago.” Because this was not done, “the Committee has been forced to reduce other items in the budget.” The final appropriation provided more funds than requested. According to the joint explanatory statement of the Committee of Conference, “The increase will ensure that the NNSA

maintains its commitment to produce a certifiable W88 pit by 2003 and a certified W88 pit by 2007.”

For FY2004, the Administration requested a substantial increase to items in this campaign. The House Appropriations Committee saw the campaign as proceeding too quickly. It recommended reducing the request for this campaign substantially. It praised NNSA and Los Alamos National Laboratory for “turning around” this campaign, but urged NNSA to reduce costs. It stated that the current plan would “aggressively pursue a multi-billion dollar Modern Pit Facility before the first production pit has even been successfully certified for use in the stockpile” and recommended “a less aggressive planning approach” to MPF. The Senate Appropriations Committee recommended the amount requested for this campaign. The Feinstein amendment (S.Amdt. 1655) discussed under DSW, which was tabled, would have barred use of funds for MPF site selection. Conferees provided the full amount requested for manufacturing and certifying the W88 pit, but reduced MPF funding from \$22.8 million to \$10.8 million: “The conferees agree with the House Report that until the Congress reviews the revised future Stockpile plan it is premature to pursue further decisions regarding the Modern Pit Facility.”

The FY2005 request (with FY2004 funding in parentheses) includes \$132.0 million (\$125.0 million) for W88 pit manufacturing, \$101.5 million (\$108.6 million) for W88 pit certification, \$21.0 (\$10.0 million) for pit manufacturing capability, \$29.8 million (\$10.8 million) for MPF, and \$52.2 million (\$42.4 million) for pit campaign support activities at Nevada Test Site.

The House Appropriations Committee raised concerns about proceeding with MPF until the need for that facility is validated. It “will consider a modern pit facility design only when the [accelerated] pit aging experiments are completed and the future MPF requirements as a function of the 2012 stockpile and the expanded TA-55 production capability are determined.” (TA-55 is the facility at Los Alamos used for making pits.) In contrast, it favored accelerating efforts to expand capability at TA-55 as a near-term hedge. Accordingly, the committee commended Los Alamos’s work to restore pit manufacturing capability at TA-55, adding \$10.0 million to W88 pit manufacturing to accelerate this work, and eliminated the \$29.8 million requested for MPF. It provided the amount requested for W88 pit certification and for pit campaign support activities at Nevada Test Site. It eliminated the \$21.0 million requested for pit manufacturing capability on grounds that “work on pit manufacturing should be focused on expansion of the pit production capability of TA-55.”

Other Campaigns. The House Appropriations Committee acted on numerous other campaigns, as presented in its report on FY2005 energy and water appropriations.

- The Primary Assessment Technology Campaign, a Science Campaign, seeks to develop the ability to certify the safety and

performance of aged or rebuilt primaries without nuclear testing.¹³ Part of the campaign is to enhance test readiness, or to reduce the time needed to conduct a nuclear test following a presidential order to test. The committee reduced the Primary Assessment Technology Campaign by \$15.0 million, as discussed in more detail under “Nuclear Testing and Test Readiness,” below.

- The committee reduced the Nuclear Survivability Campaign, an Engineering Campaign, by \$15.0 million, leaving \$9.5 million. The committee questioned its “high level of funding,” given that its purpose is “to assess the ability of weapons in the stockpile to continue to function as designed during a massive nuclear exchange. In the post-Cold War world ... this activity is a waste of scarce resources.”
- The National Ignition Facility (NIF) is part of the Inertial Confinement Fusion and High Yield Campaign. NIF is to be the world’s largest laser. It is under construction at Lawrence Livermore National Laboratory. The committee provided the amount requested for NIF, \$130.0 million. It expressed concern that NNSA’s commitment to NIF seemed uncertain because NNSA had delayed the date for ignition from 2010 to 2014. Accordingly, the committee directed that no funds be spent on NIF to add capabilities not in the project’s baseline until ignition is attempted in 2010.
- The committee recommended reducing the funding for the Advanced Simulation and Computing Campaign by \$75.0 million, to \$666.3 million. It stated that it wanted to work with NNSA to develop program products and milestones so that progress would be “transparent.”

Readiness in Technical Base and Facilities (RTBF). This program provides infrastructure and operations at the nuclear weapons complex sites. It has six subprograms. By far the largest is Operations of Facilities (\$1,021.7 million adjusted appropriation for FY2004, \$1,017.6 million requested for FY2005). Others include Program Readiness, which supports activities occurring at multiple sites or in multiple programs (\$115.8 million adjusted appropriation for FY2004, \$106.2 million requested for FY2005), and Material Recycle and Recovery, which recovers plutonium, enriched uranium, and tritium from weapons production and disassembly (\$75.7 million adjusted appropriation for FY2004, \$87.0 requested for FY2005). Construction is a separate category within RTBF; the adjusted appropriation for FY2004 was \$258.9 million, and the FY2005 request is \$206.3 million.

¹³ Department of Energy, *2005 Congressional Budget Request*. Volume 1, p. 86. The “primary” — the first stage in a thermonuclear warhead — typically involves the implosion of plutonium to create a nuclear explosion that is then harnessed to drive the “secondary” stage, which releases most of the weapon’s energy through fission and fusion.

For FY2004, the House Appropriations Committee recommended a reduction of \$102.4 million from the request. Details include \$997.8 million for Operations of Facilities, with an increase of \$20.0 million for Pantex Plant (TX) and \$5.0 million for Y-12 Plant (TN); \$106.2 million for Program Readiness, reflecting the elimination of funds for Enhanced Test Readiness (discussed below); \$76.2 million, as requested, for Material Recycle and Recovery; and \$178.9 million for construction, with almost all the reduction resulting from eliminating funds requested for three projects (\$20.0 million, exterior communications infrastructure modernization, Sandia National Laboratories; \$50.0 million, national security sciences building, and \$20.5 million, chemistry and metallurgy facility replacement project, both at Los Alamos National Laboratory).

The Senate Appropriations Committee recommended adding \$118.1 million to RTBF for FY2004. Of the increase, \$117.0 million went to Operations of Facilities, including \$25.0 million for the National Center for Combating Terrorism, \$10.0 million for Pantex Plant, \$10.0 million for Y-12 Plant, \$20.0 million for Kansas City Plant (MO), \$15.0 million for Lawrence Livermore National Laboratory, \$20.0 million for Los Alamos National Laboratory, and \$8.0 million for Sandia National Laboratories.

Conferees provided \$1,664.2 million for RTBF for 2004, an increase of \$50.8 million over the request. The main items of difference between the conference bill and the request were Operations of Facilities (a \$30.0 million increase), Special Projects (an increase of \$8.7 million), and Chemistry and Metallurgy Facility Replacement Project, Los Alamos National Laboratory (a \$10.5 million decrease). The increase in funding for Operations of Facilities was distributed as follows: \$5.0 million apiece to Pantex Plant, Y-12 Plant, Kansas City Plant, and Nevada Test Site, and \$10.0 million to Los Alamos.

For FY2005, the House Appropriations Committee recommended providing \$1,652.5 million for RTBF, an increase of \$178.0 million. Of the RTBF components, the committee recommended increasing Operations of Facilities by \$134.0 million, with all but \$4.0 million of that going to maintenance of production facilities at Pantex Plant, Kansas City Plant, and Y-12 Plant. It recommended reducing Program Readiness by \$5.0 million, to \$101.2 million; providing the requested amount, \$87.0 million, for Material Recycle and Recovery; and increasing Construction from \$206.3 million to \$260.3 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 FY2004 adjusted appropriation was \$113.5 million. The FY2005 request is \$201.3 million; the House Appropriations Committee recommended providing the amount requested.

- 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. Formerly a part of RTBF, it is a separate item in the FY2005 budget. The FY2004 adjusted appropriation was \$89.2 million. The FY2005 request is \$99.2 million; the House Appropriations Committee recommended providing the amount requested.
- 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 FY2004 adjusted appropriation was \$238.8 million. The FY2005 request is \$316.2 million; the House Appropriations Committee recommended providing \$273.5 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. The FY2004 adjusted appropriation was \$553.5 million. The FY2005 request is \$707.0 million; the House Appropriations Committee recommended providing \$741.0 million.

Nuclear Testing and Test Readiness. A key issue is whether the United States can continue to maintain its weapons through the Stockpile Stewardship Program without nuclear testing. While that program has sought to do so, statements in early 2002 implied a reduced commitment to that approach. Secretary of Defense Donald Rumsfeld reportedly said that nations with nuclear weapons have “a responsibility to see that they are safe and reliable. To the extent that can be done without testing, clearly that is the preference. And that is why the President has concluded that, thus far, that is the case.”¹⁴ J. D. Crouch, Assistant Secretary of Defense for International Security Policy, stated that there is “no change in the Administration’s policy at this point on nuclear testing. We continue to oppose CTBT [Comprehensive Test Ban Treaty] ratification. We also continue to adhere to a testing moratorium.”¹⁵

Of particular interest is readiness to conduct a nuclear test. Since FY1996, U.S. policy has been that NNSA (or DOE prior to NNSA’s establishment) should be ready to conduct a nuclear test within 24 to 36 months from the time the order is given. Several studies identified work needed to reduce this time to 18 months. These studies were funded by “Enhanced Test Readiness.” The FY2004 budget document stated, “The DOD and the NNSA agreed to transition to an 18-month test readiness

¹⁴ Walter Pincus, “Nuclear Arms Plan: Saving, Not Scrapping,” *Washington Post*, January 9, 2002: 4.

¹⁵ U.S. Department of Defense. News Transcript. *Special Briefing on the Nuclear Posture Review*, presented by J. D. Crouch, Assistant Secretary of Defense for International Security Policy, January 9, 2002.

posture while continuing to review the optimum posture. The actions necessary for moving toward an 18-month posture are expected to begin upon completion of the final FY 2003 appropriation.” The Senate Armed Services Committee’s bill for FY2004 national defense authorizations, S. 1050, section 3132, required an 18-month posture unless the Secretary of Energy determined that a different posture was preferable. NNSA, however, prepared a study in April 2003 that concluded that an 18-month posture was preferable.¹⁶ Meanwhile, through FY2003, funds in the “Nevada Site Readiness” account maintained the 24- to 36-month posture with ongoing work at the Nevada Test Site. Because no policy decision had been reached on reducing the time needed to test, the Enhanced Test Readiness and Nevada Site Readiness accounts had to be kept separated. With the move to an 18-month test readiness posture, the enhanced posture was expected to become the current posture, which would have made this separation unnecessary. Accordingly, the two accounts were expected to be merged into “Test Readiness” beginning in FY2004, depending on congressional language, though the FY2004 NNSA budget request level did not reflect that merger.

The FY2003 appropriation for enhanced test readiness was \$15.0 million. Conferees on the Consolidated Appropriations Resolution for FY2003 directed DOE to notify the Appropriations Committees before obligating any of these funds in FY2003 (H.Rept. 108-10). The FY2004 request for Test Readiness was \$24.9 million, and for Nevada Site Readiness was \$39.6 million.

In its FY2004 report, the House Appropriations Committee sharply criticized the plan for enhanced test readiness and recommended eliminating FY2004 funds for it. The committee expressed its concern over an “open-ended commitment” to enhanced test readiness “without any budget analysis or program plan to evaluate the efficiency or effectiveness of this funding increase,” argued that the proposal “does not address the fundamental difficulties in maintaining test readiness during a testing moratorium,” and noted that it took 18-24 months to conduct a fully-instrumented test during the era of routine testing so that a proposal to maintain indefinitely an 18-month posture during the testing moratorium “reflects a disturbing ‘cost is no object’ perspective.” Finally, even though NNSA and DOD decided to move to an 18-month test readiness posture, “The Committee does not recognize the NNSA declaring a revised test readiness posture as a new requirement nor is it convinced that the decision can be successfully implemented based on the planning information provided to date” (H.Rept. 108-212). The Senate Appropriations Committee made no reference to nuclear test readiness, and provided the amount requested for Program Readiness, the component of RTBF containing test readiness funds. The Feinstein amendment (S.Amdt. 1655) discussed under DSW, which was tabled, would have barred use of funds provided by H.R. 2754 for modifying the test readiness posture to a posture of less than 24 months. Conferees provided \$24.9 million for test readiness, as requested, on grounds that test readiness had atrophied. “However, the conferees expect the NNSA to focus on restoring a rigorous test readiness program that is capable of meeting the current 24-month requirement

¹⁶ U.S. Department of Energy. National Nuclear Security Administration. *Report to Congress: Nuclear Test Readiness*. April 2003, 15 p.

before requesting significant additional funds to pursue a more aggressive goal of an 18-month readiness posture” (H.Rept. 108-357).

Test Readiness had been in RTBF through FY2004, but was transferred to the Science Campaign in the FY2005 budget. (With the transfer, the name “Test Readiness” was dropped; the NNSA request refers to the program as “efforts related to maintaining the readiness of the Nevada Test Site to conduct underground nuclear tests, if directed.”) The FY2005 request is \$30.0 million; the comparable appropriation for FY2004 was \$24.7 million. The House Appropriations Committee reduced the Primary Assessment Technology Campaign by \$15.0 million

to limit the enhanced test readiness initiative to the goal of achieving a 24-month test readiness posture. The Committee continues to oppose the 18-month test readiness posture and refers the Department [of Energy] to the unambiguous Congressional language provided in the fiscal year 2004 Conference Report requiring the Department to achieve and maintain a 24-month test readiness posture.

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.

Funding for these programs in FY2004 was \$1.3198 billion. For FY2005, the Administration requested \$1.3486 billion. The House bill, H.R. 4614, reported out by the Appropriations Committee, recommended the requested amount, but distributes the funding differently among the various programs.

In particular, the Nonproliferation and Verification R&D program, which received \$232 million for FY2004, would be funded at \$220 million in the Administration’s FY2005 request, and \$241.5 million in the Appropriations Committee bill. Nonproliferation and International Security programs would receive \$124 million in the request and the Committee bill, compared with \$110.1 million in FY2004. 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 \$238 million under the President’s request, compared to \$258.5 million appropriated for FY2004. The House Appropriations bill would increase that amount to \$415.3 million. Included in the MPC&A program is the “Megaports initiative,” which is intended to install radiation detection equipment at the top 20 major overseas seaports to interdict nuclear material before it arrives in the United States. The FY2005 request for Megaports activities was \$15 million; the House Committee bill boosted funding to \$45 million.

Table 9. DOE Defense Nuclear Nonproliferation Programs
(\$ millions)

Program	FY2004	FY2005 Request	House H.R. 4614	Senate S.
Nonproliferation & Verification R&D	232.0	220.0	241.5	
Nonproliferation & International Security	110.1	124.0	124.0	
International Materials Protection, Control and Accounting (MPC&A)	258.5	238.0	415.3	
Russian Transition Initiative	39.8	41.0	41.0	
Elimination of Weapons-Grade Plutonium Production	65.0	50.1	15.1	
HEU Transparency Implementation	17.9	21.0	21.0	
Fissile Materials Disposition	652.8	649.0	483.3	
Offsite Source Recovery Project	—	5.6	7.6	
Adjustments	(56.3)	—	—	
Total, Defense Nuclear Nonproliferation	1,319.8	1,348.6	1,348.6	

Two programs in the former Soviet Union, Initiatives for Proliferation Prevention (IPP) and the Nuclear Cities Initiatives (NCI), have been combined into a single program called “Russian Transition Initiative,” aimed at finding non-weapons employment for roughly 35,000 under-employed nuclear scientists from the former Soviet weapons complex. The FY2005 request for the program is \$41 million, compared to \$40 million in FY2004. Requested funding for the Fissile Materials Disposition program for FY2005 is \$649 million, compared with \$653 million in FY2004. 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.

(For details on these programs, see CRS Issue Brief IB10091, *Nuclear Nonproliferation Issues*, by Carl E. Behrens.)

Environmental Management. The President’s budget would provide a total of \$7.43 billion for DOE’s Environmental Management Program for FY2005, \$366 million more than the FY2004 appropriation of \$7.07 billion. This program is the largest single function within DOE in terms of funding, representing nearly one third of DOE’s total budget request. The primary purpose of the program is to manage radioactive and hazardous wastes, and to remediate contamination from such wastes, at the former defense nuclear weapons complex. The program also addresses waste management and remediation at sites where civilian nuclear energy research was conducted by the federal government. As such, DOE’s Environmental Management Program is the largest waste management and environmental cleanup program throughout the federal government. In comparison, annual funding for the cleanup of non-radioactive contamination at Department of Defense sites has been less than \$2 billion in recent years, and annual funding for the Environmental Protection

Agency's cleanup of the nation's most hazardous private sector sites under the Superfund program has been around \$1.25 billion in recent years.

DOE's Environmental Management Program has a lengthy history with many longstanding issues. Much attention has focused on the amount of time and money needed to clean up environmental contamination resulting from the production of nuclear weapons during the Cold War. Since the beginning of the U.S. atomic energy program in the 1940's, DOE and its predecessors have been responsible for administering the production of nuclear weapons and managing radioactive and other hazardous wastes. In later years, DOE expanded its efforts to include the environmental restoration of radioactive sites and those with other hazardous contamination in buildings, soil, and water to ensure their safety for future uses. In 1989, the first Bush Administration established the Environmental Management Program within DOE to consolidate the agency's efforts in cleaning up contamination from defense nuclear waste and civilian nuclear energy research. DOE is responsible for complying with numerous federal environmental laws and regulations in administering the current program, and is subject to fines and penalties for violations of these requirements. Consequently, DOE has signed numerous legally binding compliance agreements with the Environmental Protection Agency and the states to perform cleanup activities and dispose of wastes according to specific deadlines.

DOE reports that there are 114 geographic sites in 31 states and one U.S. territory where the production of nuclear weapons, and civilian nuclear energy research and development activities, resulted in radioactive and other hazardous contamination. Together, these sites occupy approximately 2 million acres, which is equivalent to the land area of Rhode Island and Delaware combined. DOE reports that all response actions were complete at 76 sites as of the end of FY2003, at a cost of approximately \$70 billion. DOE expects cleanup to be complete at 3 additional sites by the end of FY2005. However, most of the sites that have been cleaned up thus far are relatively small and are among the least hazardous. The sites where cleanup remains underway contain some of the most severely contaminated areas. DOE estimates that cleanup at the remaining sites will not be complete until 2035, at a cost of \$142 billion. DOE had previously estimated that cleanup would not be complete until a later date of 2070, at a higher cost of \$192 billion.

DOE has substantially revised its earlier estimates of cleanup time frames and costs, as part of its cleanup reform initiative. DOE launched this initiative in FY2003 and has signed letters of intent with the Environmental Protection Agency and the states to accelerate cleanup at its major sites. DOE also has prepared Performance Management Plans for many of its sites, which outline how cleanup would be accelerated and costs reduced. According to DOE, these goals would be accomplished by assessing the risk of exposure to determine which cleanup remedies are selected. Risk is currently one of many factors that DOE uses to select cleanup remedies. Altering the current process to use risk as the primary factor could result in decisions to contain waste on site as a means of preventing exposure, rather than removing it. Whereas containment can often be accomplished more quickly and at less cost, the possibility of future exposure remains if the method of containment fails over time.

While there has been widespread concern about the amount of time and money needed to clean up nuclear waste sites, questions have been raised as to how DOE would use a risk-based approach to accomplish its goals of faster and less costly cleanups without weakening environmental protection. Some have drawn attention to the possibility that more contamination may be left on site, rather than removed. Because of the substantial amount of time required for certain types of radioactivity to decay, arguments have been raised that contamination left in place may migrate in unexpected ways over the long-term, and result in pathways of exposure that could not have been predicted when the remedy was originally selected. Others counter that completely removing radioactive contamination from all sites to permit unrestricted future land use, and eliminate all future pathways of exposure, would not be economically feasible, and in some cases would be beyond the capabilities of current cleanup technologies.

Congress has generally supported the goals of DOE's cleanup reform initiative, but has expressed concern about various aspects of these efforts. During the FY2003 appropriations debate, some Members indicated that DOE had provided insufficient information to explain how the pace of cleanup would be accelerated and costs would be reduced without compromising environmental protection. The Performance Management Plans that DOE has since completed for most of its sites have provided more information on the actions that are planned to achieve these goals. However, some of these planned actions may require changes to legally binding compliance agreements with the Environmental Protection Agency and the states before they could be implemented. During the FY2004 appropriations debate, the conferees (H.Rept. 108-357) expressed concern that DOE had not reached agreement with the states on activities outlined in some of its Performance Management Plans, and Congress did not provide funding for certain projects to which the states had not yet agreed. The conferees also expressed concern about statutory changes that would be necessary for some cleanup acceleration projects to proceed, as well as the understatement of costs for certain projects, which suggested more funding than projected might be necessary to increase the pace of cleanup.

In the FY2004 appropriations debate, the House Appropriations Committee also raised questions about long-term stewardship needs once cleanup is complete at each site, and in its report (H.Rept. 108-212) directed DOE to consider these needs when implementing accelerated cleanup plans "to ensure that long-term stewardship is not used as a substitute for complete and effective site cleanup." As discussed above, some have expressed concern that DOE's cleanup acceleration strategy may result in more waste being left on site than would be allowed under original cleanup agreements. If more waste were permitted to remain, rather than being removed, the stewardship costs at such sites would likely rise as a result of the need for additional measures to ensure that the waste continues to be safely contained in future years to prevent exposure. In response to this issue, the House Appropriations Committee indicated that the Performance Management Plan for each cleanup site should identify the resources that would be necessary for fulfilling DOE's responsibilities to manage the legacy of contained waste that is left behind after cleanup response actions are complete.

DOE's cleanup reform initiative would continue under the President's FY2005 budget proposal. The request is structured according to five accounts that Congress

established in the FY2004 appropriations act. The Administration had requested that the account structure be changed to focus funding on its cleanup reform efforts. These accounts include two for Site Acceleration Completion, one for Defense and one for Non-defense, which fund efforts to complete cleanup and close contaminated facilities at a faster pace than previously scheduled. There also are two Environmental Services accounts, one for Defense and one for Non-defense as well, which fund activities that indirectly support the mission of accelerated cleanup and closure, such as policy development and coordination, and the integration of mission activities across the complex of sites. A fifth account for the Uranium Enrichment Decontamination and Decommissioning Fund supports the cleanup of uranium and thorium processing sites, for which there previously had been a similar account entitled Uranium Facilities Maintenance and Remediation.

Defense sites have traditionally received the vast majority of funding under the Environmental Management Program. Accordingly, the largest portion of the FY2005 request, \$5.97 billion, would be allocated to the Defense Site Acceleration Completion Account. The second largest portion, \$982 million, would be allocated to the Defense Environmental Services Account. The Non-defense Site Acceleration Completion Account would receive \$152 million, and the Non-defense Environmental Services Account would receive \$291 million. The President's budget would allocate \$500 million to the Uranium Enrichment Decontamination and Decommissioning Fund. The total request for these five accounts is \$7.90 billion, but it is offset by \$463 million in federal contribution to the Uranium fund, which yields a total request of \$7.43 billion for the Environmental Management Program.

Thus far, the most controversial element of the Administration's FY2005 request for the Environmental Management Program has been DOE's "High-level Waste Proposal." The President's budget would set aside \$350 million to fund this proposal. It would fund activities to speed the closure of tanks storing high-level radioactive and other chemical wastes at the Hanford site in the state of Washington, the Savannah River site in the state of South Carolina, and at the Idaho National Engineering and Environmental Laboratory (INEEL). The volume of these wastes is substantial. For example, DOE reports that at the Hanford site there are over 50 million gallons of high-level radioactive and chemical wastes stored beneath the surface in 177 tanks. The portion of these tank wastes at Hanford, and the other two sites, are classified as "high-level" radioactive wastes that must be removed and safely stored in accordance with the Nuclear Waste Policy Act of 1982. (For more information, refer to CRS Report RL32163, *Radioactive Waste Streams: An Overview of Waste Classification for Disposal*, by Anthony Andrews.)

DOE has proposed to speed the closure of the tanks at these three sites by classifying some of the waste as low-level, and leaving it in the tanks sealed off with a cement "grout" to prevent it from migrating. The Administration's proposal has been controversial among environmental organizations who argue that none of the tank wastes should be allowed to remain in place, because of the possibility that the grouting could deteriorate over the long-term and allow contamination to migrate, creating pathways of exposure. However, others assert, methods to remove all of the tank residues would generate a new hazardous waste stream that would need to be managed. There also would be significant risks of exposure to workers inside the tanks who would be tasked with removing the residues.

Recently, DOE had proposed to classify the waste residues in some of the tanks at the Savannah River site as low-level and to seal these wastes in the tanks with a cement grout. The Natural Resources Defense Council (NRDC) legally challenged DOE's authority to implement this proposal. In 2003, the U.S. District Court for Idaho, in effect, ruled that DOE does not have the authority to classify the waste residues in tanks at the Savannah River site as low-level. [*NRDC v. Abraham*, 271 F. Supp. 2d. 1260 (D. Id. 2003)]. Consequently, these wastes would have to be removed and safely stored in accordance with the Nuclear Waste Policy Act of 1982. The Secretary of Energy has since asked Congress to enact legislation that would provide DOE with statutory authority to classify tank waste residues as low-level wastes at Hanford, Savannah River, and the INEEL. If this authority were provided, whether the waste residues could be left in tanks would ultimately depend on the concurrence of state regulatory agencies who issue the permits for tank closures. DOE's FY2005 budget justification document indicates the Administration will request the \$350 million for its High-level Waste Proposal after the above legal issues are resolved. However, the \$5.97 billion requested for the Defense Site Acceleration Completion Account does include this \$350 million as part of the total request for the Environmental Management Program.

As reported by the House Appropriations Committee, the Energy and Water Development Appropriations Act for FY2005 (H.R. 4614, H.Rept. 108-554) would provide \$7.37 billion for DOE's Environmental Management Program (including the offset of \$463 million for federal contribution to the Uranium fund), \$64 million less than the request of \$7.43 billion. Of the amount in H.R. 4614, \$274 million would be provided for tank waste management and cleanup activities at the Hanford and Savannah River sites and the INEEL, which are not "precluded" by the 2003 district court ruling. In report language, the committee specified that it "supports resolution of this issue through the judicial appeals process or through comprehensive legislation that would address the problem in a consistent manner nationwide," rather than only in selected states. The committee also expressed concern about the feasibility of DOE's overall plans to accelerate cleanup and lower costs across the 114 sites that make up the former defense nuclear weapons complex, due to recent delays in cleanup schedules and cost overruns of certain projects. The committee raised additional concerns about DOE's delay in submitting a report to Congress on statutory changes that may be necessary in order to allow accelerated cleanup to proceed, and whether states have agreed to all elements of the Performance Management Plans for each site that outline how accelerated cleanup would be accomplished.

In addition to appropriations, DOE's High-Level Waste Proposal has been controversial in the debate on defense authorization legislation. As passed by the House, the National Defense Authorization Act for FY2005 (H.R. 4200, H.Rept. 108-491) would authorize \$6.91 billion for defense environmental management, including funding for activities specified in DOE's tank waste proposal that are "not prevented by the federal district court ruling or are not otherwise deemed inappropriate due to the legal uncertainty resulting from the court ruling." As reported by the Senate Armed Services Committee, S. 2400 (S.Rept. 108-260) would authorize \$6.95 billion for defense environmental management and would provide targeted authority for grouting some of the tank wastes in South Carolina (i.e., at the Savannah River site), but not in other states. Floor consideration of S. 2400 began

on May 18, 2004. Senator Graham proposed an amendment that passed by voice vote, clarifying that \$350 million of the authorization would be authorized for implementing the targeted authority for grouting some of the tank wastes in South Carolina, and for tank management and cleanup activities other than the grouting of wastes at Hanford and the INEEL. Senator Cantwell proposed an amendment that failed to pass, which would have stricken the targeted authority for South Carolina and not authorized any funding for the grouting of tank wastes.

Civilian Nuclear Waste. The Bush Administration's FY2005 budget request includes \$880 million for the DOE civilian nuclear waste disposal program, a 50% boost over FY2004. The Administration also is proposing that \$749 million of the FY2005 request be offset by the existing nuclear waste fee, so that the net appropriation would be \$131 million. The House Appropriations Committee, noting that Congress has not enacted the Administration's waste-fee offset proposal, voted to provide only the \$131 million net appropriation request.

The Administration's proposed spending increase is intended primarily to pay for designing a national nuclear waste repository at Yucca Mountain, Nevada, and for developing a national waste transportation program. DOE contends that funding for the waste program, run by the Office of Civilian Radioactive Waste Management (OCRWM), must average \$1.3 billion per year between FY2005 and FY2010 to meet the current 2010 target date for shipping nuclear waste to Yucca Mountain. That target date is largely dependent on DOE's ability to submit a repository license application to NRC by the end of this year.

In addition to the \$880 million request for the civilian waste disposal program, the Administration plans in FY2005 to transfer responsibility for DOE-owned spent fuel to a new Office of DOE Spent Fuel Management, which would report to the OCRWM Director. The \$22.5 million request for the new office brings the total FY2005 request for OCRWM to \$907.5 million.

The Nuclear Waste Policy Act of 1982 (NWPAA, P.L. 97-425), as amended, names Yucca Mountain as the sole candidate site for a national geologic repository. Following the recommendation of Energy Secretary Abraham, President Bush on February 15, 2002, recommended to Congress that DOE submit an application to NRC to construct the Yucca Mountain repository. Nevada Governor Guinn then exercised his right under NWPAA to submit a "notice of disapproval" (or "state veto") to Congress. Under NWPAA, the state disapproval would have blocked the Yucca Mountain site if a congressional approval resolution had not been signed into law within 90 days of continuous session. The approval resolution was signed July 23, 2000 (H.J.Res. 87, P.L. 107-200), allowing the Yucca Mountain project to proceed to the licensing phase.

Funding in the FY2005 budget request for the Office of Civilian Radioactive Waste Management would come from four appropriations accounts. First, \$749 million would be appropriated from the Nuclear Waste Fund, which consists of fees paid by nuclear utilities; as noted above, the Administration is proposing that those fees be reclassified as discretionary offsetting collections so that the net appropriation from the Waste Fund would be zero. Second, \$131 million would be appropriated from general revenues under the Defense Nuclear Waste Disposal account, which

pays for disposing of high-level waste from the nuclear weapons program in the planned civilian repository. Third, \$5.2 million for DOE-owned research and civilian reactor spent fuel management would come from the Energy Supply R&D account, and, fourth, \$22.3 million for DOE defense-related spent fuel would come from the Other Defense Activities account. As noted above, the last two activities would be transferred to OCRWM from other DOE offices.

The House Appropriations Committee excoriated the Administration for requesting a net appropriation of only \$131 million and for assuming that Congress would enact the waste-fee reclassification proposal in time. “At best, the Office of Management and Budget (OMB) made an unwise budget calculation to assume this offset,” said the Committee report. “At worst, OMB took a foolish political gamble by assuming that reclassification legislation would be enacted this year.” The Committee also rejected the proposed transfer of additional activities to OCRWM.

The House panel warned in its report that the funding cutback would have “far-reaching” consequences for the nuclear waste program, but that there was no funding available under the budget request to shift from other programs. The Committee report noted DOE’s prediction that the funding reduction could force layoffs of 70% of the program’s work force, place submittal of the repository license application “at risk,” and cause “an indefinite delay in opening the repository.”

On the same day the House Appropriations Committee approved the energy and water bill, the Subcommittee on Energy and Air Quality of the House Energy and Commerce Committee approved a bill (H.R. 3891) to enact the Administration’s nuclear waste fee reclassification proposal. However, the use of waste fees to offset appropriations for the repository program would be limited to the next five years. No Senate action has been taken on the proposal.

The 2010 target for opening a permanent repository is 12 years later than the Nuclear Waste Policy Act deadline of January 31, 1998, for DOE to begin taking waste from nuclear plant sites. Nuclear utilities and state utility regulators, upset over DOE’s failure to meet the 1998 disposal 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, although specific damages have not been determined. On May 21, 2004, the Court rejected a request for damages by Indiana Michigan Power Company. (For more information, see CRS Issue Brief IB92059, *Civilian Nuclear Waste Disposal*, by Mark Holt.)

The State of Nevada has filed a variety of lawsuits to block the Yucca Mountain project, including a contention that the federal government lacks authority under the Constitution to force Nevada to accept the nation’s nuclear waste.

Power Marketing Administrations. DOE’s four Power Marketing Administrations (PMAs) developed during the 1930s out of the construction of dams and multi-purpose water projects that are operated by the Bureau of Reclamation and the Army Corps of Engineers. The original intention behind many of these projects was conservation and management of water resources, including irrigation, flood control, recreation and other objectives. However, many of these facilities generated

electricity for project needs. The PMAs were established to market the excess power; they are the Bonneville Power Administration (BPA), Southeastern Power Administration (SEPA), Southwestern Power Administration (SWPA), and Western Area Power Administration (WAPA).

The power is sold at wholesale to electric utilities and federal agencies “at the lowest possible rates ... consistent with sound business practice,” and priority on PMA power is extended to “preference customers,” which include municipal utilities, co-ops and other “public” bodies. The PMAs do not own the generating facilities, but they generally do own transmission facilities, except for Southeastern. The PMAs are responsible for covering their expenses and repaying debt and the federal investment in the generating facilities.

The 104th Congress debated sale of the PMAs and did, in 1995, authorize divestiture of one PMA (the Alaska Power Administration Act, P.L. 104-58). There has been no press to dispose of the remaining PMAs, and none seems likely given the broader uncertainties governing electric utility restructuring.

Congress enacted a funding level of \$213.0 million in FY2004, less \$22 million in Colorado River Basin revenues. The FY2005 request is \$210.5, less \$23 million in Colorado River revenues, reflecting a reduction of \$3.8 million for WAPA, and slight increases for the three other PMAs. The House bill reported by the Appropriations Committee includes the same level of funding.

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 is not requesting additional borrowing authority in FY2005. BPA intends to use \$487 million of its borrowing authority in FY2004, down from \$528 in FY2004, to be used for generation and transmission services, conservation, energy efficiency, fish and wildlife, and capital equipment programs.

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 10. Energy and Water Development Appropriations
Title IV: Independent Agencies**

(\$ millions)

Program	FY2004	FY2005 Request	House H.R. 4614	Senate S.
Appalachian Regional Commission	65.6	66.0	38.5	
Nuclear Regulatory Commission (Revenues)	625.6	670.3	670.3	
Net NRC	(545.6) 80.1	(541.1) 129.2	(541.1) 129.2	
Defense Nuclear Facilities Safety Board	19.4	20.3	20.3	
Nuclear Waste Technical Review Board	3.2	3.2	3.2	
TVA Inspector General	—	9.0	—	
Denali Commission	54.7	2.5	—	
Delta Regional Authority	5.0	2.1	2.1	
Total	227.9	223.2	193.2	

Source: President's budget request for FY2005, and H.Rept. 108-554.

Key Policy Issues — Independent Agencies

Nuclear Regulatory Commission. The Nuclear Regulatory Commission (NRC) is requesting a total budget of \$670.3 million for FY2005, including \$7.5 million for the NRC inspector general's office. The request is about 7% above the FY2004 funding level. 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 House Appropriations Committee recommended approval of the full NRC request.

NRC is proposing to spend \$39.7 million — an 18% increase — on licensing activities for possible new commercial reactors, which are being encouraged by DOE's Nuclear Power 2010 program. According to the NRC budget justification, the funding will be used for early site permits (sites approved for future reactors), reactor pre-licensing and licensing reviews, and certification of new reactor designs.

However, the committee included bill language prohibiting NRC from issuing a license during FY2005 for construction or operation of a new commercial nuclear power plant. The Committee report contended, "For the Nuclear Regulatory Commission to license any new reactors without a certain disposal path for the spent nuclear fuel would be unjustifiable and irresponsible." As discussed in an earlier section, the committee is concerned that insufficient funding will be available to move forward with the nuclear waste repository program. In light of that concern, the committee cut funding for DOE's Nuclear Power 2010 program.

In the wake of the September 11, 2001, terrorist attacks against the United States, NRC has focused additional attention on the security of nuclear power plants and other users of radioactive material. NRC's FY2005 budget request includes \$56.8 million for activities related to homeland security, a 10% increase over FY2004. In FY2005, NRC intends to continue conducting force-on-force security exercises and require nuclear plants to revise their 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.)

Because DOE plans to submit a license application to NRC in FY2005 for a national nuclear waste repository at Yucca Mountain, Nevada, the NRC budget for high-level waste regulation would more than double from FY2004. The \$69.1 million request also includes safety testing of full-scale casks for transporting nuclear waste by rail and by truck.

For the decade before FY2001, NRC's budget was offset 100% by fees on nuclear power plants and payments by other licensed activities, such as the DOE nuclear waste program. The nuclear power industry had long contended that the fee structure required nuclear reactor owners to pay for a number of NRC programs, such as foreign nuclear safety efforts, from which they did not directly benefit. To account for that concern, the FY2001 Energy and Water Development Appropriations Act (P.L. 106-377) included an NRC proposal to phase down the agency's fee recovery to 90% during the subsequent five years — two percentage points per year. Therefore, 90% of the FY2005 NRC budget is to be offset by fees on licensees. Because \$69.1 million would be appropriated from the Nuclear Waste Fund to pay for waste repository licensing, the 90% fee requirement would apply to \$601.2 million of the proposed budget, leaving a net appropriation of \$60.1 million. With the Nuclear Waste Fund appropriation, NRC's total proposed net appropriation is \$129.2 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 IB92059. *Civilian Nuclear Waste Disposal*, by Mark Holt.

CRS Issue Brief IB10091. *Nuclear Nonproliferation Issues*, by Carl Behrens.

CRS Issue Brief IB10120. *Army Corps of Engineers Civil Works Program: Issues for Congress*, by Nicole T. Carter and Pervaze A. Sheikh.

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

CRS Reports

CRS Report RS20702. *South Florida Ecosystem Restoration and the Comprehensive Everglades Restoration Plan*, by Nicole T. Carter and Pervaze A. Sheikh.

CRS Report RL30928. *Army Corps of Engineers: Reform Issues for the 107th Congress*, by Nicole T. Carter.

CRS Report RS20569. *Water Resource Issues in the 107th 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 RL31116. *Water Infrastructure Funding: Review and Analysis of Current Issues*, by Claudia Copeland and Mary Tiemann.

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 RL30928. *Army Corps of Engineers: Reform Issues for the 107th Congress*, by Nicole T. Carter.

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.

CRS Report RL32130, *Nuclear Weapon Initiatives: Low-Yield R&D, Advanced Concepts, Earth Penetrators, Test Readiness*, by Jonathan Medalia.

CRS Report RS21762, *Robust Nuclear Earth Penetrator Budget Request and Plan, FY2005-FY2009*, by Jonathan Medalia.

CRS Report RL31993, *Nuclear Warhead 'Pit' Production: Background and Issues for Congress*, by Jonathan Medalia.

CRS Report RL32163, *Radioactive Waste Streams: An Overview of Waste Classification for Disposal*, by Anthony Andrews.

CRS Report RS21131, *Nuclear Power Plants: Vulnerability to Terrorist Attack*, by Carl E. Behrens.