

U.S. Department of Energy

Budget Highlights

Fiscal Year 2002 Budget Request



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INTRODUCTION

The FY 2002 Department of Energy Budget – A Principled and Responsible Request

The Department of Energy's FY 2002 budget of \$19.2 billion is a principled and responsible effort, one that fulfills President Bush's commitment to moderate discretionary spending while meeting critical requirements in national security, energy, science, and environmental quality. This budget adjusts program requests to reflect program reviews underway to reevaluate and refine the Department's missions, and to implement management strategies that meet the challenges of the future. This budget also reflects Secretary Abraham's priorities in the development of program requests. These priorities seek to:

- Enhance complex-wide safeguards and security efforts
- Eliminate programs that have completed their mission, are redundant, ineffective, or obsolete
- Review all private-sector subsidies and maximize cost-sharing opportunities
- Finish promising R&D projects where investment installments are nearly complete
- Establish baselines and improve accountability for project and capital asset management
- Arrest deterioration of infrastructure through stronger management of maintenance
- Utilize computer information systems to improve management and promote efficient use of resources
- Eliminate unnecessary layers of management, and direct personnel to high-priority missions
- Achieve a 5-10 percent savings in management expenses through comprehensive, creative management reform
- Recognize and respect Congressional policy determinations for operating the DOE complex.

This budget maintains the Administration's flexibility to respond to government-wide policy reviews now underway. The Department of Defense Nuclear Posture Review, the National Security Council reviews of U.S. deterrence requirements and nonproliferation programs, Vice-President Cheney's National Energy Policy Development Group, and a newly initiated internal Environmental Management Mission Assessment figure heavily in the Department's current budget and its future year planning. Pending future decisions as a result of the reviews, the budget seeks to preserve program options by maintaining core requirements in areas under review unless a change was dictated by a Presidential commitment.

FY 2002 Budget Priorities

The FY 2002 request refocuses funding priorities to meet critical **National Security** needs. This budget protects the operational readiness of the nuclear weapons stockpile. We are conducting surveillance,

experiments, and simulations for individual weapons and weapon systems. At the same time, we are investing in advanced scientific and manufacturing capabilities for the future to ensure the capability to accurately assess weapon status, extend weapon life, and certify that the stockpile remains safe and reliable. We are also improving the safeguards and security throughout the DOE complex.

The budget request for **Energy** programs emphasizes the next generation of energy production, particularly in clean coal technologies, and meeting the power needs of families through programs such as Weatherization Assistance, and the Northeast Home Heating Oil Reserve.

In **Science**, the budget request enables DOE to continue to serve its role as a primary federal supporter of scientific research – a role which has earned praise for Nobel prize winning research, cutting-edge R&D, world class research facilities, and our highly regarded national laboratories. Funding maintains the schedule for the Spallation Neutron Source project which will help the U.S. to maintain its preeminence in science and technology.

The budget request for **Environmental Quality** programs continues to support a science-based recommendation to site a long-term nuclear waste repository; and maintains an emphasis on worker and environmental health and safety.

Secretary Abraham has initiated a sweeping Environmental Management Mission Assessment to identify efficiencies and ensure that the principal focus is on the cleanup of those sites with significant environmental, health, and safety risks.

Pending completion of this Mission Assessment, the FY 2002 request for Environmental Management fulfills commitments to major environmental site closures, complies with legal obligations, and supports the winterization and cold standby of the Portsmouth Gaseous Diffusion Plant. The request ensures that the Environmental Management program employs the best available technologies and business practices, and sets priorities to address important health, safety, and environmental needs.

National Security Business Line

The Department of Energy preserves U.S. national security by managing our nation's nuclear arsenal and working to reduce the global danger from the proliferation of nuclear materials and other weapons of mass destruction. A total of \$7.2 billion is requested in FY 2002 for DOE National Security programs, an increase of \$180.5 million.

FY 2002 funding requested for programs under the National Nuclear Security Administration (NNSA) – Defense Programs, Defense Nuclear Nonproliferation, Naval Reactors, and the Administrator's Office – totals \$6.8 billion. This is a \$136.1 million increase over the FY 2001 appropriation. Within this total, funding has been shifted to Weapons Activities to increase support for the critical needs of our nuclear weapons stockpile.

In addition to the NNSA programs, there are five other essential national security programs that report directly to the Secretary of Energy – Independent Oversight and Performance Assurance, Security and Emergency Operations, and Worker and Community Transition. The FY 2002 request for these five programs totals \$395.1 million, an increase of \$44.4 million.

National Security Priorities

Weapons Activities – Stockpile Stewardship

For more than 50 years, America's national security has relied on the deterrent provided by its nuclear weapons. Designed, built, and tested by the Department of Energy and its predecessor agencies to meet Department of Defense (DOD) requirements, these weapons helped to win the Cold War and continue to be a key component of our nation's security posture. With the end of the Cold War, the Department faces new and complex challenges. One of the most critical is the maintenance of the nuclear weapons stockpile in the absence of underground testing, the mission of the DOE **Stockpile Stewardship Program**.

The budget reflects the Administration's commitment to support all maintenance, evaluation, and certification for the current stockpile. Refurbishments of two key systems, the W87 and B61, will continue as scheduled, while other refurbishment plans will await the conclusion from the national security strategic reviews that are underway. The FY 2002 request invests in NNSA Defense Programs funded under Weapons Activities – providing a \$230.7 million increase over last year's enacted level, for a request of \$5.3 billion.

The highest priority of the Stockpile Stewardship Program is to ensure the operational readiness of nuclear weapons. Within the funding requested for Weapons Activities, \$1.04 billion is for **Directed Stockpile Work (DSW)**, an increase of \$129.3 million over last year's enacted level. The DSW program conducts surveillance, maintenance, design, and manufacturing activities required to maintain the nuclear weapons stockpile and to conduct the annual certification. DSW activities will significantly increase in FY 2002 as we continue the W87 life extension program, start the W61 refurbishment consistent with a first delivery unit in FY 2004, and do limited development work on the W76 and W80 pending the completion of the strategic review.

As responsible stewards of the weapons stockpile, the NNSA invests in advanced scientific and manufacturing capabilities for the future to ensure the long-term capability to accurately assess weapon status, extend weapon life, and certify that the stockpile remains safe, secure and reliable without nuclear testing. **Campaigns** have been initiated to develop these new capabilities. To enable the Secretary of Energy to annually certify the safety, reliability and performance of the nation's nuclear stockpile in the absence of underground nuclear testing, the Department requires state of the art scientific simulation capabilities and advanced facilities, to assess and certify replacement components for the nuclear weapons stockpile. The Department's **Advanced Strategic Computing Initiative** and construction of the world's largest scientific laser, the **National Ignition Facility**, are two examples of the significant scale and sophistication required in this effort. The Department will continue to support the reestablishment of plutonium pit manufacturing capability at Los Alamos National Laboratory, focusing the manufacturing capability by 2003. This and other science campaign schedules will be reviewed as a part of the strategic review. To support these efforts, \$1.99 billion is requested for Campaigns.

Safeguards and Security

Another priority is to strengthen security throughout the Department. The Department's request for Safeguards and Security activities cross-cuts through the major program requests and in total provides \$1.03 billion for **Safeguards and Security** throughout the DOE complex – a \$100 million increase over the FY 2001 enacted level. This activity provides the funds for: protective forces; security systems; nuclear safeguards and security, including nuclear material control and accounting; personnel, information, and cyber security; and security investigations. In particular, the FY 2002 request provides \$109.7 million for cyber security, an increase of \$32.8 million above the FY 2001 enacted level, to enhance protection of information in the NNSA and Science programs. The FY 2002 request will also improve physical security throughout the DOE complex and enhance materials management and surveillance.

The FY 2002 request includes \$268.5 million for the **Office of Security and Emergency Operations (SO)**, an increase of \$38.0 million over the FY 2001 enacted appropriation. The Office of Security and Emergency Operations develops the policies and provides programmatic direction governing the protection of national security and other assets entrusted to the Department of Energy. SO also provides safeguards and security training and field assistance to ensure the efficient and effective implementation of Departmental security policy. This requested increase provides for the Department's \$20 million **Corporate Management Information Program** and a substantial increase in the number of security background investigations for DOE personnel and contractors.

Other National Security Programs

The FY 2002 budget request maintains DOE programs that address the proliferation of weapons of mass destruction and nuclear weapons material, the focus of DOE's **Defense Nuclear Nonproliferation** program. The FY 2002 request includes \$773.7 million for Defense Nuclear Nonproliferation.

The National Security Council is currently conducting a comprehensive government-wide review of U.S. nonproliferation policy to assess current programs and determine their focus and priorities in the future.

Pending this interagency review, the FY 2002 request maintains core nonproliferation R&D programs, and emphasizes meeting commitments to protect against the danger of unauthorized use or diversion of surplus fissile materials – U.S. and Russian weapons plutonium and highly enriched uranium no longer needed for national defense purposes. The request for Fissile Materials Disposition programs is \$248.1, a \$22 million increase over the FY 2001 appropriated level.

Additionally, the U.S. and the Russian Federation are now in the fifth year of a 20-year contract to convert 500 metric tons of weapons grade uranium from dismantled Russian nuclear weapons into low-enriched uranium which will be fabricated into fuel elements for commercial nuclear power reactors in the United States.

Energy Resources Business Line

Recent events have called into question the future availability, cost, and reliability of our traditional fuels. The threat of California power outages spreading to other parts of the country, recent explosions of aging gas pipelines and storage facilities in New Mexico and Kansas, power transmission bottlenecks in the Northwest and New England, gas pipeline constraints in the Northeast, and continued uncertainty over the actions of OPEC and other foreign crude suppliers – all raise concerns as to whether the U.S. can continue to rely on the reasonably priced fuels that have powered our economic growth in the face of significant increases in demand projected over the next 20 years.

To address this situation, President Bush asked Vice President Cheney, working with Secretary Abraham and other members of the Cabinet, to develop a national energy policy to help the private sector and government promote dependable, affordable, and environmentally sound production and distribution of energy for the future. In advance of these policy determinations, the FY 2002 budget focuses DOE's energy programs toward the next generation of energy production, including clean coal and advanced nuclear technologies; and provides assistance to Americans through the Northeast Home Heating Oil Reserve and Weatherization Grants. The budget also reflects an evaluation of program operations, and, where feasible, proposes to expand cost-sharing in applied research, further develop partnerships, and strengthen industry collaboration.

Clean Coal Power Initiative

The **Clean Coal Power Initiative (CCPI)** is a new effort that reflects President Bush's commitment to clean coal technology. The FY 2002 request provides new funding, \$150 million in federal matching funds, for innovations in coal-fired power technology.

The new initiative will endeavor to create a consortium of coal companies, utilities, and generating equipment vendors to direct coal research toward the most important problems faced by the entire industry. This cooperative effort, totaling more than \$2 billion over ten years, will require industry to share in the cost of the research work, with the industry share increasing as technologies approach commercial states. Participating companies will take part in selection of the technologies and evaluate the progress of R&D efforts to accelerate development and deployment of coal technologies that will economically meet environmental standards.

Weatherization Assistance

Low-income families spend a very large part of their income on energy. Many live in homes that are poorly insulated or have broken or inefficient heating systems, causing these families to spend more on heating and cooling bills.

To address this problem, \$273 million, nearly double the FY 2001 enacted level, is requested in FY 2002 for **Weatherization Assistance** grants to provide assistance to 123,000 homes. The Department will make a special investment in FY 2002 for targeted development of the Weatherization network's production capacity, particularly in rapid-growth states, to enable expanded delivery of quality services to more low-income households in subsequent years while achieving higher energy savings per home. This year's budget marks

the beginning of the President's ten year commitment to increase funding for Weatherization Assistance by \$1.4 billion over ten years.

Northeast Home Heating Oil Reserve

The **Northeast Home Heating Oil Reserve** provides an important safety cushion for the millions of families in the Northeast that depend on affordable heating oil to stay warm in the winter. On March 6, 2001, the Department notified the Congress of the Administration's intent to establish the heating oil reserve on a permanent basis. Should extreme events conspire to threaten Americans in the Northeast, the Reserve stands ready to fill any fuel gap until private suppliers can resume their business activities. The FY 2002 budget provides \$8 million to continue leasing commercial terminals that hold the two million barrels of federally-owned, emergency heating oil.

Other Energy Programs

At \$2.28 billion, the FY 2002 request for energy resource programs maintains a comprehensive energy portfolio to maximize U.S. energy options. The request also seeks to expand the benefit of federal investment by aggressively pursuing cost-sharing requirements in applied R&D.

Support for **Nuclear Energy** programs (\$223 million) enables innovation for the future and maintains the human infrastructure necessary to increase nuclear power generating capability. Looking forward, this request includes long-term investments in **Renewable Energy Resources** (\$237.5 million) to emphasize core R&D in alternative energy resources. The request for both activities is complemented by the Administration's proposal to provide tax credits to boost incentives for private sector development and use of renewable energy, and modify the tax treatment of nuclear decommissioning costs.

Activities emphasizing energy security, energy reliability, and consumer concerns are the focus of the FY 2002 request for **Energy Efficiency** (\$795.0 million) and **Fossil Energy R&D** (\$449 million) programs. In addition, the Department will soon submit a Budget Amendment to increase the request for Renewable Energy Resources by \$39 million in order to fund Hydrogen research, High Temperature Superconducting R&D, and Hydropower at their FY 2001 levels.

The FY 2002 request features a collaborative effort in **Distributed Energy Resources** (DER). Over the next two decades, consumers will be able to choose from an array of ultra-high efficiency, ultra-low emission, fuel flexible, and cost-competitive distributed energy resource products and services. These will be easily interconnected into the nation's infrastructure for electricity, natural gas, and renewable energy resources. The localized generation and use of power can greatly enhance reliability and power quality and provide an alternative to new transmission lines as we replace the aging electricity and natural gas infrastructure in the United States. This is critical to U.S. economic growth. The FY 2002 program will support research and development on thermal, electrical, and mechanical power technologies and provide cross-cutting assistance. In FY 2002, funding is included in the Energy Efficiency (\$47.3 million), Renewable Energy Resources (\$15.9 million) and Fossil Energy (\$45.1 million) programs to support this program.

To maintain the nation's hedge against energy supply disruptions, \$169.0 million is requested for the **Strategic Petroleum Reserve (SPR)**. This maintains the SPR's ability to draw down about four million barrels a day within 15 days and continue that rate for at least 90 days.

Science and Technology Business Line

At its core DOE is a science agency. The Department of Energy is the third-largest government sponsor of basic research in the United States (after the National Institutes of Health and the National Science Foundation) and the largest government supporter of the physical sciences. DOE has principal responsibility for basic research in high-energy physics, nuclear physics, and fusion energy science. DOE also supports important basic research in the fields of materials science, biology, chemistry, nuclear medicine, and computational science. Office of Science research underpins the applied research and development conducted throughout DOE.

The FY 2002 request for the **Office of Science** is \$3.16 billion, a slight increase over the FY 2001 funding level. This funding supports over 6,500 of the nation's graduate students and postdoctoral researchers who will be the next generation of scientists. The large scientific user facilities it designs, builds and operates are used annually by over 15,000 researchers, half from universities – many funded by NIH or NSF – and approximately 1,000 from industry.

The **High Energy Physics** program (\$721.1 million) seeks to understand how nature operates at its most fundamental level. Large accelerators are used to speed particles to extremely high energies that can then probe inside a proton and create particles offering clues to the forces that act inside protons and neutrons, once thought to be the basic constituents of matter. The **Nuclear Physics** (\$360.5 million) program seeks to explain the behavior of atomic nuclei to understand how they were formed and why some of them decay.

The **Basic Energy Sciences (BES)** program (\$1.0 billion) seeks to provide fundamental knowledge to improve the production, conversion and efficient use of energy resources through work in materials sciences, chemical sciences, engineering, geoscience, and bioscience. Within this total is funding to continue construction of the **Spallation Neutron Source** at the Oak Ridge National Laboratory in Tennessee. Neutron sources are used to study the structure of certain materials leading to discoveries in fundamental materials science that will lead to the design of improved pharmaceuticals, engines, plastics, and other products. When completed, the Spallation Neutron Source will be ten times more powerful than any neutron source now in existence, reestablishing U.S. leadership in this important field.

In FY 2002, the BES program will continue work in the emerging field of nanoscience – the ability to characterize, manipulate, and move matter atom by atom, which is leading to unprecedented understanding and control over the fundamental building blocks of all physical things. The potential benefits of studying materials and processes at this scale may lead to devices and capabilities not even contemplated a few years ago –supercomputers that fit in the palm of a hand, and tiny machines that fight disease and repair damage from inside the human body.

The **Biological and Environmental Research (BER)** program (\$443 million) works to develop the knowledge necessary to identify, understand, and anticipate the long-term health and environmental consequences of energy production, development, and use. Research is supported in four subprograms: Life Sciences which includes structural, molecular and cellular biology, and the **Human Genome** program; Environmental Processes which conducts research on climate change; Bioremediation; and Nuclear Medicine applications. This research provides a strong interface between the physical sciences and the life sciences.

In FY 2002, the BER program will support the next phase of research in genomics. **Genomes to Life** will build upon achievements of the Human Genome program to achieve greater understanding of the genomic processes in cells. The Department was the initiator of the Human Genome Program and originally developed the techniques making sequencing the genome feasible. The Human Genome program had a major milestone in June 2000 when completion of a working draft of human DNA sequence was announced. In February 2001, the draft sequence was published for public use. A great deal of work remains, including understanding biological systems, gene function and variation and how they affect human disease, comparative sequencing, and understanding the role of “junk” DNA.

The FY 2002 budget includes \$ 238.5 million for the **Fusion Energy Sciences** program to understand the release of energy during the fusion process, and the control of it so that fusion eventually may become an economically and environmentally attractive energy source. In addition, the Administration soon will submit a budget amendment that adds \$10 million to Fusion Energy Science programs.

The FY 2002 budget also includes \$165.8 million for the **Advanced Scientific Computing Research (ASCR)** program. Scientists in the ASCR program work to discover, develop and deploy the computational and networking tools to provide researchers with state of the art capabilities in analysis, modeling, and simulation. The ASCR program operates the **National Energy Research Supercomputing Center** at the Lawrence Berkeley National Laboratory, containing the most powerful computer dedicated to civilian science and is used by researchers nationwide. It also supports the **Energy Sciences Network** to provide worldwide access to Office of Science facilities.

Environmental Quality Business Line

Fifty years of nuclear weapons research and production resulted in the generation of volumes of radioactive waste and environmental contamination. The Department of Energy bears the government's obligation to: clean up the sites across the country that supported the nation's production and testing of nuclear weapons; dispose of spent nuclear fuel from civilian nuclear power plants; dispose of government-owned spent nuclear fuel and high-level radioactive wastes; and protect human health and the environment. The programs working to achieve these objectives are in DOE's Environmental Quality business line, representing 34 percent of the total DOE budget.

Environmental Management

The **Environmental Management** program is responsible for the cleanup of 113 geographic sites located in 30 states and one territory. Altogether, these sites encompass an area of over two million acres – equal to the size of Rhode Island and Delaware combined. At the beginning of FY 2001, the Department had completed active cleanup at 71 out of the 113 geographic sites.

A total of \$5.9 billion is requested for Environmental Management in FY 2002. This request reflects the ongoing evaluation of processes and procedures in anticipation of an internal DOE Environmental Management Mission Assessment. The Administration is committed to ensure that the best available technologies and business practices are applied to cleanup, and priorities are set with regulators to address important health, safety, and environmental needs. The FY 2002 request for Environmental Management fulfills commitments to major environmental site closures, compliance with legal obligations, and to winterization and cold standby of the Portsmouth Gaseous Diffusion Plant.

In FY 2002, the Department will: support the **Waste Treatment and Immobilization Facility** (formerly called the Tank Waste Remediation System or TWRS) at Hanford, Washington to address highly radioactive liquid waste, with modification to the construction schedule; continue operation of the **Defense Waste Processing Facility** and stabilization of at-risk nuclear materials at the Savannah River site in South Carolina; satisfy commitments to the State of **Idaho** to ship 3,100 cubic meters of transuranic waste off-site for treatment and disposal; retain capability to receive transuranic waste for permanent disposal at the **Waste Isolation Pilot Plant** in Carlsbad, New Mexico; continue the movement of spent fuel to safe, dry storage at the Hanford, Washington and Idaho sites; continue constructing the **Advanced Mixed Waste Treatment Plant** at Idaho; accelerate remediation activities at Portsmouth, Ohio; and maintain accelerated closure of the **Rocky Flats**, Colorado and **Fernald**, Ohio sites.

The Department's commitment to comply with environmental laws and regulations remains firm, and several steps will be taken to ensure that compliance activities and cleanups are conducted in the best and most practical way possible. While this budget addresses the major cleanup problems outlined in environmental agreements and other essential requirements at the Department's sites across the complex, there are individual sites where some work will be deferred until other, higher risks are mitigated.

Secretary Abraham has initiated a comprehensive Environmental Management Mission Assessment to identify efficiencies and re-examine program workscope priorities. There are sites where the cleanup approach needs to be reviewed and updated to implement a site-wide contracting strategy that promotes efficient work and optimizes the use of cleanup funds.

At sites where there is an ongoing Department mission, sites will focus on continuing programs. At sites that are to be closed, cleanup will be accelerated so the fixed "landlord" costs can be dramatically reduced and funds made available for cleanup at other sites. The effort also will allow the Department to put contracts in place that clearly define the scope of cleanup work and provide appropriate incentives for the contractor and the workforce to expedite cleanup while maintaining safety and health. In implementing this approach, the Department will continue to have an open dialogue with federal and state regulators to examine each site and come to agreement on the appropriate sequencing of activities and compliance framework in enforceable agreements.

Nuclear Waste Disposal

The Nuclear Waste Policy Act, as amended, established our nation's policy to provide for the secure disposal of spent nuclear fuel and high-level radioactive waste from commercial electricity generation and defense activities in a geologic repository. The Department's **Office of Civilian Radioactive Waste Management** is responsible for implementing this policy in a manner that protects public health and safety, and the environment. This Office is conducting the scientific and engineering studies to determine site suitability for development as a geologic repository.

The volumes of waste that will require disposition in the future are significant. By 2035, commercial nuclear power plants that generate 20 percent of our nation's electricity will have accumulated over 80,000 metric tons of spent nuclear fuel. Past weapons production and research activities also will have accumulated over 2,400 metric tons of spent nuclear fuel. Thousands of high-level radioactive waste canisters will be processed at Hanford and Savannah River. Our Navy's nuclear powered ships will have generated approximately 65 metric tons of spent nuclear fuel. From dismantling surplus weapons, our nation will have amassed approximately 50 metric tons of surplus weapons-usable plutonium. The nation will require disposition of these materials in a geologic repository to maintain our energy options, support cleanup of our weapons sites, continue operations of our nuclear powered ships, and advance our non-proliferation goals.

A total of \$445 million is requested for the Office of Civilian Radioactive Waste Management in FY 2002. Work during the fiscal year will focus on continuing a transition from predominately investigative science to engineering and design to support the preparation of a license application for submittal to the Nuclear Regulatory Commission. A license application will include detailed surface and subsurface designs including descriptions of operational parameters to meet the Commission's technical licensing and nuclear quality-assurance requirements. Performance confirmation will continue to verify and further strengthen scientific and technical understanding. Other work in FY 2002 will begin the development of the national infrastructure to move spent nuclear fuel and high-level radioactive waste from their present locations.

Environment, Safety and Health

The FY 2002 budget includes \$140.1 million for the **Office of Environment, Safety and Health (EH)**. This office is responsible for advising the Secretary of Energy on the status of the health and safety of workers at DOE sites; and the public, and the environment near DOE facilities. The office also plays a critical role in performing independent oversight of the Department's nuclear safety, worker safety, and radiation protection programs. The office has additional duties related to enforcing nuclear safety requirements of the Price-Anderson Act, as amended; developing environment, safety, and health directives and policies; and funding studies to evaluate potential health effects of radiation exposure. EH also assists workers to obtain information and medical records when applying for benefits under the Federal Energy Employees Occupational Illness Compensation Program Act of 2000.

Corporate Management

To accomplish the Department of Energy's objectives the agency employs almost 16,000 federal (of which nearly 4,000 work for the Power Marketing Administrations) and over 100,000 contractor personnel at over 50 major installations in 35 states. The program offices that address the overall management of the Department are included under Corporate Management.

The Corporate Management budget takes the first step to implement Secretary Abraham's challenge to achieve five to ten percent savings throughout the Department by comprehensive, creative management reform. The FY 2002 request emphasizes a business approach to management of Departmental resources. The reform of DOE's project management activities continues with additional support for project coordination and oversight activities, and inclusion of a separate funding request line for project evaluation and design in each major program to enable a more thorough evaluation of project requirements at the front end of the project. In addition, the request initiates improved capital asset management by which infrastructure requirements can be standardized and tracked corporately throughout the DOE complex.

Funding for Departmental Administration, Cost of Work for Others, Inspector General, and the Office of Hearings and Appeals, are included in this area. The FY 2002 request for Corporate Management is \$145.1 million.

The total staffing level proposed for DOE Corporate Management programs in FY 2002 is 1,441 FTEs, which is 2.7 percent (40 FTEs) below the FY 2001 level. The Department will continue to address skill mix and retention issues, however, the FY 2002 request calls for continued down-sizing of the federal and contractor workforce.

Secretary Abraham proposes to consolidate two offices within the Departmental Administration account. Given the increasing interconnection between U.S. and global energy markets, the Department's international and domestic policy functions need to be more closely coordinated. To improve the ability of the Department to respond to this reality, we intend to merge the Office of International Affairs and the Office of Policy. The merger will create an office that comprehensively addresses domestic policy development and implementation, international policy analysis, and international energy activities.

Description of the Details that Follow

The Department of Energy's primary business lines – National Security, Energy Resources, Science and Technology, and Environmental Quality – provide the structure for DOE's strategic planning, performance metrics, and performance measurement. The Department's funding, however, is organized along the budget structure of the two Congressional Appropriation Bills that fund the agency.

The following sections of this document are presented in order of the budget structure of the appropriation bills. These sections present a summary level of detail of our FY 2002 request. The FY 2000 and FY 2001 amounts in the following tables and narrative, reflect the actual appropriations adjusted to be "comparable" with the FY 2002 request. These "comparability adjustments" net to zero for DOE overall, and ensure that activities are shown in the same place in all three years, even when responsibility for an activity has transferred between programs.

A crosswalk showing funding for DOE's program offices, by appropriation and business line follows along with detailed funding charts by Program Organization and by Appropriation.

Department of Energy

Budget by Business Line

FY 2002 Budget

(discretionary dollars in millions - OMB Scoring)

| FY 2000 Current Approp. | FY 2000 Comp. Approp. | FY 2001 Current Approp. | FY 2001 Comp. Approp. | FY 2002 Request to Congress |
|-------------------------------|-----------------------------|-------------------------------|-----------------------------|-----------------------------------|
|-------------------------------|-----------------------------|-------------------------------|-----------------------------|-----------------------------------|

Business Lines

National Security

National Nuclear Security Administration

| | | | | | |
|---|----------------|----------------|----------------|----------------|----------------|
| Defense Programs..... | 4,523.2 | 4,562.0 | 5,004.2 | 5,069.3 | 5,300.0 |
| Defense Nuclear Nonproliferation..... | 913.9 | 761.7 | 872.3 | 873.9 | 773.7 |
| Naval Reactors..... | 675.1 | 669.6 | 688.6 | 687.6 | 688.0 |
| Office of the Administrator..... | — | 0.4 | 10.0 | 10.0 | 15.0 |
| Total, National Nuclear Security Administration..... | 6,112.3 | 5,993.6 | 6,575.0 | 6,640.7 | 6,776.8 |

| | | | | | |
|--|------|-------|-------|-------|-------|
| Worker and Community Transition..... | 23.9 | 23.9 | 24.4 | 24.4 | 24.4 |
| Security & Emergency Operations..... | 23.0 | 210.3 | 275.1 | 230.5 | 268.5 |
| Independent Oversight & Performance Assurance..... | 12.1 | 12.1 | 14.9 | 14.9 | 14.9 |

| | | | | | |
|--------------------------------------|----------------|----------------|----------------|----------------|----------------|
| Total, National Security..... | 6,199.6 | 6,315.2 | 6,972.4 | 6,991.4 | 7,171.9 |
|--------------------------------------|----------------|----------------|----------------|----------------|----------------|

Energy Resources

| | | | | | |
|---|----------------|----------------|----------------|----------------|----------------|
| Energy Efficiency & Renewable Energy..... | 1,043.8 | 1,055.4 | 1,188.6 | 1,188.6 | 1,032.5 |
| Fossil Energy..... | 422.2 | 409.0 | 735.7 | 735.7 | 745.4 |
| Nuclear Energy Science & Technology..... | 283.9 | 225.6 | 276.4 | 277.5 | 223.1 |
| Power Marketing Administrations..... | 229.4 | 229.4 | 200.1 | 200.1 | 205.1 |
| Energy Information Administration..... | 72.4 | 72.4 | 75.5 | 75.5 | 75.5 |
| Total, Energy Resources..... | 2,051.7 | 1,991.8 | 2,476.3 | 2,477.4 | 2,281.6 |

Science and Technology

| | | | | | |
|---|---------|---------|---------|---------|---------|
| Office of Science..... | 2,817.0 | 2,829.4 | 3,180.3 | 3,155.5 | 3,159.9 |
| Office of Technical Information Management..... | 8.6 | 8.8 | 8.4 | 8.7 | 9.0 |

| | | | | | |
|---|----------------|----------------|----------------|----------------|----------------|
| Total, Science and Technology..... | 2,825.6 | 2,838.2 | 3,188.8 | 3,164.2 | 3,168.9 |
|---|----------------|----------------|----------------|----------------|----------------|

Environmental Quality

| | | | | | |
|--|----------------|----------------|----------------|----------------|----------------|
| Environmental Management..... | 5,931.2 | 5,948.7 | 6,262.5 | 6,266.9 | 5,912.8 |
| Office of Civilian Radioactive Waste Management..... | 347.2 | 340.5 | 390.4 | 390.4 | 445.0 |
| Defense Nuclear Waste Disposal (Rescission)..... | — | — | -75.0 | -75.0 | — |
| Environment, Safety and Health..... | 139.5 | 138.1 | 161.1 | 161.1 | 140.1 |
| Total, Environmental Quality..... | 6,417.8 | 6,427.3 | 6,739.0 | 6,743.4 | 6,497.8 |

| | | | | | |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Total, Business Lines..... | 17,494.7 | 17,572.5 | 19,376.4 | 19,376.4 | 19,120.1 |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|

| | | | | | |
|---|-------|-------|-------|-------|-------|
| Corporate management and other (gross)..... | 233.1 | 204.3 | 221.1 | 221.1 | 211.1 |
|---|-------|-------|-------|-------|-------|

| | | | | | |
|--|-------|-------|-------|-------|-------|
| Corp. Mgmt. (revenues, cost of work, & adjs.)..... | -73.0 | -73.0 | -84.8 | -84.8 | -66.0 |
|--|-------|-------|-------|-------|-------|

| | | | | | |
|-----------------------------------|-------|-------|-------|-------|---|
| Cerro Grande Fire Activities..... | 138.0 | 138.0 | 203.0 | 203.0 | — |
|-----------------------------------|-------|-------|-------|-------|---|

| | | | | | |
|------------------------------------|---|-------|---|---|---|
| Russian plutonium disposition..... | — | -49.0 | — | — | — |
|------------------------------------|---|-------|---|---|---|

| | | | | | |
|---------------------------|-------|-------|-------|-------|-------|
| Excess FERC Receipts..... | -17.6 | -17.6 | -25.3 | -25.3 | -26.2 |
|---------------------------|-------|-------|-------|-------|-------|

| | | | | | |
|--------------------|-----|-----|---|---|---|
| Undistributed..... | 1.0 | 1.0 | — | — | — |
|--------------------|-----|-----|---|---|---|

| | | | | | |
|---------------------------|---|---|-------|-------|-------|
| Colorado River Basin..... | — | — | -21.0 | -21.0 | -26.0 |
|---------------------------|---|---|-------|-------|-------|

| | | | | | |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|
| Total, Department of Energy..... | 17,776.3 | 17,776.3 | 19,669.4 | 19,669.4 | 19,213.0 |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|

| | | | | | |
|---|-----------|-----------|-----------|-----------|-----------|
| DOE Civilian programs (250/270 function) funding..... | (5,501.8) | (5,416.3) | (6,170.3) | (6,148.8) | (5,857.9) |
|---|-----------|-----------|-----------|-----------|-----------|

| | | | | | |
|---|------------|------------|------------|------------|------------|
| DOE Defense (050 function) funding..... | (12,274.5) | (12,360.0) | (13,499.1) | (13,520.6) | (13,355.2) |
|---|------------|------------|------------|------------|------------|

Department of Energy

Appropriation/Business Line Crosswalk

FY 2002 Budget

(discretionary dollars in thousands - OMB Scoring)

| | FY 2002 Request to Congress | National Security | Energy Resources | Science and Technology | Environ- mental Quality | Other |
|---|-----------------------------------|----------------------|---------------------|---------------------------|-------------------------------|-----------------|
| Energy and Water Development | | | | | | |
| Energy Programs | | | | | | |
| Energy Supply | 505,069 | — | 460,599 | 8,970 | 35,500 | — |
| Non-Defense Environmental Management..... | 228,553 | — | — | — | 228,553 | — |
| Uranium Facilities Maintenance & Remediation..... | 363,425 | — | — | — | 363,425 | — |
| Science..... | 3,159,890 | — | — | 3,159,890 | — | — |
| Nuclear Waste Disposal Fund..... | 134,979 | — | — | — | 134,979 | — |
| Departmental Administration..... | 83,808 | — | — | — | — | 83,808 |
| Inspector General..... | 31,430 | — | — | — | — | 31,430 |
| Total, Energy Programs..... | 4,507,154 | — | 460,599 | 3,168,860 | 762,457 | 115,238 |
| Atomic Energy Defense Activities | | | | | | |
| National Nuclear Security Administration | | | | | | |
| Weapons Activities..... | 5,300,025 | 5,300,025 | — | — | — | — |
| Defense Nuclear Nonproliferation..... | 773,700 | 773,700 | — | — | — | — |
| Naval Reactors..... | 688,045 | 688,045 | — | — | — | — |
| Office of the Administrator..... | 15,000 | 15,000 | — | — | — | — |
| Total, National Nuclear Security Administration..... | 6,776,770 | 6,776,770 | — | — | — | — |
| Environmental and Other Defense Activities | | | | | | |
| Defense Env. Restoration & Waste Management..... | 4,548,708 | — | — | — | 4,548,708 | — |
| Defense Facilities Closure Projects..... | 1,050,538 | — | — | — | 1,050,538 | — |
| EM privatization..... | 141,537 | — | — | — | 141,537 | — |
| Other Defense Activities..... | 527,614 | 395,121 | — | — | 104,600 | 27,893 |
| Defense Nuclear Waste Disposal..... | 310,000 | — | — | — | 310,000 | — |
| Total, Environmental and Other Defense Activities..... | 6,578,397 | 395,121 | — | — | 6,155,383 | 27,893 |
| Total, Atomic Energy Defense Activities..... | 13,355,167 | 7,171,891 | — | — | 6,155,383 | 27,893 |
| Power Marketing Administrations..... | 205,057 | — | 205,057 | — | — | — |
| Federal Energy Regulatory Commission..... | — | — | — | — | — | — |
| Subtotal, Energy and Water Development..... | 18,067,378 | 7,171,891 | 665,656 | 3,168,860 | 6,917,840 | 143,131 |
| UE D&D Fund Discretionary Payments..... | -420,000 | — | — | — | -420,000 | — |
| Excess FERC Receipts..... | -26,241 | — | — | — | — | -26,241 |
| Colorado River Basin..... | -26,000 | — | — | — | — | -26,000 |
| Total, Energy and Water Development..... | 17,595,137 | 7,171,891 | 665,656 | 3,168,860 | 6,497,840 | 90,890 |
| <i>EWD Civilian programs (250/270 functions) funding.....</i> | <i>(4,239,970)</i> | <i>(—)</i> | <i>(665,656)</i> | <i>(3,168,860)</i> | <i>(342,457)</i> | <i>(62,997)</i> |
| <i>EWD Defense (050 function) funding.....</i> | <i>(13,355,167)</i> | <i>(7,171,891)</i> | <i>(—)</i> | <i>(—)</i> | <i>(6,155,383)</i> | <i>(27,893)</i> |
| Interior and Related Agencies | | | | | | |
| Fossil Energy Research & Development..... | 449,000 | — | 449,000 | — | — | — |
| Alternative Fuels Production..... | -7,961 | — | -7,961 | — | — | — |
| Naval Petroleum & Oil Shale Reserves..... | 17,371 | — | 17,371 | — | — | — |
| Elk Hills School Lands Fund..... | 36,000 | — | 36,000 | — | — | — |
| Energy Conservation..... | 794,981 | — | 794,981 | — | — | — |
| Economic Regulation..... | 1,996 | — | — | — | — | 1,996 |
| Strategic Petroleum Reserve..... | 169,009 | — | 169,009 | — | — | — |
| Energy Information Administration..... | 75,499 | — | 75,499 | — | — | — |
| Clean Coal Technology..... | 82,000 | — | 82,000 | — | — | — |
| Total, Interior and Related Agencies..... | 1,617,895 | — | 1,615,899 | — | — | 1,996 |
| Total, Department of Energy | 19,213,032 | 7,171,891 | 2,281,555 | 3,168,860 | 6,497,840 | 92,886 |
| <i>DOE Civilian programs (250/270 function) funding.....</i> | <i>(5,857,865)</i> | <i>(—)</i> | <i>(2,281,555)</i> | <i>(3,168,860)</i> | <i>(342,457)</i> | <i>(64,993)</i> |
| <i>DOE Defense (050 function) funding.....</i> | <i>(13,355,167)</i> | <i>(7,171,891)</i> | <i>(—)</i> | <i>(—)</i> | <i>(6,155,383)</i> | <i>(27,893)</i> |

Department of Energy

Budget by Appropriation

FY 2002 Budget

(discretionary dollars in millions - OMB Scoring)

| FY 2000 Current Approp. | FY 2000 Comp. Approp. | FY 2001 Current Approp. | FY 2001 Comp. Approp. | FY 2002 Request to Congress |
|-------------------------------|-----------------------------|-------------------------------|-----------------------------|-----------------------------------|
|-------------------------------|-----------------------------|-------------------------------|-----------------------------|-----------------------------------|

Energy and Water Development

| | | | | | |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|
| Energy Programs | | | | | |
| Energy Supply | 644.4 | 583.8 | 659.9 | 661.3 | 505.1 |
| Non-Defense Environmental Management..... | 332.4 | 301.6 | 277.2 | 279.2 | 228.6 |
| Uranium Enrichment D&D Fund..... | 307.2 | — | — | — | — |
| Uranium Facilities Maintenance & Remediation..... | — | 336.1 | 392.5 | 392.5 | 363.4 |
| Science..... | 2,812.5 | 2,824.8 | 3,180.3 | 3,155.5 | 3,159.9 |
| Nuclear Waste Disposal..... | 235.6 | 228.9 | 190.7 | 190.7 | 135.0 |
| Departmental Administration..... | 115.7 | 86.9 | 74.9 | 74.9 | 83.8 |
| Office of Inspector General..... | 29.5 | 29.5 | 31.4 | 31.4 | 31.4 |
| Total, Energy Programs..... | 4,477.2 | 4,391.7 | 4,807.0 | 4,785.5 | 4,507.2 |
| Atomic Energy Defense Activities | | | | | |
| National Nuclear Security Administration | | | | | |
| Weapons Activities..... | 4,524.7 | 4,563.5 | 5,004.2 | 5,069.3 | 5,300.0 |
| Defense Nuclear Nonproliferation..... | 35.5 | 712.7 | 872.3 | 873.9 | 773.7 |
| Naval Reactors..... | — | 669.6 | 688.6 | 687.6 | 688.0 |
| Office of the Administrator..... | — | 0.4 | 10.0 | 10.0 | 15.0 |
| Total, National Nuclear Security Administration..... | 4,560.2 | 5,946.2 | 6,575.0 | 6,640.7 | 6,776.8 |
| Environmental and Other Defense Activities | | | | | |
| Defense Env. Restoration & Waste Management..... | 4,462.9 | 4,586.2 | 4,963.5 | 4,966.0 | 4,548.7 |
| Defense Facilities Closure Projects..... | 1,060.4 | 1,062.2 | 1,080.3 | 1,080.3 | 1,050.5 |
| Environmental Management Privatization..... | 188.3 | 82.6 | -32.0 | -32.0 | 141.5 |
| Other Defense Activities..... | 1,753.1 | 433.2 | 584.5 | 537.9 | 527.6 |
| Defense Nuclear Waste Disposal..... | 111.6 | 111.6 | 199.7 | 199.7 | 310.0 |
| Total, Environmental and Other Defense Activities..... | 7,576.2 | 6,275.8 | 6,796.1 | 6,751.9 | 6,578.4 |
| Defense Nuclear Waste Disposal (Rescission)..... | — | — | -75.0 | -75.0 | — |
| Cerro Grande Fire Activities..... | 138.0 | 138.0 | 203.0 | 203.0 | — |
| Total, Atomic Energy Defense Activities..... | 12,274.5 | 12,360.0 | 13,499.1 | 13,520.6 | 13,355.2 |
| Power Marketing Administrations..... | 229.4 | 229.4 | 200.1 | 200.1 | 205.1 |
| Geothermal Resources Development Fund..... | -0.8 | -0.8 | — | — | — |
| Subtotal, Energy and Water Development..... | 16,980.3 | 16,980.3 | 18,506.2 | 18,506.2 | 18,067.4 |
| UE D&D Fund Discretionary Payments..... | -420.0 | -420.0 | -419.1 | -419.1 | -420.0 |
| Excess Fees and Recoveries, FERC..... | -17.6 | -17.6 | -25.3 | -25.3 | -26.2 |
| Colorado River Basin..... | — | — | -21.0 | -21.0 | -26.0 |
| Total, Energy and Water Development..... | 16,542.7 | 16,542.7 | 18,040.8 | 18,040.8 | 17,595.1 |
| <i>EWD Civilian programs (250/270 functions) funding.....</i> | <i>(4,268.3)</i> | <i>(4,182.7)</i> | <i>(4,541.7)</i> | <i>(4,520.2)</i> | <i>(4,240.0)</i> |
| <i>EWD Defense (050 function) funding.....</i> | <i>(12,274.5)</i> | <i>(12,360.0)</i> | <i>(13,499.1)</i> | <i>(13,520.6)</i> | <i>(13,355.2)</i> |
| Interior and Related Agencies | | | | | |
| Fossil Energy Research & Development..... | 409.8 | 396.7 | 541.5 | 541.5 | 449.0 |
| Alternative Fuels Production..... | — | — | -1.0 | -1.0 | -8.0 |
| Naval Petroleum & Oil Shale Reserves..... | — | — | 1.6 | 1.6 | 17.4 |
| Elk Hills School Lands Fund..... | — | — | 36.0 | 36.0 | 36.0 |
| Energy Conservation..... | 737.1 | 750.2 | 815.4 | 815.4 | 795.0 |
| Economic Regulation..... | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Strategic Petroleum Reserve..... | 158.4 | 158.4 | 148.6 | 148.6 | 169.0 |
| Energy Information Administration..... | 72.4 | 72.4 | 75.5 | 75.5 | 75.5 |
| Clean Coal Technology..... | -146.0 | -146.0 | 9.0 | 9.0 | 82.0 |
| Total, Interior and Related Agencies..... | 1,233.6 | 1,233.6 | 1,628.6 | 1,628.6 | 1,617.9 |
| Total, Department of Energy | 17,776.3 | 17,776.3 | 19,669.4 | 19,669.4 | 19,213.0 |
| <i>DOE Civilian programs (250/270 function) funding.....</i> | <i>(5,501.8)</i> | <i>(5,416.3)</i> | <i>(6,170.3)</i> | <i>(6,148.8)</i> | <i>(5,857.9)</i> |
| <i>DOE Defense (050 function) funding.....</i> | <i>(12,274.5)</i> | <i>(12,360.0)</i> | <i>(13,499.1)</i> | <i>(13,520.6)</i> | <i>(13,355.2)</i> |

ENERGY SUPPLY

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| Energy Supply | | | | | |
| Renewable Energy Resources..... | 306,054 | 373,179 | 237,477 * | -135,702 | -36.4% |
| Nuclear Energy..... | 227,187 | 245,937 | 223,122 | -22,815 | -9.3% |
| Environment, Safety and Health..... | 37,840 | 35,823 | 35,500 | -323 | -0.9% |
| Technical information management..... | 8,751 | 8,732 | 8,970 | +238 | +2.7% |
| Transfer to OSHA for external regulation..... | 996 | — | — | — | — |
| Small business innovation research (SBIR)..... | 4,555 | — | — | — | — |
| Subtotal, Energy Supply..... | 585,383 | 663,671 | 505,069 | -158,602 | -23.9% |
| Use of prior year balances and other adjustments..... | -1,570 | -2,352 | — | +2,352 | +100.0% |
| Total, Energy Supply..... | 583,813 | 661,319 | 505,069 | -156,250 | -23.6% |

The Energy Supply appropriation accounts support a variety of applied energy research and development programs as well as programs providing environmental oversight and mitigation. Organizations with activities supported by this appropriation include: Renewable Energy Resources; Nuclear Energy; Environment, Safety and Health; and Technical Information Management.

Renewable Energy Resources

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| Renewable Energy Resources | | | | | |
| Renewable energy technologies | | | | | |
| Biomass/biofuels energy systems..... | 69,379 | 86,268 | 80,500 | -5,768 | -6.7% |
| Geothermal technology development..... | 23,333 | 26,911 | 13,900 | -13,011 | -48.3% |
| Hydrogen research..... | 24,287 | 26,881 | 13,900 | -12,981 | -48.3% |
| Hydropower..... | 4,861 | 4,989 | 2,500 | -2,489 | -49.9% |
| Solar energy | | | | | |
| Concentrating solar power..... | 14,924 | 13,710 | 1,932 | -11,778 | -85.9% |
| Photovoltaic energy systems..... | 64,571 | 75,060 | 39,000 | -36,060 | -48.0% |
| Solar building technology research..... | 1,915 | 3,911 | 2,000 | -1,911 | -48.9% |
| Total, Solar energy..... | 81,410 | 92,681 | 42,932 | -49,749 | -53.7% |
| Wind energy systems..... | 31,734 | 39,553 | 20,500 | -19,053 | -48.2% |
| Total, Renewable energy technologies..... | 235,004 | 277,283 | 174,232 | -103,051 | -37.2% |
| Electric energy systems and storage..... | 37,336 | 51,746 | 33,927 | -17,819 | -34.4% |
| Renewable support and implementation..... | 14,894 | 21,500 | 5,118 | -16,382 | -76.2% |
| National renewable energy laboratory..... | 1,100 | 3,991 | 5,000 | +1,009 | +25.3% |
| Program direction..... | 17,720 | 18,659 | 19,200 | +541 | +2.9% |
| Total, Renewable Energy Resources..... | 306,054 | 373,179 | 237,477 | -135,702 | -36.4% |

* These amounts will be modified by a budget amendment to be submitted shortly. Renewable energy resources will be increased by \$39,176 thousand in the following areas: biomass/biofuels energy systems, hydrogen research, hydropower, electric energy systems and storage, and renewable support and implementation. Reductions in the Energy Conservation account will offset this increase.

PROGRAM DESCRIPTION

The **Office of Energy Efficiency and Renewable Energy (EE)** conducts research and development to advance energy efficiency and clean power technologies and practices. EE's renewable energy program promotes the development and use of clean power and heat technologies, including renewable and natural gas hybrids, and biofuels to meet growing energy needs, reduce our dependence on foreign energy sources, and increase use of environmentally-friendly fuels.

The **Biomass/Biofuels Energy Systems** programs provide baseload renewable electricity and transportation fuel options with substantial environmental benefits to the nation. These programs are developing technologies to enable integrated feedstock and conversion systems that will make biomass competitive with conventional fossil-based energy options.

The **Biopower** program conducts R&D to increase the viability of clean, efficient biomass – estimated to add about 3,000 MW of new power capacity to the United States by 2010. The Biopower program is focused on three major areas of R&D: co-firing biomass with fossil fuels such as coal and natural gas; small modular biomass systems; and advanced biomass gasification. This program additionally benefits consumers by helping to revitalize rural economies, create jobs, and improve the environment by reducing greenhouse gas emissions. The **Biofuels** program funds research, development, and demonstration of transportation fuel technologies to: expand a domestic biomass-based industry; reduce reliance on imported fuels and chemical feedstocks; promote rural economic development; and use agricultural residues and municipal solid wastes.

The **Geothermal** Technology Development program works in partnership with U.S. industry to establish geothermal energy as a major, competitive contributor to the U.S. energy supply for both

electricity and heat. The program sponsors exploration, drilling, and energy conversion R&D to help the U.S. realize substantial economic, environmental, and energy security benefits. Technology improvements may reduce the cost of generating geothermal power to 3-5 cents/kWh by 2010. Geothermal energy would then be positioned to supply the electrical power or heat energy needs of 5 million homes and businesses in the United States by 2015, compared with about 1.5 million homes in 2000.

The **Hydrogen Research** program supports R&D to use hydrogen – the most plentiful element in the universe – as a fuel. Hydrogen can be oxidized in a fuel cell, combusted in a conventional engine, or simply burned, and its only by-products are water and heat. The Hydrogen program focuses on developing safe, cost-effective storage, production, and fuel cell technologies to enable the use of hydrogen energy systems in the future.

The **Hydropower** program conducts research to improve the technical, economic, and environmental performance of the nation's abundant, in-place hydropower resources through collaborative R&D with industry and other federal agencies. The program focuses on the development of a new generation of environmentally-friendly turbines. Current hydropower technology, while essentially emission-free, can have undesirable environmental effects such as fish mortality. Advanced hydropower technology could minimize these adverse effects yet preserve energy generation ability. Developing more environmentally-friendly turbine technology will also help to reverse the decline in hydroelectric generation.

The **Solar Energy Technologies** program sponsors R&D in advanced materials, systems integration, and durability to improve the performance and reliability of solar energy technologies and reduce their cost. Solar programs support large-scale power production, on-site electricity generation, and thermal energy for space heating and hot water; and have unique benefits due to their flexibility and scale. For example, small-scale distributed solar systems are able to provide energy at the point of use which can significantly shave utility peak loads and eliminate transmission and distribution losses, while increasing energy service reliability. Solar systems increase customer energy choices, can reduce energy price volatility, emit virtually no harmful emissions, and can reduce dependence on foreign fuel supplies.

Wind energy development diversifies the nation's energy supply, takes advantage of a domestic resource, and helps the nation to curb emissions of toxic and greenhouse gas emissions. The Wind Energy Systems program conducts research, testing, and field verification needed by U.S. industry to fully develop advanced wind energy technologies; and coordinates with partners to overcome barriers to wind energy use. Wind energy can provide electricity at some of the lowest costs available and provide a hedge against future fuel price fluctuations. Goals of the program include achieving a near-term generation cost of 2 ½ cents per kilowatt-hour at higher wind speed sites (15 mph) and developing lower wind speed turbines (13 mph) that will expand twenty-fold the viable areas for cost competitive wind energy production.

Electric Energy Systems and Storage supports R&D in: transmission reliability, distributed power, energy storage, and high temperature superconductivity activities. These programs promote the efficient and reliable delivery of electric services in competitive, restructured electric markets. Growing consumer demand for electricity is placing increased stress on the nation's aging transmission and distribution systems. Overcoming regulatory, technical, and institutional barriers to distributed power will help relieve this stress. The development of lower cost, high performance power electronic controllers with energy storage systems as part of the transition to real-time systems control will provide improved power quality and additional operational capacity within the existing transmission and distribution infrastructure. The development of High-Temperature Superconducting power equipment will significantly reduce losses in generation, delivery and end-use of electricity. Advancements in superconductivity will also relieve power delivery system constraints, particularly in urban areas, with very high capacity transmission and distribution cables.

Renewable Support and Implementation includes: the **Departmental Energy Management Program (DEMP)**, the **Renewable Energy Production Incentive**, and **Renewable Program Support** activities. These programs collectively encourage the use of renewable energy technologies

by federal, state and local governmental entities, non-profit electric cooperatives, and residents in remote areas of the U.S. under-served by the electric grid. DEMP assists to improve energy and water efficiency, promote renewable energy use, and manage utility costs at DOE's own facilities and operations. The Renewable Energy Production Incentive encourages state and local governmental entities (usually public power electric utilities) and non-profit electric cooperatives to acquire renewable energy generation resources by providing financial incentives equivalent to that offered private sector generators through tax credits.

Renewable Program Support has two components. Through targeted, geographically-diverse technology field validations, the **Competitive Solicitation Program** obtains, analyzes, and disseminates the cost and operational information needed to improve efficiency and effectiveness, and reduce the perceived risk of renewable energy and hybrid renewable energy generation systems for use in the competitive market. The **Electricity Restructuring Program** provides federal and state officials with unbiased technical assessments of utility restructuring issues relating to energy efficiency and renewable energy.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

| | |
|---|-----------------|
| Renewable Resources Technologies (FY 2001 \$277.3; FY 2002 \$174.2) | -\$103.1 |
| Even though FY 2002 funding is 37 percent below FY 2001, the request maintains core R&D efforts for renewable technologies and hydrogen research until ongoing operations can be evaluated against the outcome and priorities that will flow from the Vice President's National Energy Policy Development Group. | |
| Biomass/Biofuels Energy Systems (FY 2001 \$86.3; FY 2002 \$80.5) | -\$5.8 |
| The biomass/biofuels systems programs are developing technologies that work toward integrated feedstock and conversion systems that will make biomass competitive with conventional fossil-based options. Increases to specific programs include: Thermochemical Conversion (FY 2001 \$3.4; FY 2002 \$4.0); Biomass Power for Rural Development (FY 2001 \$4.4 M; FY 2002 \$5.8); Small Modular BioPower (FY 2001 \$4.0; FY 2002 \$5.0); Advanced Fermentation Organisms R&D (FY 2001 \$3.0; FY 2002 \$5.0); Advanced Cellulase R&D (FY 2001 \$7.0; FY 2002 \$12.0); and Pretreatment R&D (FY 2001 \$2.1; FY 2002 \$4.5). | |
| Geothermal Technology Development (FY 2001 \$26.9; FY 2002 \$13.9) | -\$13.0 |
| The Geothermal program will maintain its core research and development capabilities in FY 2002 while closing out systems field verification projects, the Enhanced Geothermal Systems activity, and GeoPowering the West. | |
| Hydrogen Research (FY 2001 \$26.9; FY 2002 \$13.9) | -\$13.0 |
| In FY 2002, the Hydrogen program will primarily focus on hydrogen production, high-density storage technologies, and small-scale reformer development for distributed power applications and fuel cell vehicles. | |
| Hydropower (FY 2001 \$5.0; FY 2002 \$2.5) | -\$2.5 |
| The focus of the Hydropower program in FY 2002 will be micro-hydro R&D. FY 2002 activities will include proof-of-concept testing for an Advanced Turbine design (FY 2001 \$0.7; FY 2002 \$0.8) and Mini-Hydro Research and Development (FY 2001 \$0.08; FY 2002 \$0.7). In addition, Biologically-Based Criteria Development (FY 2001 \$1.4; FY 2002 \$1.0) to help reduce the rate of fish mortality, will continue at a reduced level. | |
| Solar Energy (FY 2001 \$92.7; FY 2002 \$42.9) | -\$49.8 |
| The FY 2002 funding for Solar Energy activities provides for close-out of the Concentrating Solar Program (FY 2001 \$13.7; FY 2002 \$1.9). The Photovoltaic Energy Systems program (FY 2001 \$75.1; FY 2002 \$39.0) will focus more on R&D in core materials and devices. Solar Building | |

Technology Research (FY 2001 \$3.9; FY 2002 \$2.0) will build and test prototypes of a low-cost solar water heater using newly developed polymers, and finalize design concepts for zero energy buildings.

Wind Energy Systems (FY 2001 \$39.6; FY 2002 \$20.5)-\$19.1

In FY 2002, the Wind Energy Systems program will concentrate funding on low wind speed turbine technology. Funding for **Applied Research** (FY 2001 \$15.0; FY 2002 \$8.4) and **Cooperative Research and Testing** (FY 2001 \$12.1; FY 2002 \$4.6) is refocused on these priorities. The Department proposes to eliminate funding for Wind Powering America and Wind Hybrid Systems and provides modest funding for the **National Wind Technology Center** (FY 2001 \$1.2; FY 2002 \$0.8). Overall funding will decrease for Turbine Research (FY 2001 \$12.4; FY 2002 \$7.5) while funding for **Low Wind Speed Turbine** (FY 2001 \$0.2; FY 2002 \$1.1) research increases.

Electric Energy Systems and Storage (FY 2001 \$51.7; FY 2002 \$33.9).....-\$17.8

The FY 2002 budget is directed towards systems reliability. In FY 2002, **Energy Storage Systems** (FY 2001 \$6.0; FY 2002 \$6.0) and **Transmission Reliability** (FY 2001 \$8.9; FY 2002 \$8.9) activities that support the Department's **Distributed Energy Resources** Program will receive level funding. Funding for **High Temperature Superconducting R&D** (FY 2001 \$36.8; FY 2002 \$19.0) will meet outstanding commitments, maintain core capabilities, continue strategic research, and allow for no new activities.

Renewable Support and Implementation (FY 2001 \$21.5; FY 2002 \$5.1)-\$16.4

The FY 2002 request maintains core renewable support and implementation programs at a reduced level of effort. Funding supports the **Departmental Energy Management Program** (FY 2001 \$2.0; FY 2002 \$1.0) to provide funding at various DOE facilities for energy projects to increase energy efficiency and reduce future utility and maintenance costs. The **Renewable Energy Production Incentive** program (FY 2001 \$4.0; FY 2002 \$2.1) will provide funding for Tier 1 projects and some Tier 2 projects. **Renewable Program Support** (FY 2001 \$4.0; FY 2002 \$2.1) will competitively select 2-4 projects (including those on Native American lands and with Tribal Colleges and Universities). A total decrease of \$11.5M reflects the completion of Congressionally directed projects within the Renewable Indian Energy Resources Program (-\$6.6), and the elimination of the International Renewable Energy Program (-\$4.9).

National Renewable Energy Laboratory (NREL) (FY 2001 \$4.0; FY 2002 5.0)..... +\$1.0

Increase in funding provides support for NREL's infrastructure needs including necessary repairs, maintenance, equipment replacement, new construction and facility modifications.

Program Direction (FY 2001 \$18.7; FY 2002 \$19.2) +\$0.5

FY 2002 funding provides for: federal employee salary, benefits, and travel; landlord activities such as rent at Headquarters and the Golden Field Office; and a modest increase for support services and other related expenses, such as computer workstations and network infrastructure technology upgrades.

Nuclear Energy, Science and Technology

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|--------------|
| Nuclear Energy | | | | | |
| Advanced radioisotope power system..... | 29,295 | 31,794 | 29,094 | -2,700 | -8.5% |
| Isotope support and production..... | 18,953 | 18,677 | 18,177 | -500 | -2.7% |
| University reactor fuel assistance and support..... | 12,000 | 11,974 | 11,974 | — | — |
| Research and development..... | | | | | |
| Civilian research and development..... | 8,220 | — | — | — | — |
| Nuclear energy plant optimization..... | 4,845 | 4,989 | 4,500 | -489 | -9.8% |
| Nuclear energy research initiative..... | 21,709 | 34,826 | 18,079 | -16,747 | -48.1% |
| Nuclear energy technologies..... | — | 7,483 | 4,500 | -2,983 | -39.9% |
| Total, Research and development..... | 34,774 | 47,298 | 27,079 | -20,219 | -42.7% |
| Infrastructure | | | | | |
| ANL-West operation..... | 29,367 | 31,207 | 34,107 | +2,900 | +9.3% |
| Fast flux test facility (FFTF)..... | 31,908 | 38,439 | 38,439 | — | — |
| Test reactor area landlord..... | 6,905 | 8,733 | 8,733 | — | — |
| Total, Infrastructure..... | 68,180 | 78,379 | 81,279 | +2,900 | +3.7% |
| Nuclear facilities management..... | 42,100 | 34,773 | 30,457 | -4,316 | -12.4% |
| Program direction..... | 21,885 | 23,042 | 25,062 | +2,020 | +8.8% |
| Subtotal, Nuclear Energy..... | 227,187 | 245,937 | 223,122 | -22,815 | -9.3% |
| Use of prior year balances and..... | -1,570 | — | — | — | — |
| Offset from nuclear energy royalties..... | — | -2,352 | — | +2,352 | +100.0% |
| Total, Nuclear Energy..... | 225,617 | 243,585 | 223,122 | -20,463 | -8.4% |

PROGRAM DESCRIPTION

The **Office of Nuclear Energy, Science and Technology (NE)** promotes secure, competitive, and environmentally responsible nuclear technologies to serve the present and future energy needs of the country. Because of the nation's reliance on nuclear energy, DOE's investments in services, products, and technologies are essential to the future. The Office of Nuclear Energy, Science and Technology supports research and development to advance the application of nuclear technology for improved energy security, economic prosperity, and quality of life. NE's programs enhance the nation's nuclear science, technology, and human infrastructure for the future, and manage legacy nuclear materials for the Department. The major components of the Nuclear Energy program include:

The **Advanced Radioisotope Power Systems** program develops and delivers power systems to the National Aeronautics and Space Administration (NASA) and other federal agencies. The program continues to develop an advanced radioisotope power system for anticipated use on NASA missions and new technologies that could be used to reduce weight and cover a range of power levels to meet the more stringent performance requirements of future space and national security missions. The program also continues to assess special purpose fission technology for potential use in future space systems.

The **University Reactor Fuel Assistance and Support** program supports the operation and upgrade of university research reactors, provides fellowships and scholarships to outstanding students, and provides nuclear engineering research grants. The program helps to maintain domestic capabilities to conduct research, and the critical infrastructure necessary to attract, educate, and train the next generation of scientists and engineers with expertise in nuclear energy technologies. The Nuclear Engineering Education Research program stimulates innovative research at U.S. universities. DOE also supports the supply of fresh fuel to and transport of spent fuel from university research reactors, and enables reactor equipment upgrades at universities.

The **Nuclear Energy Plant Optimization (NEPO)** program develops key technologies to ensure that our nation's existing nuclear power plants can continue to deliver reliable and affordable energy supplies up to and beyond their initial 40-year license period. NEPO works to resolve open issues related to plant aging, and applies new technologies to improve plant reliability, availability, and productivity. NEPO is conducted in cost-shared cooperation with the nuclear industry. This research addresses the long-term effects of component aging; improved nuclear power plant capacity factors; optimization through efficiency and productivity improvements; and increased power output while maintaining high levels of safety.

The **Nuclear Energy Research Initiative (NERI)** program funds innovative investigator-initiated, peer-reviewed R&D at U.S. universities, national laboratories, and industry to advance nuclear energy technology. The NERI program is developing advanced concepts and scientific breakthroughs in nuclear fission and reactor technology to address and overcome the principal technical and scientific obstacles to the expanded use of nuclear energy in the U.S. NERI research and development focuses on proliferation-resistant reactor and fuel technologies, high performance/efficient reactor technology, advanced nuclear fuels, and new technologies for the minimization and management of nuclear waste.

The **Nuclear Energy Technologies** program is working to identify, assess, and develop cost-efficient technologies that further enhance nuclear safety, minimize the generation of nuclear waste, and further reduce the risk of proliferation. As a major part of the program, NE is developing a Generation IV Technology Roadmap to identify and assess concept designs, and preparing an implementation plan for the roadmap that focuses on cooperative international R&D for reactor and fuel cycle concepts. The program will also continue activities related to potential deployment of advanced gas reactor technologies.

Argonne National Laboratory-West (ANL-W) Operations activities provide engineering, maintenance, and operational support to safely and effectively maintain the site's infrastructure. This includes meeting the Department's waste management and environmental commitments for ANL-West and ensuring the physical security of stored nuclear materials.

The **Fast Flux Test Facility (FFTF)** located at the Hanford Site in Washington, is a government-owned, 400 megawatt, sodium-cooled reactor that operated from 1982 to 1992, providing a materials testing facility for nuclear fusion and fission programs. In April 1992, the FFTF was placed in hot standby. In December 2000, DOE announced its intention to permanently deactivate the FFTF.

Test Reactor Area (TRA) Landlord funds the operations, maintenance, and upgrade activities for site common facilities and utilities at the Test Reactor Area (TRA) in Idaho. Activities conducted at TRA include naval reactor fuel and core component testing, and production of isotopes for medicine and industry. The program also ensures environmental compliance at TRA, including the identification of legacy waste and mitigation in accordance with state regulations and DOE agreements with the State of Idaho.

The **Nuclear Facilities Management** program manages the Experimental Breeder Reactor-II (EBR-II) shutdown and deactivation, treatment and disposition of sodium coolant from the EBR-II and the Fermi reactors, long-term treatment of DOE's sodium-bonded spent nuclear fuels, and further development of innovative spent fuel treatment and disposal. A project to demonstrate electrometallurgical technology by treating up to 125 EBR-II spent fuel and blanket assemblies has been completed.

The **Medical Isotope Program** provides a reliable supply of stable and radioactive isotope product and services used in medicine, industry, and research. In addition to producing and distributing needed isotopes, the program conducts: an **Advanced Nuclear Medicine Initiative** to sponsor research in nuclear medicine-based diagnosis and therapy; a program to use alpha particle-emitting isotopes to fight malignant diseases; and scholarships and fellowships for nuclear medicine specialists.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Nuclear Energy, Science and Technology (FY 2001 \$245.9; FY 2002 \$223.1)- \$22.8

The FY 2002 request supports innovative applications of nuclear technology such as: the development of the **Generation IV Technology Roadmap**; research and development activities in such areas as cost; safety, waste and non-proliferation; and maintains infrastructure of nuclear facilities to meet future challenges. The FY 2002 request reflects the decision to not request funding for major new energy initiatives pending the outcome of the current Administration's review of U.S. energy policy and related research priorities.

Advanced Radioisotope Power System (FY 2001 \$31.8; FY 2002 \$29.1)..... - \$2.7

The FY 2002 request supports: radioisotope power system assembly and testing at the **Mound, OH** site; continued development of the **Stirling Radioisotope Power System** for potential use on future space exploration missions; continued development of **Special Purpose Fission Technology**; and full operation of full-scale **Pu-238** scrap recovery line. The request accelerates replacement of glove boxes and consolidation of Pu-238 chemical and isotopic analysis in building TA-55 at Los Alamos National Laboratory (FY 2001 \$6.3; FY 2002 \$6.8). Decreases reflect: reduced efforts in radioisotope power system activities (FY 2001 \$16.4; FY 2002 \$15.0) primarily due to termination of Alkali-Metal Thermal to Electric Conversion (AMTEC) technology development because it's planned development did not coincide with NASA's launch schedule; completion of several consolidation activities at Mound, Ohio; reduced Plutonium-238 acquisition and processing activities (FY 2001 \$4.9; FY 2002 \$4.1) due primarily to completion of installation of the full-scale Pu-238 scrap recovery line, and deferral of post irradiation examination of targets that were irradiated in the Advanced Test Reactor and the High Flux Isotope Reactor.

Isotope Support and Production (FY 2001 \$18.7; FY 2002 \$18.2)..... - \$0.5

The FY 2002 request supports production, packaging, and distribution of radioactive and stable isotopes for approximately two hundred and fifty customers, the continuation of the **Advanced Nuclear Medicine Initiative** (FY 2001 \$2.5; FY 2002 \$2.5), and completion of eighty percent of the **Isotope Production Facility** at Los Alamos National Laboratory (FY 2001 \$2.5; FY 2002 \$2.5). In addition, the request supports acquisition of additional alpha-emitting isotopes necessary for medical research and human clinical trials (FY 2001 \$0.9; FY 2002 \$1.0), and investment in new products and process improvements (FY 2001 \$0.05; FY 2002 \$0.3). Decreases reflect placing the Annular Core Research Reactor (ACRR) in standby mode (FY 2001 \$11.5; FY 2002 \$11.0), and completion of the stable isotope enrichment unit (FY 2001 \$0.3; FY 2002 \$0.0).

University Reactor Fuel Assistance and Support (FY 2001 \$12.0; FY 2002 \$12.0) \$0

The FY 2002 request maintains the supply of fresh fuel to all university reactors requiring these services, and continues the DOE/Industry Matching Grants Program that support education, training and innovative research at participating U.S. universities. The request will provides for 20-24 fellowships and 50 scholarships to students enrolled in nuclear science programs at U.S. universities. The request continues the **Reactor Sharing Program** that allows students and faculty at institutions without reactors to have access to reactors at other universities. The request also continues the **Reactor Upgrade Program** that assists in the replacement of outdated equipment, maintenance of reactor systems, and upgrading of experimental capabilities for at least 23 university reactors.

Nuclear Energy Plant Optimization (FY 2001 \$5.0; FY 2002 \$4.5)..... -\$0.5

The FY 2002 request maintains support for projects initiated in FY 2000 and FY 2001 on the long-term reliability of irradiated structural materials, long-term fatigue, and assessment of aging effects on critical components and structures associated with nuclear energy plants. This request reflects a slight decrease in the number of research and development projects that will be conducted in FY 2002.

Nuclear Energy Research Initiative (FY 2001 \$34.8; FY 2002 \$18.1).....-\$16.7

The FY 2002 request allows continuation of the existing NERI research ensuring that successful innovative reactor and fuel technologies are developed and that issues affecting expanded use of nuclear technology will be addressed. The Department will

complete 43 research projects initiated in FY 1999, and continue the 10 research projects awarded in FY 2000 and approximately 15 projects expected to be awarded in FY 2001. In addition, the Department will continue the five bilateral international projects initiated in FY 2001. No new awards will be awarded in FY 2002. The Vice President's energy review will assess this program before further new commitments are made.

Nuclear Energy Technologies (FY 2001 \$7.5; FY 2002 \$4.5)..... - \$3.0

The FY 2002 request supports the completion of the draft **Generation IV Technology Roadmap** (FY 2001 \$4.5; FY 2002 \$4.0). This request reflects completion of the ALWR design assessment in FY 2001 (-\$1.0) and the small reactor deployment feasibility study in FY 2001 (-\$1.0); and reduced workscope for the advanced gas reactor development activities pending endorsement from the Vice President's energy review (-\$.5) within Advanced Reactor Development activities (FY 2001 \$3.0; FY 2002 \$0.5).

ANL-West Operations (FY 2001 \$31.2; FY 2002 \$34.1).....+ \$2.9

The FY 2002 request supports the maintenance and operation of essential facilities at ANL-West to safely and securely manage all special nuclear materials and deactivate unnecessary facilities. This request reflects an increased effort in safety and quality oversight as required to correct deficiencies and comply with revised DOE requirements associated with Nuclear Facility Support activities (FY 2001 \$16.8; FY 2002 \$17.6). Other increases include: Radiological Facility and Balance-of-Plant Support activities (FY 2001 \$8.0; FY 2002 \$8.4) for costs of resources, including materials and supplies; increases in Materials and Services activities (FY 2001 \$6.4; FY 2002 \$6.9) for costs of electricity, power management, fuel oil, and diesel fuel for transportation; increases for General Plant Projects to begin repair and replacement of aging facility and utility systems to correct identified regulatory deficiencies and to improve system performance (FY 2001 \$0; FY 2002 \$0.5); and conceptual design activities needed to support the design and construction of a Remote Treatment Facility to treat mixed transuranic waste for disposal in accordance with the Court Ordered Settlement Agreement between DOE and the State of Idaho (FY 2001 \$0; FY 2002 \$0.8).

Fast Flux Test Facility (FFTF) (FY 2001 \$38.4; FY 2002 \$38.4)..... \$0

The FY 2002 request will be used to conduct the minimum surveillance and maintenance activities to maintain the FFTF in full compliance with applicable federal and state health, safety and environmental assessments. In addition, the request supports activities that implement the Record of Decision to permanently deactivate FFTF.

Test Reactor Area Landlord (FY 2001 \$8.7; FY 2002 \$8.7)..... \$0

The FY 2002 request supports maintenance activities associated with site common facilities and utility infrastructure, construction upgrades to the site buildings, and utility infrastructure and environmental compliance for the site including identification of legacy waste and mitigation.

Nuclear Facilities Management (FY 2001 \$34.8; FY 2002 \$30.5)..... - \$4.3

The FY 2002 request supports **Experimental Breeder Reactor-II** shutdown activities; the disposition of spent fuel and legacy materials; and research on, and development of, various waste disposition technologies. This request reflects increases due to rising costs of resources, including materials and supplies associated with the **Disposition of Spent Fuel** effort (FY 2001 \$15.0; FY 2002 \$15.8), and key program areas associated with Disposition Technology activities (FY 2001 \$9.8; FY 2002 \$10.0). These increases are offset by reductions in scope to cover materials storage costs at the commercial facility and minimal planning efforts for permanent disposal associated with Disposition of Legacy Materials activities (FY 2001 \$1.2; FY 2002 \$0.5); completion of all sodium processing activities in FY 2001 (FY 2001 \$3.0; FY 2002 \$0) and all EBR-II shutdown activities in Mid FY 2002 (FY 2001 \$5.8; FY 2002 \$4.2).

Program Direction (FY 2001 \$23.0; FY 2002 \$25.1).....+ \$2.1

The FY 2002 request includes salaries, travel, support services and other expenses for headquarters and field personnel providing technical direction to NE programs. Request also includes funding to support Nuclear Energy Research Advisory Committee (NERAC) activities. The request includes an increase for salaries and benefits to support additional FTEs that will replenish critical technical expertise (FY 2001

NUCLEAR ENERGY, ENERGY SUPPLY

\$15.4; FY 2002 \$17.3), an increase related to travel within the International NERI program (FY 2001 \$0.8; FY 2002 \$0.9), and an increase in other related services related to support activities for the new hires (FY 2001 \$2.8; FY 2002 \$2.9).

Environmental, Safety and Health (non-defense)

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|--------------|
| Environment, Safety and Health | | | | | |
| Office of environment, safety & health (non-defense)..... | 19,447 | 15,869 | 14,973 | -896 | -5.6% |
| Program direction..... | 18,393 | 19,954 | 20,527 | +573 | +2.9% |
| Total, Environment, Safety and Health..... | 37,840 | 35,823 | 35,500 | -323 | -0.9% |

PROGRAM DESCRIPTION

The **Office of Environment, Safety and Health (EH)** advises the Secretary of Energy on the status of the health and safety of DOE workers, the public, and the environment near DOE facilities. By statute, DOE assumes direct regulatory authority for safety and health and EH plays a critical role by performing independent oversight of the Department’s nuclear safety, worker safety, and radiation protection of the public programs. DOE is externally regulated for compliance with applicable environmental laws administered by other Federal agencies. EH serves as DOE’s advocate to assure the Department’s interests are reflected in the formulation of environmental regulations and standards. EH develops environment, safety, and health directives and policies; performs Price-Anderson enforcement, and funds radiation health studies. EH also assists workers in obtaining information and medical records when applying for benefits under the Federal Energy Employees Occupational Illness Compensation Program Act of 2000.

EH programs are funded under two accounts within the Energy and Water Development Appropriation. Defense-related activities are funded in Other Defense Activities account and discussed later in this document. Non-Defense EH activities, discussed here, are funded in the Energy Supply account and support Policy, Standards and Guidance; DOE-Wide ES&H Programs; and Program Direction.

Policy, Standards and Guidance develops and promulgates state-of-the-art directives for the protection of workers, facilities, the public and environment from the unique hazards presented by DOE operations. National consensus standards are used to the maximum extent possible in DOE directives to optimize resources and cost savings in contracting. EH fosters effective relations with regulatory Federal agencies (the Occupational Safety and Health Administration, Environmental Protection Agency, and Nuclear Regulatory Commission) to review and harmonize new directives to new regulations.

DOE-Wide ES&H Programs provide products and services to the DOE complex that are more cost-effectively implemented by central management in EH. Such programs include: the Department of Energy Laboratory Accreditation Program (DOELAP) which accredits personnel radiation dosimetry programs to ensure the accuracy of worker radiation monitoring devices; the nationally recognized Voluntary Protection Program (VPP) which promotes and recognizes excellence in contractor environment, safety, and health programs; the Federal Employees Occupational Safety and Health (FEOSH) program, which assures the safety and health of federal workers exposed to hazards across DOE; and the National Environmental Policy Act (NEPA) program which provides procedural and technical compliance assurance to line management actions thus averting legal challenge and supporting mission-essential projects.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Environment, Safety and Health (FY 2001 \$15.9; FY 2002 \$15.0)..... - \$0.9
 The **Policy, Standards and Guidance** activities will continue to develop and update current DOE environment, safety and health policies, standards and guidance by adopting non-government consensus

standards that are appropriate for DOE work. **Regulatory liaison** activities with other government agencies to support DOE's interest will also continue. The **DOE-Wide ES&H** activities will continue to provide products and support that efficiently use DOE resources when managed centrally. The decrease reflects the transfer of information technology support to Other Defense Activities account in support of Oversight, Health Studies, and the new Energy Employees Occupational Illness Compensation program to more accurately reflect actual usage.

Program Direction (FY 2001 \$20.0; FY 2002 \$20.5).....+ \$0.5
Provides funding for the current level of Federal staff of 122 FTEs and includes pay, benefits, travel, and training. This program also provides support for the Department's Working Capital Fund, which recovers the cost of administrative services such as building occupancy. The funding increase is for cost-of-living adjustments.

Technical Information Management

(dollars in thousands)

| FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|----------------------------------|----------------------------------|-----------------------------------|---------------------|--|
|----------------------------------|----------------------------------|-----------------------------------|---------------------|--|

Technical information management

| | | | | | |
|---|--------------|--------------|--------------|-------------|--------------|
| Technical information management program..... | 1,600 | 1,596 | 1,600 | +4 | +0.3% |
| Program direction..... | 7,151 | 7,136 | 7,370 | +234 | +3.3% |
| Total, Technical information management..... | 8,751 | 8,732 | 8,970 | +238 | +2.7% |

PROGRAM DESCRIPTION

The **Technical Information Management (TIM)** program collects, preserves, organizes, and disseminates scientific and technical information resulting from Department of Energy research and development and environmental programs. The program provides worldwide energy scientific and technical information to DOE, U.S. industry, academia, and the public through a set of cutting-edge, Internet based information products for technical reports, scientific journals and preprints – the three main sources in which scientific and technical information is recorded. The TIM program also coordinates technical information activities throughout the DOE complex, maintains a classified information program, and serves as DOE's leader in the international exchange of scientific and technical information.

Report literature is disseminated via the **Information Bridge**, (www.osti.gov/bridge) and provides free, full-text access to over 70,000 technical reports. For journal literature, TIM has developed **PubScience** (www.osti.gov/pubscience) which provides searchable bibliographic records with links to full-text journal articles in over 1,400 journals at publishers' web sites. The **PrePrint Network** (www.osti.gov/preprint) provides searchable access to over 2,400 preprint sites worldwide. The TIM program also represents DOE and the U.S. in the International Energy Agency's Energy Technology Data Exchange (EDTE) which includes eighteen industrialized nations. TIM has also established electronic subscription arrangements with publishers.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Technical Information Management Program (FY 2001 \$8.7; FY 2002 \$9.0)+ \$0.3

In FY 2002, an increase of \$0.3 million is requested to support the 83 FTEs associated with the TIM program. All other program activities are essentially unchanged from FY 2001 levels.

Science

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|--------------|
| Science | | | | | |
| High energy physics..... | 683,050 | 712,001 | 721,100 * | +9,099 | +1.3% |
| Nuclear physics..... | 340,869 | 360,508 | 360,510 | +2 | +0.0% |
| Biological and environmental research..... | 416,037 | 482,520 | 442,970 | -39,550 | -8.2% |
| Basic energy sciences..... | 752,031 | 991,679 | 1,004,705 | +13,026 | +1.3% |
| Advanced scientific computing research..... | 122,338 | 165,750 | 165,750 * | — | — |
| Energy research analyses..... | 950 | 976 | 1,300 * | +324 | +33.2% |
| Multiprogram energy labs–facility support..... | 29,557 | 30,174 | 30,175 | +1 | +0.0% |
| Fusion energy sciences program..... | 238,260 | 248,493 | 238,495 * | -9,998 | -4.0% |
| Safeguards and security..... | 42,569 | 41,569 | 55,412 | +13,843 | +33.3% |
| Program direction..... | 120,491 | 126,906 | 144,385 * | +17,479 | +13.8% |
| Small business innovation research (SBIR)..... | 83,962 | — | — | — | — |
| Subtotal, Science..... | 2,830,114 | 3,160,576 | 3,164,802 | +4,226 | +0.1% |
| Less security charge for reimbursable work..... | -5,266 | -5,122 | -4,912 | +210 | +4.1% |
| Total, Science..... | 2,824,848 | 3,155,454 | 3,159,890 | +4,436 | +0.1% |

* These amounts will be modified by a budget amendment to be submitted shortly. The Fusion Energy Science Program will be increased \$10 million to \$248,495 thousand. This will be offset by decreases to High Energy Physics (-\$5 million), Advanced Scientific Computing Research (-\$2.7 million), Energy Research and Analysis (-\$0.3 million), and Program Direction (-\$2.0 million).

PROGRAM DESCRIPTION

The **Office of Science** supports basic research in energy related areas, providing the science that drives technological development within the Department. The program also supports government-wide R&D projects in areas such as Climate Change and Human Genome. Topics explore the health and environmental consequences of energy production and development (including climate change research and genomics); provide a science base for fusion as a potential energy source; conduct fundamental research in energy, matter and the basic forces of nature; and supply the advanced computational and networking tools critical to this research. The program supports laboratory operations and maintenance as well as the design and construction of new state-of-the-art scientific facilities. These facilities are also used by other federal agencies such as NIH and NSF. Science programs are continuously evaluated through merit-based peer review and scientific advisory committees, and as major sponsors of the nation's fundamental research, consistently rank among the most outstanding in the world. The Science budget also funds the federal staff to manage these programs and the Chicago and Oak Ridge Operations Offices.

The **High Energy Physics** program supports research to provide new insights into the nature of matter and energy at the most fundamental level. It seeks to understand the universe by investigating the elementary particles that are the basic constituents of matter and the forces between them. This knowledge is encompassed within a theory known as the Standard Model. According to this theory, matter consists of three families of quarks and leptons. The quarks and leptons interact through the electro-weak force, while the quarks alone feel the strong force. The research program is largely dependent upon DOE's state-of-the-art particle accelerators, fixed target and colliding beam facilities, and particle detectors. These facilities are used by large collaborations of physicists and engineers from universities and laboratories for peer-reviewed and competitively selected research.

Program funding is largely driven by operation of and research at the major research facilities. These include: (1) The **Tevatron at Fermilab** in Batavia, IL, the new Main Injector, and upgraded CDF and D-zero detectors;

and, (2) the **Stanford Linear Accelerator Center (SLAC)** in California with existing fixed target capability and new colliding beam research capability in the **B-Factory** with its BaBar detector. While, the **Alternating Gradient Synchrotron** at Brookhaven National Laboratory in New York is a Nuclear Physics facility, a small number of high priority High Energy Physics experiments are conducted there. High Energy Physics also conducts R&D to improve performance of existing facilities, and to plan for and design new state-of-the-art facilities.

A highly anticipated event in High Energy Physics will be finding the **Higgs Boson**, the source of mass. Finding the Higgs will be the primary emphasis at Fermilab for the next several years. At SLAC, the focus of research in the new B-Factory will be on **charge-parity (CP) violation**, which may explain the preponderance of matter over antimatter in the universe.

In FY 2002, the priority is to take advantage of a window of opportunity to discover the elusive Higgs prior to start of the **Large Hadron Collider** at CERN in FY 2006. Accelerator and detector upgrade activities at both Fermilab and SLAC are a high priority. The program will continue construction of the **Neutrinos at the Main Injector (NuMI)** project; this facility will be used to study the properties of neutrinos. In December 1997, the Department of Energy and the National Science Foundation signed an agreement with the European Center for Nuclear Research (CERN) concerning U.S. contributions to the Large Hadron Collider accelerator and two detectors. DOE will continue LHC project funding through FY 2005, and will then become an active participant in its research programs.

The **Nuclear Physics** program conducts research to understand the structure and interactions of atomic nuclei and the fundamental forces and particles of nature in nuclear matter. Nuclear Physics focuses on understanding the structure and properties of nuclei and nuclear matter in terms of their constituents (i.e., how do quarks bind together in groups of three to form nucleons). The Nuclear Sciences Advisory Committee is currently preparing a new Long-Range Plan for Nuclear Science to guide research in future years.

The Nuclear Physics program funds two large flagship national user accelerator facilities: (1) The **Thomas Jefferson National Accelerator Facility (TJNAF)** in Newport News, Virginia investigates how quarks and gluons bind together to make protons and neutrons; and (2) the **Relativistic Heavy Ion Collider (RHIC)** at Brookhaven National Laboratory in New York is searching for the predicted "quark-gluon plasma" which existed microseconds after the "big bang." Nuclear Physics also funds five smaller national user facilities, four university based accelerators, and several non-accelerator facilities.

The experimental programs are supported by a Nuclear Theory subprogram carried out at universities and national laboratories, including the **Institute for Nuclear Theory** at the University of Washington. There are no on-going construction projects in Nuclear Physics in FY 2002, however, research is continuing on the proposed **Rare Isotope Accelerator Facility** that will investigate stellar evolution and the origin of the elements. In FY 2002, the program scope of Nuclear Physics is maintained pending guidance from the Nuclear Sciences Advisory Committee. A priority in the FY 2002 request is to maintain utilization of the Nuclear Physics user facilities.

The **Biological and Environmental Research (BER)** program develops the knowledge needed to identify, understand and mitigate the adverse health and environmental consequences of energy production, development, and use. The science is subjected to rigorous peer review, and follows the scientific priorities recommended by the BER Advisory Committee. The program is structured along the following four subprograms:

Life Sciences focuses on understanding and mitigating the potential effects of energy production, use, and waste cleanup. **Structural Biology** analyzes and predicts gene function and is concerned with recognition and repair of DNA damage. **Molecular and Cellular Biology** has several elements: The completed sequencing of over 50 microbes for possible use in solving DOE problems in energy, waste, cleanup, and carbon management; microbes will be used for methane and hydrogen production from carbon sources and for carbon sequestration; the microbial cell project, which sought a complete understanding of a single cell, has evolved into the **Genomes to Life** project which will look at multi-cellular

systems to predict their behavior and response to environmental cues; and, research on biological effects of low dose radiation will determine safe radiation exposure levels for clean-up workers and the general public. The **Human Genome** program had a major milestone in June 2000 when the President announced completion of a working draft of human DNA sequence, and in February 2001, the draft sequence was published. Much work remains, including understanding biological systems, gene function and variation and how they affect human disease, comparative sequencing, and understanding the role of the “junk” DNA. The **Health Effects** subprogram seeks an understanding of normal human development and disease processes. Construction continues on the **Laboratory for Comparative and Functional Genomics** at Oak Ridge National Laboratory.

Environmental Processes represents DOE’s contribution to the **U.S. Global Change Research Program (USGCRP)**. Working with other federal agencies, the program will continue to develop highly parallel climate models with improved abilities to predict climate on regional scales. Program elements include: climate modeling; the **Atmospheric Radiation Measurement** program to understand the role of clouds and solar radiation in climate prediction; atmospheric chemistry and the carbon cycle; and, studying the effects of elevated CO₂ levels on terrestrial ecosystems. Partnerships on terrestrial and ocean carbon cycles are also supported.

Environmental Remediation performs research related to remediation and restoration of the nation’s nuclear weapons production sites. The **Natural and Accelerated Bioremediation Research (NABIR)** program focuses on determining the use of bioremediation in subsurface environments. Funding is provided for operation of the **William R. Wiley Environmental and Molecular Sciences Laboratory** at the Pacific Northwest National Laboratory in Washington.

Medical Applications and Measurement Science develops new medical diagnostic and therapeutic tools. Research activities include: continuation of **Boron Neutron Capture Therapy** and radionuclide therapies for cancer treatment, radiopharmaceutical design for disease diagnosis and treatment, non-invasive imaging techniques, and biomedical engineering.

The **Basic Energy Sciences (BES)** program fosters fundamental research to provide the foundations for new and improved energy technologies and for understanding and mitigating the environmental impacts of energy use. The BES mission includes planning, construction, and operation of major scientific user facilities serving researchers at universities, national laboratories and industrial laboratories. Research is conducted in four areas:

Materials Sciences performs research to make materials perform better at acceptable cost through new methods of synthesis and processing. It leads to new materials that improve efficiency, economy, environmental acceptability, and safety in energy generation, conversion, transmission and use. Applications could include electric motors and generators, solar conversion, batteries and fuel cells, vehicles, and industrial applications. Research in **nanoscale science** has become a major focus.

Chemical Sciences seeks to understand fundamental interactions of atoms, molecules, and ions with photons and electrons, and is crucial to improving combustion systems and solar photoconversion processes. It also underpins improvements in energy systems, catalytic systems, catalysis for fuels and chemical production, waste management and environmental remediation. The program also supports **nanoscale science**.

The Materials and Chemical Sciences subprograms also plan, construct, and operate major scientific user facilities that include: four synchrotron light sources (**Advanced Photon Source** at Argonne National Laboratory near Chicago; **Advanced Light Source** at Lawrence

Berkeley Laboratory, California; the **National Synchrotron Light Source** at Brookhaven National Laboratory on Long Island, and the **Stanford Synchrotron Radiation Laboratory** at Stanford University). Also included are: three neutron sources (**Intense Pulsed Neutron Source** at Argonne National Laboratory; the **High Flux Isotope Reactor** at Oak Ridge National Laboratory, Tennessee, and the **Los Alamos Neutron Science Center** in New Mexico). BES manages four electron beam micro-characterization facilities and five other specialized facilities, such as the **Combustion Research Center** at Lawrence Livermore National Laboratory, that are located throughout the U.S. BES is currently constructing a major new scientific user facility, the \$1.4 billion **Spallation Neutron Source**, which when completed, will be the world's most powerful spallation neutron source.

Within **Engineering and Geosciences**, Engineering research supports the mission needs of the Department including: robotics and intelligent machines, nano-engineering, and data and engineering analysis. Geosciences research seeks to improve the fundamental understanding of earth processes that affect energy production and environmental quality.

Energy Biosciences supports research in the formation, storage, and interconversion of energy by plants and microorganisms. This includes renewable fuel resources, agents to restore disrupted environmental sites, and photosynthesis.

The **Advanced Scientific Computing Research** program supports world leadership in areas of scientific computing research relevant to the DOE missions, and supports the goal of providing extraordinary tools for extraordinary science. Research in **Mathematical, Information, and Computational Sciences** concentrates on advanced computing applications and techniques that enable researchers to analyze, model, simulate, and predict complex physical, chemical, and biological phenomena relevant to DOE. Mathematical methods are developed to model these complex systems, and software is developed to support these large applications on high performance, terascale computers. Modeling and simulation has become increasingly important and is used for problems insoluble by traditional approaches, hazardous in laboratory study, or time consuming and expensive to study by traditional means. Accomplishments include software for simulating the flow of oil and gas in reservoirs, modeling the chemistry of heavy elements for managing highly radioactive mixed wastes from DOE weapons production facilities, climate modeling, and simulation of diesel combustion.

This program also provides the resources for these applications. The **National Energy Research Scientific Computing Center (NERSC)** at Lawrence Berkeley National Lab supports over 2,000 users, and in FY 2000 will be upgraded to a five teraflop computer. The **Energy Sciences Network (ESNET)** links the Office of Science researchers and facilities, and by the year 2005 plans to have network speeds 500 times faster than today's highest speeds. The program also provides software tools for collaborative projects which link geographically distributed research teams with experimental and computational facilities.

The **Laboratory Technology Research** subprogram supports increased partnerships in the transfer of high-risk, long-term basic research to applied energy efficiency and utilization technologies. Within the Office of Science, this program takes the lead for leveraging science and technology to advance understanding and to promote U.S. economic competitiveness through cost-shared partnerships with the private sector.

The **Fusion Energy Sciences** program seeks to understand and control the process of fusion of deuterium and tritium that can produce an enormous release of energy. Greater understanding may enable fusion to be considered as a future energy option. The program mission is to advance plasma science, fusion science, and fusion technology—the knowledge base needed for an economically and environmentally attractive fusion energy source. In recent years the program has refocused its emphasis from development of a new energy source to a strong science-based program in fusion (magnetic and inertial confinement) and plasma physics.

Fusion Energy Sciences has three subprograms. The Science subprogram supports tokamak research, investigation of alternative concepts, plasma science, theory and inertial confinement fusion. Facilities Operations funds operation and maintenance of the **DIII-D** at General Atomics in San Diego, **the Alcator C-Mod** at MIT, and the **National Spherical Tokamak Experiment** in Princeton, and also funds decontamination

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and decommissioning of the **Tokamak Fusion Test Reactor** at Princeton. The Enabling R&D subprogram provides engineering and materials research support.

The Office of Science also funds: the **Multiprogram Energy Laboratories-Facilities Support** program which supports the infrastructure of the five Office of Science multiprogram laboratories, and the Oak Ridge Landlord Activities; the **Energy Research Analyses** program which evaluates Department of Energy research projects; **Science Program Direction** which funds Office of Science and field operations staff, and science education activities; and **Safeguards and Security** which provides appropriate protection of research facilities, personnel, information, and nuclear materials in a technologically sound and cost-effective manner.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

High Energy Physics (FY 2001 \$712.0; FY 2002 \$721.1)..... +\$9.1

The FY 2002 High Energy Physics (HEP) budget request increases by \$9.1million over the FY 2001 level. The focus of the program is related to the “windows of opportunity” in finding the **Higgs Boson** (Fermilab) and on **CP violation** (SLAC) to explore the preponderance of matter over antimatter. HEP will continue its participation in the **Large Hadron Collider** project, but at a reduced level as agreed to by CERN. Construction funding is reduced with completion of two projects in FY 2001 and another nearing completion in FY 2002.

- Funding for **Research and Technology** (FY 2001 \$242.9; FY 2002 \$247.9) increases by \$5.0 million primarily to support research and future facility upgrades at Fermilab (related to the search for the Higgs Boson) (FY 2001 \$33.4; FY 2002 \$35.1), and at SLAC (for CP violation investigations) (FY 2001 \$34.4; FY 2002 \$36.6). University R&D declines by \$5.6 million (FY 2001 \$110.9; FY 2002 \$105.3). Other changes, including a transfer of SBIR funds (+\$6.5) net to +\$6.7 million +\$5.0
- **High Energy Physics Facilities** (FY 2001 \$436.8; FY 2002 \$456.8) focuses on enhanced operations of Fermilab and SLAC. **Fermilab** (FY 2001 \$211.4; FY 2002 \$244.7) will operate for 22 weeks in FY 2001 and 39 weeks in FY 2002 as it increases its search for the Higgs Boson. Fermilab funding includes continued fabrication of the **MINOS Detector** (FY 2001 \$15.0; FY 2002 \$18.0) for the **Neutrinos at the Main Injector (NuMI)** project, and other facility improvement projects. **SLAC** (FY 2001 \$116.4; FY 2002 \$125.1) will operate for 34 weeks in FY 2001 and 35 weeks in FY 2002, concentrating on CP violation investigations. SLAC funding includes a \$2.5 increase for GLAST, a joint DOE/NASA effort to study cosmic radiation from a satellite. Funding for the **Large Hadron Collider** declines to a level agreed upon by CERN (FY 2001 \$58.9; FY 2002 \$49.0). Other changes, including a transfer of SBIR funds to Research and Technology (-\$6.5) net to -\$12.1 million+\$20.0
- **Construction** funding decreases at Fermilab with completion of the **Wilson Hall Safety Improvements** project in FY 2001 (-\$4.2) and completion of funding for the **NuMI** project in FY 2002 (FY 2001 \$22.9; FY 2002 \$11.4). At SLAC the **SLAC Research Office Building** is completed in FY 2001 (-\$5.2).....-\$20.9
- **Adjustment for proposed amendment**..... +\$5.0

Nuclear Physics (FY 2001 \$360.5; FY 2002 \$360.5)..... \$0

The Nuclear Physics budget, unchanged from FY 2001, is \$360.5 million. All research and facility operations activities are continued below FY 2001 levels, including research

and operation of the **Thomas Jefferson National Accelerator Facility (TJNAF)** and the **Relativistic Heavy Ion Collider (RHIC)**.

- **Medium Energy Nuclear Physics** (FY 2001 \$118.6; FY 2002 \$118.0) reflects a reduction for completion of the MIT **BLAST detector** (FY 2001 \$1.2; FY 2002 \$0); this and other small savings are used to maintain operation of the MIT **Bates** accelerator (13 weeks in FY 2001 and 14 weeks in FY 2002) and the **TJNAF** (27 weeks in FY 2001 and 26 weeks in FY 2002) at near FY 2001 levels.-\$0.6
- **Heavy Ion Nuclear Physics** (FY 2001 \$155.8; FY 2002 \$156.3) primarily funds research and operations of RHIC. Total BNL funding for **RHIC**, which will operate 27 weeks in FY 2001 and 20 weeks in FY 2002, increases by \$1.0 million (FY 2001 \$113.6; FY 2002 \$114.6) while university research declines from FY 2001 (FY 2001 \$12.0; FY 2002 \$11.5)+\$0.5
- **Low Energy Nuclear Physics** (FY 2001 \$62.7; FY 2002 \$62.7) has no change in funding but has minor reallocations between research and facility operations. The facilities funded by this subprogram will have relatively stable budgets but reduced operating times (HRIBF-14 weeks in FY 2001 and 13 weeks in FY 2002; ATLAS-34 weeks in FY 2001 and 23 weeks in FY 2002; 88-inch Cyclotron 33 weeks in FY 2001 and 27 weeks in FY 2002). R&D and preconceptual design for the **Rare Isotope Accelerator (RIA)** continues (FY 2001 \$2.8; FY 2002 \$3.0).....\$0
- **Nuclear Theory** (FY 2001 \$23.4; FY 2002 \$23.5) will continue theoretical research and the Nuclear Data program at the FY 2001 funding level.+\$0.1

Biological and Environmental Research (FY 2001 \$482.5; FY 2002 \$443.0).....-\$39.5

The FY 2002 budget request for Biological and Environmental Research (BER) decreases by \$39.5 million. The majority of the reduction reflects completion of 24 Congressionally directed projects (-\$43.0), funding increases are for the new **Genomes to Life** program (+\$9.9), and to keep construction of the **Laboratory for Comparative and Functional Genomics** on schedule (FY 2001 \$2.5; FY 2002 \$10.0).

- **Life Sciences** (FY 2001 \$192.5; FY 2002 \$186.2) continues funding for the biology, human genome and health effects programs at \$6.3 million below the FY 2001 level. The majority of the decrease reflects FY 2001 completion of the **DNA Repair Protein Complex Beamline** at LBNL (-\$4.5). The **Microbial Genomics** program is reduced (FY 2001 \$14.9; FY 2002 \$10.9) with funds redirected mainly to **Genomes to Life**. The **Microbial Cell** project, which began in FY 2001, is incorporated into the new and more comprehensive **Genomes to Life** program (FY 2001 \$9.6; FY 2002 \$19.5). **Low Dose** research is held to near the FY 2001 request level that was lower than the appropriation level (FY 2001 \$18.5; FY 2002 \$12.7). The **Human Genome** program (FY 2001 \$86.4; FY 2002 \$88.2) has an increase for DNA sequencing technologies and sequencing analysis (FY 2001 \$24.0; FY 2002 \$28.5). The **Health Effects** subprogram terminates its Technology Development Research activity (-\$3.2) and increases funding for functional genomics (use of model organisms to understand function of human genes) (FY 2001 \$12.2, FY 2002 \$14.3).-\$6.3

- **Environmental Processes** (FY 2001 \$129.7; FY 2002 \$129.5) continues DOE support of the **U.S. Global Change Research Program (USGCRP)**. A reduction in the Atmospheric Chemistry and Carbon Cycle subprogram of \$1.7 million for completion of two Congressionally directed projects in FY 2001 is offset by increased funding for terrestrial and ocean carbon cycle research (FY 2001 \$12.7; FY 2002 \$13.7). There are only minor adjustments in the Climate and Hydrology subprogram (FY 2001 \$70.3; FY 2002 \$70.8) which includes all Atmospheric Radiation Measurement (ARM) Activity..... -\$0.2
- The **Environmental Remediation** (FY 2001 \$61.5; FY 2002 \$66.1) program provides funding for operations of the **Environmental and Molecular Sciences Laboratory (EMSL)** at PNNL. EMSL funding increases (FY 2001 \$31.1; FY 2002 \$34.1) to lease a 2-3 teraflop computer for molecular modeling and structural genomics. Funding for Bioremediation (Natural and Accelerated Bioremediation Research) and Clean-up Research is increased by \$1.5 million. +\$4.6
- **Medical Applications and Measurement Science** (FY 2001 \$96.4; FY 2002 \$51.2) funding drops significantly due to completion of 21 Congressionally directed projects (FY 2001 \$41.1; FY 2002 \$0). Funding for radiopharmaceutical design and synthesis also declines (FY 2001 \$26.6; FY 2002 \$24.4) as infrastructure support is completed.....-\$45.2
- **Construction** (FY 2002 \$2.5; FY 2002 \$10.0) Funding for the **Laboratory for Comparative and Functional Genomics** increases as planned from \$2.5 million in FY 2001 to \$10.0 million in FY 2002. +\$7.5

Basic Energy Sciences (FY 2001 \$991.7; FY 2002 \$1,004.7)+\$13.0

Most of the increase in BES is related to construction: Funding for the **Spallation Neutron Source (SNS)**, a world-class facility for neutron scattering, increases from \$258.9 million in FY 2001 to \$276.3 million in FY 2002; and new funding of \$4.0 million is requested for plant engineering and design for **Nanoscale Science Research Centers**. Research and facility operations is funded at or slightly below FY 2001 levels, and small increases are offset by a transfer of funding for the **High Flux Beam Reactor (HFBR)** (-\$15.3) to the Office of Environmental Management.

- **Materials Sciences** (FY 2001 \$443.2; FY 2002 \$434.4): In FY 2002 responsibility for the **High Flux Beam Reactor** at BNL is transferred to the Office of Environmental Management for surveillance and decommissioning (- \$15.3). Some of the HFBR funds made available will support increases for neutron and x-ray scattering at three existing facilities and the new Spallation Neutron Source (FY 2001 \$31.2; FY 2002 \$36.3). The **High Flux Isotope Reactor (HFIR)** Beam Tube project at ORNL was completed in FY 2001 (FY 2001 \$1.2, FY 2002 \$0) and provides access for six additional experiments at higher flux; acquisition of new and upgraded neutron scattering instruments for HFIR are initiated (FY 2001 \$0; FY 2002 \$2.0). Project related costs for the **Spallation Neutron Source** are reduced according to schedule (FY 2001 \$19.1; FY 2002 \$15.1). Other changes net to +\$4.5 million..... -\$8.9
- **Chemical Sciences** (FY 2001 \$216.5; FY 2002 \$218.7) maintains research and facility operations funding at near FY 2001 levels. There is a small increase in operations of the **Stanford Synchrotron Radiation Laboratory** (FY 2001 \$16.8; FY 2002 \$17.8) and the **High Flux Isotope Reactor** at ORNL (FY 2001 \$28.8; FY 2002 \$30.1)..... +\$2.2
- **Engineering and Geosciences** (FY 2001 \$39.8; FY 2002 \$38.9) and **Biosciences** (FY 2001 \$33.2; FY 2002 \$32.4) have small funding reductions..... -\$1.7

- **Construction** (FY 2001 \$258.9; FY 2002 \$280.3): Funding for the SNS (FY 2001 \$258.9; FY 2002 \$276.3) increases by \$17.4 million as planned. New plant engineering and design funds of \$4.0 million are requested for **Nanoscale Science Research Centers**.....+\$21.4

Advanced Scientific Computing Research (FY 2001 \$165.8; FY 2002 \$165.8)..... \$0

The Advanced Scientific Computing Research budget request for FY 2002 is equal to the FY 2001 level. The program will develop and provide the computational and networking tools to enable scientists to analyze, model, simulate and predict complex phenomena important to Department of Energy missions. High performance computing is rapidly increasing its importance as a science tool. All high performance computing activities will be funded at current levels, but Laboratory Technology Research, which funds CRADAs, will decrease.

- **Mathematical, Computational and Computer Sciences** (FY 2001 \$70.7; FY 2002 \$70.7) will continue development of the mathematics required for effective description and prediction of physical systems (\$32.3), development of software to effectively utilize high-end performance computers (\$21.1), software tools for high performance applications (\$8.5), and pilot projects to apply these tools to DOE applications (\$8.8). \$0
- **Advanced Computation, Communications Research, and Associated Activities** (FY 2001 \$81.5; FY 2002 \$81.5) will continue to conduct research on advanced networking needed to support distributed large scale scientific collaborations (\$7.1), develop and test the software tools to support these collaborations (\$16.3), support hardware testbeds for testing advanced hardware and software (\$13.1), and support users with the **National Energy Research Scientific Computing Center (NERSC)** at LBNL (\$28.2) and the **Energy Sciences Network (Esnet)** (\$16.8). \$0
- **Laboratory Technology Research** (FY 2001 \$9.6; FY 2002 \$6.9) reduces support for CRADA projects by about 30%. -\$2.7
- **Adjustment for proposed amendment**..... +\$2.7

Fusion Energy Sciences (FY 2001 \$248.5; FY 2002 \$238.5).....-\$10.0

In FY 2002 the Fusion Energy Sciences (FES) budget has been reduced by \$10.0 million. (An additional \$10 million, however, will be transferred to Fusion Energy in a budget amendment to be submitted shortly.) The budget will continue funding for three subprograms: Science will focus on Tokamak and alternative concept experiments, theory, and general plasma science; Facility Operations will fund operation of the 3 primary fusion facilities and will continue decontamination and decommissioning of the **Tokamak Fusion Test Reactor**; and Enabling R&D will fund removal of recoverable tritium from the **Tritium Systems Test Assembly (TSTA)** facility at LANL.

- **Science** (FY 2001 \$136.3; FY 2002 \$133.4) will continue research at **DIII-D**, **National Spherical Tokamak Experiment (NSTX)**, and the **Alcator C-Mod** and through international collaboration. To absorb part of the FES reduction, experimental plasma research in tokamaks and alternative concepts is reduced by \$1.5 million (FY 2001 \$31.5; FY 2002 \$30.0). Inertial Fusion Energy research (FY 2001 \$13.8; FY 2002 \$13.2) and Theory (FY 2001 \$27.3; FY 2002 \$26.0) also decline. Other changes net to +\$0.6 million. -\$2.9
- **Facility Operations:** (FY 2001 \$77.9; FY 2002 \$72.0) The **DIII-D** at General Atomics in San Diego will operate 17 weeks in FY 2001 and 14 weeks in FY 2002 (FY 2001

\$29.3; FY 2002 \$26.7); The **Alcator C-Mod** at MIT will operate 12 weeks in FY 2001 and 8 weeks in FY 2002 (FY 2001 \$10.6; FY 2002 \$9.6); the **National Spherical Tokamak Experiment** at Princeton will operate 15 weeks in FY 2001 and 11 weeks in FY 2002 (FY 2001 \$14.4; FY 2002 \$13.2). Funding for the **Tokamak Fusion Test Reactor (TFTR)** decontamination and decommissioning (FY 2001 \$19.0; FY 2002 \$18.0) should bring the project to completion. Other changes net to -\$0.1.-\$5.9

- **Enabling R&D:** (FY 2001 \$34.3; FY 2002 \$33.1) Funding for the **Tritium Systems Test Assembly (TSTA)** (FY 2001 \$2.2; FY 2002 \$3.3) increases to reduce the tritium inventory in preparation for transfer of this excess facility to Environmental Management (+\$1.1). This is offset by minor reductions and transfer of SBIR/STTR to the Science subprogram (-\$2.3).....-\$1.2

Multiprogram Energy Laboratories-Facilities Support (FY 2001 \$30.2; FY 2002 \$30.2)..... \$0

Funding for the Multiprogram Energy Laboratories-Facilities Support program remains unchanged from FY 2001. Within this funding level, there is a shift of \$3.4 million from General Purpose Projects to Environment, Safety and Health projects.

Program Direction (FY 2001 \$126.9; FY 2002 \$144.4)..... + \$17.5

Most of the increase is for continued support (COLA, within grades, etc.) for existing staff, support services, and other related expenses. Specific programmatic increases include funding for the Corporate R&D Portfolio Management Environment (+\$4.0), and support for additional students in the Laboratory Fellowship program and the Community College Institute for Biotechnology, Environmental Science and Computing (+\$1.1).

- **Program Direction** (FY 2001 \$61.1; FY 2002 \$72.5) will continue support of ongoing staff and services (+\$7.4), and enhance funding for development of the Corporate R&D Portfolio Management Environment (+\$4.0).+\$11.4
- **Science Education** (FY 2001 \$4.4; FY 2002 \$5.5) provides additional funding for Energy Research Undergraduate Laboratory Fellowships and the DOE Community College Institute of Biotechnology, Environmental Science and Computing.....+\$1.1
- **Field Operations** (FY 2001 \$61.4; FY 2002 \$64.4) continues support of staff, support services and other related expenses.+\$3.0
- **Adjustment for proposed budget amendment** + \$2.0

Safeguards and Security (FY 2001 \$36.5 million; FY 2002 \$50.5 million)..... + \$14.0

Safeguards and Security increases \$14.0 million over the FY 2001 level to fully fund all activities at the Office of Science laboratories and field sites. The largest part of the increase is for protective forces (salaries, etc.) (+\$4.4), security systems (+\$2.2), cyber security (+\$4.0), and program management (+\$1.9). Other increases total +\$1.5 million.

Departmental Administration

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| Departmental Administration | | | | | |
| Administrative operations | | | | | |
| Office of the Secretary..... | 5,308 | 4,989 | 4,700 | -289 | -5.8% |
| Board of contract appeals..... | 838 | 876 | 911 | +35 | +4.0% |
| Chief financial officer..... | 30,629 | 35,392 | 36,464 | +1,072 | +3.0% |
| Congressional and intergovernmental affairs..... | 4,910 | 4,989 | 5,478 | +489 | +9.8% |
| Economic impact and diversity..... | | | | | |
| Field integration..... | 6,633 | 6,610 | 6,728 | +118 | +1.8% |
| General counsel..... | 1,000 | — | — | — | — |
| International affairs..... | 20,790 | 22,675 | 23,058 | +383 | +1.7% |
| Management and administration..... | | | | | |
| Policy..... | 7,954 | 9,026 | 9,026 | — | — |
| Public affairs..... | 80,933 | 88,783 | 76,392 | -12,391 | -14.0% |
| Total, Administrative operations..... | 6,986 | 7,443 | 7,443 | — | — |
| Cost of work for others..... | 3,885 | 3,892 | 4,581 | +689 | +17.7% |
| Funding from other defense activities..... | 169,866 | 184,675 | 174,781 | -9,894 | -5.4% |
| Use of prior year balances and other adjustments..... | 33,205 | 74,027 | 71,837 | -2,190 | -3.0% |
| Total, Departmental Administration (gross)..... | -9,962 | -24,945 | -25,000 | -55 | -0.2% |
| Miscellaneous revenues..... | -16,183 | -7,815 | — | +7,815 | +100.0% |
| Total, Departmental Administration (net)..... | 176,926 | 225,942 | 221,618 | -4,324 | -1.9% |
| | -90,014 | -151,000 | -137,810 | +13,190 | +8.7% |
| | 86,912 | 74,942 | 83,808 | +8,866 | +11.8% |

PROGRAM DESCRIPTION

The **Departmental Administration** appropriation account funds ten Department-wide management organizations under **Administrative Operations**. These organizations support headquarters in human resources, administration, accounting, budgeting, project management, legal services, life cycle asset management, workforce diversity, minority economic impact, policy, international affairs, congressional and intergovernmental liaison, and public affairs. Funding for the **Office of the Secretary** is provided separately from the other administrative functions within the Departmental Administration account.

The Departmental Administration account also budgets for **Cost of Work for Others**, which advances funds for the cost of products and services provided by DOE's laboratories and other contractors to non-Departmental users. This facilitates revenue generating work with State and local entities which are precluded by law from making advance payments. When work is completed, costs are offset with revenues received from the sale of these products or services. Examples of proposed FY 2002 revenue generating products or services are: sales of foreign research reactor fuel, timber, utilities, and research and development activities conducted for State and local governments.

In addition to receiving offsetting **Revenues**/receipts for the goods and services associated with the Cost of Work for Others program, the Departmental Administration account also receives miscellaneous revenues from other sources. These revenues are received from the sale of by-products that have no costs associated with the Departmental Administration appropriation, and provide an offset to the appropriation. Examples are: fees received from handling and basin storage of spent fuel cores from Navy ships; charges to the Navy for nuclear material burn-up while nuclear cores are in operation; and federal administrative charges on DOE Reimbursable Work for Others.

The Department also operates a **Working Capital Fund (WCF)** as a financial tool to improve management of common administration services. The objectives of the WCF are: to fairly allocate costs to mission programs; to

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offer better choices on amount, quality and sources of services; and, to provide flexibility for service providers to respond to customer needs. The WCF is composed of 11 self-financing businesses that report administratively to the Offices of Management and Administration, Chief Information Officer, and Chief Financial Officer; with oversight from a customer-majority Board chaired by the Director of Management and Administration. Pricing policies are implemented through a combination of fee-for-service (for direct usage) and pro-rata allocation (for common and infrastructure usage).

| Working Capital Fund | | |
|--------------------------------|----------------|----------------|
| FY 2001 and FY 2002 Activities | | |
| | <u>FY 2001</u> | <u>FY 2002</u> |
| Building Rent & Operations | 55,083 | 55,453 |
| Telephone Services | 6,914 | 6,676 |
| Mail Services | 1,634 | 1,855 |
| Printing and Graphics | 3,485 | 3,485 |
| Supplies | 2,759 | 2,759 |
| Photocopying | 2,420 | 2,420 |
| Contract Closeouts | 677 | 569 |
| Desktop | 1,434 | 1,434 |
| Payroll Processing | 3,102 | 5,270 |
| Networking | <u>6,385</u> | <u>6,385</u> |
| Total | 83,893 | 86,306 |

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Office of the Secretary (FY 2001 \$5.0; FY 2002 \$4.7) - \$0.3

The Office of the Secretary provides overall policy direction and central management for the Department of Energy complex. The decrease in the Office of the Secretary is due to a reduction of 5 FTEs, from 40 in FY 2001 to 35 in FY 2002.

Management and Administration (FY 2001 \$88.8; FY 2002 \$76.4)..... - \$12.4

The Office of Management and Administration (MA) provides administration, human resources and training, procurement, and other management systems and processes. MA also includes the Secretary of Energy's Advisory Board which provides timely, balanced, and independent external advice on issues of national importance related to the missions of the Department of Energy. The FY 2002 request reflects the:

- Reduction of 1 FTE, from 490 in FY 2001 to 489 in FY 2002, which is offset by the FY 2001 pay raise and the partial effect of the FY 2002 pay raise +\$0.5
- Inclusion of information management business activities in the Working Capital Fund (WCF) and an associated increase in costs and the transfer of the **Corporate Human Resources Information System** to the WCF. - \$0.9
- Transfer of the **Corporate Management Information Program (CMIP)** to the Office of the Security and Emergency Operations.- \$12.0

Chief Financial Officer (FY 2001 \$35.4; FY 2002 \$36.5).....+ \$1.1

The Office of the Chief Financial Officer provides corporate guidance on all financial matters within the Department of Energy, administers all financial operations and financial systems, ensures the integrity of the Department's financial data, advises the Secretary on funding matters, evaluates the financial aspects of policy options being considered within the

Department, and guides budget requests through the Congressional Appropriations process. The net increase in the Office of the Chief Financial Officer reflects: a reduction of 2 FTEs, from 242 in FY 2001 to 240 in FY 2002, which is offset by the FY 2001 pay raise and the partial effect of the FY 2002 pay raise.

General Counsel (FY 2001 \$22.7; FY 2002 \$23.1).....+ \$0.4

The Office of General Counsel provides comprehensive legal services to the Secretary and the Department. The net increase in the Office of the General Counsel reflects the:

- Reduction of 5 FTEs, from 160 in FY 2001 to 155 in FY 2002. The reduction in FTEs is offset by the FY 2001 pay raise and the partial effect of the FY 2002 pay raise. +\$0.8
- Decreased Intellectual Property activity and a reduction in the Working Capital Fund and GSA rent costs..... - \$0.4

Policy (FY 2001 \$7.4; FY 2002 \$7.4) \$0

The Office of Policy is the primary policy advisor to the Secretary and the Department’s senior management on emerging challenges to the economic efficiency and reliability of the nation’s energy sector, and the source of accurate and unbiased analysis of existing and prospective energy-related policies. Office of Policy staffing will be reduced by 3 FTEs, from 46 in FY 2001 to 43 in FY 2002. The reduction in FTEs is offset by the FY 2001 pay raise and the partial effect of the FY 2002 pay raise.

International Affairs (FY 2001 \$9.0; FY 2002 \$9.0)..... \$0

The Office of International Affairs provides advice to the leadership of the Department on international energy affairs and coordinates negotiation and implementation of cooperative agreements. Staffing will be reduced by 4 FTEs, from 66 in FY 2001 to 62 in FY 2002. The reduction in FTEs is offset by the FY 2001 pay raise and the partial effect of the FY 2002 pay raise.

Congressional and Intergovernmental (FY 2001 \$5.0; FY 2002 \$5.5).....+ \$0.5

The Office of Congressional and Intergovernmental Affairs promotes Departmental policies, programs and initiatives through communication, coordination and interaction with Congress, State, local, and Tribal governments, other Federal agencies, stakeholders, and the general public. The net increase reflects the:

- Reduction of 2 FTEs, from 41 in FY 2001 to 39 in FY 2002. The reduction in FTEs is offset by the FY 2001 pay raise and the partial effect of the FY 2002 pay raise. +\$0.4
- Upgrade of computer hardware and software for 39 workstations..... +\$0.1

Public Affairs (FY 2001 \$3.9; FY 2002 \$4.6).....+ \$0.7

The Office of Public Affairs is responsible for managing overall public affairs for the Department. This includes communicating Departmental information to the news media and the general public; coordinating public affairs activities for Headquarters, field offices and sites, and DOE laboratories; serving as primary spokesperson for the Department; arranging interviews with news media; providing speechwriting services to the Secretary, Deputy Secretary and Under Secretary; and, preparing written information about Departmental activities. The net increase reflects the:

- Reduction of 1 FTE, from 34 in FY 2001 to 33 in FY 2002. The FTE reduction is offset by the FY 2001 pay raise and the partial effect of the FY 2002 pay raise. +\$0.6
- Increase in technical computer support (DOE Homepage, fax liaison maintenance) and 33 workstation replacements or upgrades. +\$0.1

Economic Impact and Diversity (FY 2001 \$6.6; FY 2002 \$6.7).....+ \$0.1

The Office of Economic Impact and Diversity advises the Secretary of Energy to ensure equitable opportunities for small, minority, and women-owned businesses to compete for contracts. The Office implements applicable Civil Rights laws, devises and leads diversity strategies, manages the Department's whistleblower reform initiatives, and oversees policies for resolution of environmental, health and safety, and human resources disputes. The net increase reflects a reduction of 1 FTE, from 41 in FY 2001 to 40 in FY 2002. The FTE reduction is offset by the FY 2001 pay raise and the partial effect of the FY 2002 pay raise.

Board of Contract Appeals (FY 2001 \$0.88; FY 2002 \$0.91) + \$0.03

The Board of Contract Appeals provides informal, expeditious and inexpensive resolution of contract and financial assistance-related disputes pursuant to the Contract Disputes Act of 1978, the Alternative Disputes Resolution Act, and other authority. The increase is due to the FY 2001 pay raise and the partial effect of the FY 2002 pay raise.

Cost of Work for Others (FY 2001 \$74.0; FY 2002 \$71.8) - \$2.2

Cost of Work for Others provides funding to the Department of Energy's multi-purpose field offices and national laboratories to finance the cost of products and services requested by non-DOE users, both foreign and domestic. The decrease in Cost of Work for Others is due to: a reduction in the amount of funding needed for several projects with the University of California and the California Energy Commission due to their ability to provide advance funding; reduced technical and manufacturing support to be provided to foreign industries; and an increase due to higher estimated costs for the specific shipments of Foreign Research Reactor Spent Fuel.

Revenues (FY 2001 -\$151.0; FY 2002 - \$137.8).....+\$13.2

Associated revenues represent the full-cost recovery offset to Cost of Work for Others activities, the program associated with providing products and services to our customers. Miscellaneous revenues are received from the sale of by-products that have no cost associated with the Departmental Administration appropriation. Reduced revenues reflect:

- Amounts which will be collected after factoring in the cumulative effect of continuing blanket waivers granted in previous years+\$9.1
- Lower level of projects with the State of California and a fewer number of projects which utilize the Accelerator Mass Spectrometry Center to measure samples; transfer of surplus Los Alamos utility sales to the County of Los Alamos; and a decrease in the amount of technical and manufacturing support to be provided to foreign industries+\$4.1

Inspector General

(dollars in thousands)

| FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 |
|----------------------------------|----------------------------------|-----------------------------------|---------------------|
|----------------------------------|----------------------------------|-----------------------------------|---------------------|

Office Of the Inspector General

| | | | | | |
|----------------------------------|---------------|---------------|---------------|---|---|
| Office of inspector general..... | 29,500 | 31,430 | 31,430 | — | — |
|----------------------------------|---------------|---------------|---------------|---|---|

PROGRAM DESCRIPTION

The **Office of Inspector General (OIG)** promotes the effective, efficient, and economical operation of the programs and operations of the Department of Energy (DOE), including the National Nuclear Security Administration (NNSA), through audits, inspections, investigations and other reviews. The OIG is mandated by the Inspector Generals' Act of 1978, as amended, to: (1) detect and prevent fraud and abuse in the Department's programs and operation, and to recommend corrective action and keep the Secretary and Congress informed; (2) receive and investigate complaints from employees regarding mismanagement, abuse of authority, danger to public health and safety, or violations of laws, rules or regulations; and (3) conduct, supervise, and coordinate relationships between the Department and other federal, state, and local agencies concerning the identification and prosecution of criminal and civil violations of law.

Additional OIG statutory requirements include: conducting annual financial statement audits required by the **Government Management Reform Act of 1994**; reviewing the Department's information security systems as required by the **Government Information Security Reform Act** of 2001; and reviewing the Department's implementation of the **Government Performance and Results Act of 1993**. In addition, the OIG conducts reviews of the most significant management challenges facing the Department, including NNSA, as resources permit. The current management challenges are: Effective Establishment of the NNSA; Contract Administration; Energy Supply/Demand Technology; Environmental Remediation (including radioactive waste storage); Human Capital; Information Technology; Infrastructure; Property Controls and Asset Inventories; Safety and Health; and Security.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Inspector General (FY 2001 \$31.4; FY 2002 \$31.4)..... \$0

The FY 2002 request supports pay raise and base salary adjustments, and statutory workload requirements. Work includes new requirements associated with the **Government Information Security Reform Act of 2001** that the OIG conduct an evaluation of unclassified information systems and audit the Department's review of classified systems. The OIG will also perform reviews of the Department's critical management challenge areas.

National Nuclear Security Administration

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|--------------|
| National Nuclear Security Administration | | | | | |
| Weapons Activities..... | 4,563,505 | 5,069,289 | 5,300,025 | +230,736 | +4.6% |
| Defense Nuclear Nonproliferation..... | 712,672 | 873,884 | 773,700 | -100,184 | -11.5% |
| Naval Reactors..... | 669,637 | 687,560 | 688,045 | +485 | +0.1% |
| Office of the Administrator..... | 350 | 9,978 | 15,000 | +5,022 | +50.3% |
| Total, National Nuclear Security Administration..... | 5,946,164 | 6,640,711 | 6,776,770 | +136,059 | +2.0% |

The Department of Energy is required by various laws to enhance U.S. national security through the military application of nuclear technology and to reduce the global danger from the proliferation of weapons of mass destruction. The **National Nuclear Security Administration (NNSA)**, a semi-autonomous Administration within the Department, carries out these responsibilities. Established in March 2000, pursuant to Title 32 of the National Defense Authorization Act for FY 2002 (Public Law 106-65), NNSA is structured to provide clear and direct lines of accountability and responsibility for the management and operation of the nation's nuclear weapons, naval reactors, and nuclear nonproliferation activities. NNSA is comprised of the Offices of Defense Programs, Defense Nuclear Nonproliferation, Naval Reactors, and an Office of the Administrator.

Weapons Activities -- National Nuclear Security Administration

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|--------------|
| Weapons Activities | | | | | |
| Stewardship operation and maintenance | | | | | |
| Directed stockpile work..... | 732,088 | 914,536 | 1,043,791 | +129,255 | +14.1% |
| Campaigns..... | 1,831,051 | 2,023,199 | 1,996,413 | -26,786 | -1.3% |
| Readiness in technical base and facilities..... | 1,312,752 | 1,413,777 | 1,446,988 | +33,211 | +2.3% |
| Total, Stewardship operation and maintenance..... | 3,875,891 | 4,351,512 | 4,487,192 | +135,680 | +3.1% |
| Secure transportation asset..... | 104,463 | 115,117 | 121,800 | +6,683 | +5.8% |
| Safeguards and security..... | 393,788 | 394,664 | 448,881 | +54,217 | +13.7% |
| Program direction..... | 238,005 | 250,566 | 271,137 | +20,571 | +8.2% |
| Subtotal, Weapons Activities..... | 4,612,147 | 5,111,859 | 5,329,010 | +217,151 | +4.2% |
| Use of prior year balances..... | -20,668 | -13,647 | — | +13,647 | +100.0% |
| Less security charge for reimbursable work..... | -27,974 | -28,923 | -28,985 | -62 | -0.2% |
| Total, Weapons Activities..... | 4,563,505 | 5,069,289 | 5,300,025 | +230,736 | +4.6% |

PROGRAM DESCRIPTION

The National Nuclear Security Administration's (NNSA) **Office of Defense Programs (DP)** maintains and enhances the safety, reliability and performance of the U.S. nuclear weapons stockpile, without nuclear testing, to meet national security requirements. The mission is carried out in partnership with the Department of Defense, through research, development and production activities encompassed in the Stockpile Stewardship Program. Defense Programs also supports national assets for the secure transportation of weapons and hazardous materials, and the capability to respond to incidents involving nuclear weapons and materials. About 2,000 federal employees provide direction, management and oversight of about 25,000 contractor employees who carry out program activities at a nationwide complex of government-owned, contractor operated national security laboratories and nuclear weapons production facilities. Locations include: Lawrence Livermore National Laboratory in California and Los Alamos National Laboratory in New Mexico; Sandia National Laboratories in California and New Mexico; Kansas City Plant in Kansas City, Missouri; the Pantex Plant, Amarillo, Texas; the Y-12 Plant in Oak Ridge, Tennessee, the Savannah River Site Tritium Facility, South Carolina; and the Nevada Test Site near Las Vegas, Nevada. Defense Programs also provides oversight and landlord responsibilities for the Albuquerque, Nevada, and Oakland Operations Offices.

The Office of Defense Programs receives funding in the Weapons Activities account of the Energy and Water Development Appropriation. The main components of the budget request include: Directed Stockpile Work (DSW); Campaigns; Readiness in Technical Base and Facilities (RTBF); Secure Transportation Asset; Safeguards and Security; and Program Direction.

Directed Stockpile Work (DSW) activities support the highest priority of the Stockpile Stewardship Program – to ensure the operational readiness of the nuclear weapon stockpile. These include: the maintenance, evaluation, refurbishment, reliability assessment, weapon dismantlement and disposal, research, development, and certification activities in direct support of each weapon; and long-term future-oriented research and development to solve either current or projected stockpile problems. The challenges the program faces includes an aging stockpile that must be maintained, a significant potential workload of weapon refurbishment, and an aging workforce and infrastructure in the nuclear weapons complex. The outcome of the strategic review of national security-related programs directed by the President will determine the goals for future weapons refurbishment and life extension for the stockpile. The FY 2002 request places a high priority on accomplishing the near-term workload for the W87 and the B61, and continues limited research, development and engineering on other systems pending future decision on scope and schedule.

Campaigns are focused scientific and technical efforts essential for certification and life extension of the stockpile. They are designed to allow us to move to "experience-based" judgments for stewardship; to rely on experiments, computations, simulation and surveillance information, rather than nuclear testing. During the upcoming five-year period, many of the science campaign activities will be focused to provide technologies for the directed stockpile workload, and the completion of new scientific and experimental facilities. The **National Ignition Facility (NIF)** project is scheduled for completion at the end of FY 2008, with experimental operations in support of stockpile stewardship scheduled to begin during the upcoming five-year period. The Advanced Simulation and Computing campaign will continue to improve our computing and simulation capabilities at the laboratories, but without a commitment to a 100 teraops capability by 2004 as previously planned. The five readiness campaigns are technology-based efforts to maintain and enhance manufacturing and other capabilities needed for the future production of weapon components. The pace of all of the campaigns will be assessed as part of the strategic review of the national security-related programs.

Readiness in Technical Base and Facilities (RTBF) supports the underlying physical infrastructure and operational readiness required to conduct weapons activities at the national laboratories, Nevada Test Site (NTS), the weapons production plants and other supporting sites. Over one-third of DP's financial resources are devoted to these activities to ensure that principal facilities are operational, safe, secure, compliant with regulatory requirements, and sustain a defined level of readiness to execute tasks identified in the Campaigns and Directed Stockpile Work. A multi-year initiative to correct maintenance deficiencies, with the goals of stabilizing the infrastructure, will be included as part of the strategic review.

Secure Transportation Asset provides for the safe, secure movement of nuclear weapons, special nuclear material, and weapon components between military locations and nuclear complex facilities within the United States.

This account provides funding for all **Safeguards and Security (S&S)** activities at the NNSA landlord sites, specifically the three national weapons laboratories, the Nevada Test Site (NTS), and the four plant sites. Physical security, personnel security, and cyber security are all funded in this account. Funding for security investigations of M&O contractors at NNSA landlord sites is included in the Security Operations request.

Program direction funding supports federal staffing for Defense Programs (with the exception of those associated with the Secure Transportation Asset) and support for NNSA landlord responsibilities in the field.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Weapons Activities (FY 2001 \$5,069.3; FY 2002 \$5,300.0) + \$230.7

The Defense Programs request of \$5,300M, is an increase of 4.6 percent above the FY 2001 comparable appropriation. The increase will support scheduled maintenance and evaluation and certification for the stockpile but will defer decisions on most refurbishment work pending the outcome of the strategic review. Funding provides for the consolidation of NNSA landlord activities; maintenance of facilities and sites at FY 2001 levels; and current contractor employment levels for ongoing programs.

Directed Stockpile Work (FY 2001 \$914.5; FY 2002 \$1,043.8)..... + \$129.3

The FY 2002 request includes:

- **Stockpile Research and Development (FY 2001 \$245.5; FY 2002 \$305.5)** supports technologies for weapon refurbishment, maintenance, surveillance and/or certification. Stockpile R&D work funds the laboratory efforts needed in the development engineering stages and to assess the safety and reliability of the stockpile as a basis for the Annual Certification to the President. The increased efforts are focused on assessment and certification for the W87 Safety-Enhanced Reentry Vehicle replacement, B61 feasibility and design studies, and limited W76 and W80 development engineering work..... + \$60.0

- **Stockpile Maintenance** (FY 2001 \$321.7; FY 2002 \$362.5) supports production and installation of limited life components in each weapon type, refurbishment and replacement of aging components and major refurbishment activities to extend the life of the W87 and B61. Increase reflects initiation of development and production engineering for the B61 and continuing limited work on the W80 and W76. + \$40.8
- **Stockpile Evaluation** (FY 2001 \$168.8; FY 2002 \$180.8) increases to implement recommended changes in surveillance policies and procedures as well as to reduce surveillance backlogs at the Pantex Plant. Activities will: enable new material laboratory and stockpile tests and quality evaluations; improve the stockpile surveillance process; complete the Pit Sampling process; redesign the W76 joint test assembly; and reduce W76, W88 and B83 surveillance backlogs + \$12.0
- **Dismantlement/Disposal** (FY 2001 \$27.4; FY 2002 \$35.4) activities enable safety analysis associated with the retirement, disassembly, component characterization and disposal, and reclamation of materials; and enable the engineering, development, testing, certification, procurement and refurbishment of containers. The increase allows the Pantex Plant to expand from one W56/W79 dismantlement line to two W79 lines and one W56 line +\$8.0
- **Production Support** (FY 2001 \$144.9; FY 2002 \$152.9) Provides quality and production efforts related to the W87 life extension program, concurrent quality and production development efforts for the W80 and W76, and similar efforts for the B61 canned sub-assembly refurbishments + \$8.0
- **Field Engineering, Training and Manuals** (FY 2001 \$6.2; FY 2002 \$6.7) provides for technical training and weapons manuals and technical publications. Planned field training activities account for the increase..... + \$0.5

Campaigns (FY 2001 \$2,023.2; FY 2002 \$1,996.4) - \$26.8
 The FY 2002 request includes:

- **Primary Certification** (FY 2001 \$47.3; FY 2002 \$55.5) supports experimental activities to develop and implement the ability to certify, without nuclear testing, rebuilt and aged primaries to within a stated yield level. The campaign's objective is to develop and demonstrate the tools required to certify the performance and safety of any rebuilt or aged primary to a specific yield. The increase supports more complex integrated subcritical experiments and the consolidation of LLNL subcritical experiments into this campaign..... + \$8.2
- **Dynamic Materials Properties** (FY 2001 \$67.2; FY 2002 \$97.8) development of experimentally validated predictive material models and physical data of all materials required to assess the performance, safety and reliability of the stockpile. The FY 2002 request includes \$3.5 million for measurements contributing to pit manufacturing and certification and continues work at the **Atlas** pulsed power facility by using the \$10 million from FY 2001 to initiate physics demonstrations. Planning is underway to relocate this facility to the **Nevada Test Site** as a multi-user facility; however, the actual relocation costs are funded in the Project Engineering and Design construction line item, 01-D-103. The funding increase in FY 2002 supports additional work needed for data and models of stockpile materials such as plutonium, and the expansion of current **University Partnerships** (FY 2001 \$ 2.5; FY 2002 \$14.2) . + \$30.6
- The **Advanced Radiography** (FY 2001 \$86.7; FY 2002 \$60.5) campaign objective is to provide the technology to obtain 3-D motion pictures of imploding surrogate primaries. The R&D effort is focused on defining the requirements of advance

radiography capabilities to support certification of refurbished and replaced primaries. In FY 2001 \$15 million was provided to support R&D and pre-conceptual design studies leading to an **Advanced Hydrodynamic Testing (AHT)** facility. During FY 2002 conceptual design may be initiated which is expected to cost in excess of \$3 million. The decrease is due to completion of funding for the **DARHT** construction project and the start of operations of the facility.....- \$26.2

- **Secondary Certification and Nuclear Systems Margins** (FY 2001 \$43.1; FY 2002 \$47.3) provides modern computational baselines for stockpiled weapon systems including: radiation sources and dynamics, radiation flow, and determining performance of nominal aged and rebuilt secondaries. The fund increase supports efforts toward providing modern computational baselines for weapons systems and diagnostic and shot fielding support for the Atlas pulsed power machine.+ \$4.2
- **Enhanced Surety** (FY 2001 \$34.0; FY 2002 \$34.8) provides validated technology for inclusion in the stockpile refurbishment program to assure that modern nuclear safety standards are fully met and to provide a new level of use-denial performance. Funding increase includes acceptance and testing of weapon surety subsystems. ... +\$0.8
- **Weapons Systems Engineering Certification** (FY 2001 \$15.3; FY 2002 \$24.0) establishes science based engineering certification methods to validate computer models and codes. Activities include experiments within a limited non-nuclear test program. The increase responds to a recent review of DSW requirements recommending commensurate experimental validation efforts to computational efforts.+ \$8.7
- **Nuclear Survivability** (FY 2001 \$14.6; FY 2002 \$19.1) demonstrates the capability to support the nuclear survivability of the enduring stockpile. The increase supports neutron generator qualification and certification activities +\$4.5
- **Enhanced Surveillance** (FY 2001 \$102.0; FY 2002 \$82.3) provides validated component lifetime assessments to support weapons refurbishment decisions and annual assessment of the nuclear stockpile. In FY 2001, Congress provided a one-time \$17.0 million increase to this campaign to: support activities at Kansas City, Pantex, and the Savannah River Site; and to accelerate deployment of diagnostic equipment at LANL and LLNL. The decrease in FY 2002 reflects the discontinuation or delay of diagnostic projects initiated in FY 2001 funds, including the X-ray Pit Tomography, Canned-Subassembly (CSA) Neutron Radiography, and the W-76 High Energy Radio Telemetry -\$19.7
- **Advanced Design and Production Technologies (ADAPT)** (FY 2001 \$80.6; FY 2002 \$75.5). This campaign deploys capabilities to deliver qualified stockpile life extension refurbishment products upon demand and will contribute in achieving the 36 month weapons refurbishment readiness objective within the Nuclear Weapons Complex. The decrease mainly reflects a reduced scope of **Integrated Product and Process Design (IPPD)/Agile Manufacturing** campaign activities and the decision to fund Plant Technical Partnership activities in the campaigns specifically accruing benefits from those activities..... -\$5.1
- **Inertial Confinement Fusion and High Yield** (FY 2001 \$431.0; FY 2002 \$467.9) addresses high energy density physics issues required to maintain a safe, secure, and reliable nuclear stockpile. This request supports the current project schedule for the **National Ignition Facility (NIF)** (TEC \$2,095 million). Most of the increase in this campaign is attributable to NIF construction project funds (FY 2001\$197.3; FY 2002 \$245.0). Specific campaign objectives include the demonstration of laboratory ignition (both direct and indirect drive) using NIF, enhancement of the experimental capabilities needed to support development and validation of advanced computer simulation codes for stockpile stewardship, and assessment of options for high yield fusion. The Inertial

Confinement Fusion (ICF) Program uses a complementary suite of laser and pulsed power facilities to accomplish its mission, including the Z-machine, Omega, Nike and Trident. The funding increase also supports development of ICF target layering technology and the NIF core diagnostic and cryogenics projects. + \$36.9

- **Advanced Simulation and Computing** (FY 2001 \$747.1; FY 2002 \$738.0) supports: verification and validation of prototype codes; development and application of improved software engineering techniques to code development projects; and quantification of uncertainties of code runs versus Campaign-generated data to enhance the predictability of weapons simulations. Funding provides for several ongoing strategies including the 30 TeraOps supercomputer at LANL and the Visual Interactive Environment for Weapon Simulation (VIEWS) strategy to enable weapons scientists and engineers to “see and understand” results of calculations performed on the Advanced Simulation and Computing Initiative (ASCI) computers. The decrease is a result of extending computer facility construction at the laboratories and a reduction in scope for the Distance and Distributed Computing strategy. - \$9.1
- **Pit Manufacturing and Certification** (FY 2001 \$144.6; FY 2002 \$128.5) This restructured campaign has merged with certification-related activities to unify management focus and resources associated with the pit mission. Development pits will be manufactured while manufacturing processes are defined and qualified. Engineering tests will be identified and scheduled. Integral tests in weapon-like environment will play an important role. Funds associated with operation of facilities such as TA-55 and the CMR are included in RTBF, Operation of Facilities. The decrease reflects realignment of funds in FY 2002 within Weapons Activities to support this redefined campaign and its near-term focus on the manufacturing and certification of W88 pits. - \$16.1
- **Secondary Readiness** (FY 2001 \$29.3; FY 2002 \$23.2) started in FY 2001 to conduct studies and develop upgrade/modernization plans to address secondary manufacturing infrastructure gaps and to address critical skills needs and issues in a systemic way. The decrease reflects a one-time funding increase in FY 2001 dedicated to B61 life extension capabilities at the Y-12 Plant - \$6.1
- **High Explosives Manufacturing and Weapons Assembly/ Disassembly** (FY 2001 \$1.8; FY 2002 \$4.0) to support present and long-term manufacturing capabilities for high explosive fabrication and weapon assembly/disassembly operations. Increase will establish production scale of high explosive manufacturing and qualification capability. +\$2.2
- **Nonnuclear Readiness** (FY 2001 \$1.3; FY 2002 \$12.2) ensures present and long-term manufacturing capabilities for non-nuclear production. The request reflects the first full year of funding for this campaign and supports the Heartland supercomputer at Kansas City and the High Powered Detonator Facility at LANL. +\$10.9
- **Materials Readiness** (FY 2001 \$11.8; FY 2002 \$1.2) provides the means to analyze and identify shortfalls of nuclear and critical non-nuclear materials and establishes an integrated material database. The request supports the DOE Business Center for Precious Metals (FY 2001 \$0; FY 2002 \$0.5). The decrease reflects a realignment of activities at the Y-12 Plant and other sites into other programs as the purpose of the campaign is being redefined. -\$10.6
- **Tritium Readiness** (FY 2001 \$165.4; FY 2002 \$124.5) campaign. The Secretarial Record of Decision selected the **Commercial Light Water Reactor (CLWR)** (FY 2001 \$57.1; FY 2002 \$42.4) as the primary technology for the production of tritium and designated the **Accelerator Production of Tritium (APT)** (FY 2001 \$33.4; FY 2002 \$1.0) as the backup tritium production source. The decrease reflects the Administration’s

priority to emphasize the CLWR source for tritium and is consistent with the longstanding baseline plan for using a light water reactor as well as the completion of tritium-producing rod technology development and testing. The \$1.0 million requested for the APT will allow the program to finish documentation and archival activities initiated in FY 2001, and to complete closeout of the project in FY 2002. - \$40.9

Readiness in Technical Base and Facilities (RTBF) (FY 2001 \$1,413.8; FY 2002 \$1,447.0)..... + \$33.2

The FY 2002 request includes:

- **Operations of Facilities** (FY 2001 \$837.1; FY 2002 \$830.4) provides infrastructure support and the operation and the on-going maintenance of facilities for activities conducted in the Campaigns and Directed Stockpile Work across the nuclear weapons complex. Funding in FY 2002 by site includes: Lawrence Livermore National Laboratory (FY 2001 \$34.3; FY 2002 \$40.2); Los Alamos National Laboratory (FY 2001 \$263.4; FY 2002 \$296.5); Sandia National Laboratory (FY 2001 \$163.1; FY 2002 \$131.4); Nevada Test Site (FY 2001 \$45.0; FY 2002 \$43.6); Y-12 Plant (FY 2001 \$76.0; FY 2002 \$72.2); Savannah River Site (FY 2001 \$72.9; FY 2002 \$70.1); Kansas City Plant (FY 2001 \$93.5; FY 2002 \$85.0); Pantex Plant (FY 2001 \$71.0; FY 2002 \$78.0); and all other (FY 2001 \$17.8; FY 2002 \$13.4). At LLNL \$0.3 million is for safety road improvements adjacent to laboratory property and at LANL \$81.9 million supports facilities associated with the Pit Manufacturing and Certification campaign. Funding is provided for the **Amarillo National Resource Center** (FY 2001 \$1.0; FY 2002 \$1.0). The slight decrease is attributable to one-time funding increases in FY 2001 for various facilities improvements in the complex. - \$6.7
- **Program Readiness** (FY 2001 \$150.1; FY 2002 \$188.1) includes select activities that support more than one facility, Campaign or Directed Stockpile Work activity, and unique test readiness activities. Ongoing activities support **Nevada Test Site** readiness and maintenance of nuclear testing capabilities, manufacturing process capabilities for the stockpile, and a variety of critical skills consistent with Chiles Commission recommendations. The increase addresses critical skills requirements at Kansas City and the Y-12 Plants and computing capabilities at Y-12; and shifts funds provided in FY 2001 from Operations of Facilities for microsystems and microelectronics technologies for pulsed power facilities into the more appropriate budget element. ... +\$38.0
- **Special Projects** (FY 2001 \$76.4; FY 2002 \$64.5) supports a variety of activities including **Laboratory Critical Skills Development** to implement Chiles Commission recommendations (FY 2001 \$5.7; FY 2002 \$5.4); the **Los Alamos School District** (FY 2001 \$8.0; FY 2002 \$8.0); the final DOE payment to fully endow the **New Mexico Educational Enrichment Foundation** (FY 2001 \$3.0; FY 2002 \$6.9); and **LANL land transfer activities** (FY 2001 \$0; FY 2002 \$1.9). Decrease reflects funding constraints and completion of several engineering studies, surveys and tracking system.. - \$11.9
- **Nuclear Weapons Incident Response** (FY 2001 \$85.8; FY 2002 \$89.1) provides for the **Accident Response Group** (ARG) (FY 2001 \$12.0; FY 2002 \$12.1) which responds to potential US nuclear accidents; the **Nuclear Emergency Search Team** (NEST) (FY 2001 \$43.0; FY 2002 \$43.1) which responds to nuclear terrorist threats; and other nuclear incident response activities (FY 2001 \$30.7; FY 2002 \$33.9). The increase supports and maintains radiological emergency response capabilities . +\$3.3
- The three remaining activities funded under RTBF (FY 2001 \$103.1; FY 2002 \$120.1) are for **Material Recycle and Recovery** (FY 2001 \$67.9; FY 2002 \$101.3) associated with weapons components; and **Containers** (FY 2001 \$14.4; FY 2002 \$8.2) and **Storage** (FY 2001 \$20.8; FY 2002 \$10.6) which provides for the safety and security of nuclear weapons materials. There is an increase supporting Y-12 Plant's Enriched

Uranium Operations for containers and storage pending Defense Nuclear Facility Safety Board review..... + \$17.0

- **Construction** (FY 2001 \$161.3; FY 2002 \$152.7) supports project construction and the preceding Project Engineering Design activities in support of the Campaigns and Directed Stockpile Work. Support for on-going construction mortgages account for the majority of the request. The new start construction projects in FY 2002 include long-lead procurements for the **Microsystems and Engineering Sciences Applications (MESA) Complex** at Sandia National Laboratory (FY 2001 \$0; FY 2002 \$2.0); **Sensitive Compartmented Information Facility** at LLNL (FY 2001 \$2.0; FY 2002 13.0) which was previously funded in the **Electrical Power Systems Safety, Communications and BUS upgrades** at Nevada (FY 2001 \$0; FY 2002 \$3.5); and FY 2002 **Project Engineering and Design (PED)** activities (FY 2001 \$0; FY 2002 \$9.2). The FY 2001 PED line-item includes FY 2002 funds (\$10M) for the relocation of TA-18 at LANL and (\$12M) preliminary design activities for the MESA complex. The decrease reflects completion of several projects in FY 2001 where no funds have been requested in FY 2002, such as the Chemistry and Metallurgy Research (CMR) upgrade at LANL..... -\$6.6

Secure Transportation Asset (FY 2001 \$115.1; FY 2002 \$121.8).....+ \$6.7

The FY 2002 request provides for required security enhancements including: replacement of older trailers (SSTs) with newly designed **SafeGuards Transporters (SGT)**; improved escort vehicles and intra-convoy communications. In program direction (FY 2001 \$36.2; FY 2002 \$44.2) the increase supports more intensive agent training and special training for escort personnel; recruitment of courier personnel by hiring up to 20 new special agents per year; and provides for the pay grade increases consistent with mission responsibilities.

Safeguards and Security (S&S) (FY 2001 \$394.7; FY 2002 \$448.9)..... + \$54.2

Provides for all physical, personal and cyber security activities at National Nuclear Security Administration landlord sites specifically: the Los Alamos, Livermore and Sandia National Laboratories; the Nevada Test Site; the Kansas City, Pantex and Y-12 Plants; and the Savannah River Site Tritium Facility. Funding supports the protection of classified information, nuclear weapons and components and special nuclear materials. This increase responds to increasing cyber security requirements (FY 2001 \$28.8; FY 2002 \$58.0); materials control and accountability. (FY 2001 \$19.9; FY 2002 \$23.7) protective force needs (FY 2001 \$210.7; FY 2002 \$222.8) including a \$12 million increase for the Y-12 Plant and Pantex; and physical security systems (FY 2001 \$53.2; FY 2002 \$63.9) including system upgrades at LANL, Kansas City and Y-12 Plants.

Program Direction (FY 2001 \$250.6; FY 2002 \$271.1)..... + \$20.5

FY 2002 supports current federal staff levels and full-year funding for FY 2001 new hires associated with re-engineering efforts for the federal workforce, including establishment of the Y-12 Plant Area Office. The request supports NNSA landlord responsibilities at the Oakland, Oak Ridge, Albuquerque and Nevada Operations Offices previously funded by other programs. Also requested is \$5.0 million in general plant project funds for a replacement federal facility for the Los Alamos Area Office in New Mexico.

Defense Nuclear Nonproliferation – National Nuclear Security Administration

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|--|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| Defense Nuclear Nonproliferation | | | | | |
| Nonproliferation and national security | | | | | |
| Nonproliferation and verification R&D..... | 212,842 | 244,515 | 206,102 | -38,413 | -15.7% |
| Arms control..... | 109,439 | 148,588 | 101,500 | -47,088 | -31.7% |
| International materials protection, control, and accounting..... | 138,735 | 169,707 | 138,800 | -30,907 | -18.2% |
| | | | | | |
| HEU transparency implementation..... | 14,813 | 14,592 | 13,950 | -642 | -4.4% |
| International nuclear safety..... | 14,272 | 19,401 | 13,800 | -5,601 | -28.9% |
| Soviet design reactor safety program..... | 40,500 | — | — | — | — |
| Total, Nonproliferation and national security..... | 530,601 | 596,803 | 474,152 | -122,651 | -20.6% |
| Fissile materials disposition..... | 190,069 | 226,148 | 290,089 | +63,941 | +28.3% |
| Program direction..... | 41,302 | 51,459 | 51,459 | — | — |
| Subtotal, Defense Nuclear Nonproliferation..... | 761,972 | 874,410 | 815,700 | -58,710 | -6.7% |
| Use of prior year balances..... | -49,300 | -526 | -42,000 | -41,474 | -7885% |
| Total, Defense Nuclear Nonproliferation..... | 712,672 | 873,884 | 773,700 | -100,184 | -11.5% |

PROGRAM DESCRIPTION

The **Office of Defense Nuclear Nonproliferation (NN)** works to: (1) prevent the spread of materials, technology, and expertise relating to weapons of mass destruction (WMD); (2) detect the proliferation of weapons of mass destruction worldwide; (3) provide for international nuclear reactor safety, and (4) eliminate inventories of surplus fissile materials usable for nuclear weapons. The program addresses the danger that hostile nations or terrorist groups may acquire weapons of mass destruction or weapons-usable material, dual-use production technology or weapons of mass destruction expertise. The Administration's current review of Russian nonproliferation programs will determine the future scope and direction of these activities. In FY 2002, work will be done in the following major areas:

Nonproliferation and Verification Research and Development advances proliferation detection, nuclear explosion monitoring, and chemical and biological response technologies and conducts demonstrations to find the means for timely detection of potential threats to national security.

Arms Control and Nonproliferation will continue efforts to detect, prevent and reverse proliferation by securing WMD materials, technology and expertise including: engaging former weapons scientists in non-military research and commercial ventures; strengthening international nonproliferation regimes; promoting transparent nuclear reduction; limiting the production and use of weapon-usable fissile materials around the world; reducing the size of the Russian nuclear weapons complex; and controlling sensitive exports. These objectives necessarily include participating in the policy formulation process, implementation and monitoring of treaties and agreements, and various regional security efforts.

International Materials Protection, Control, and Accounting installs physical security and accounting upgrades to secure Russian nuclear weapons and weapons-usable material against theft, consolidates Russian nuclear material into fewer sites where enhanced security systems have already been installed, converts weapons grade Highly Enriched Uranium (HEU) to Low Enriched Uranium (LEU), and tracks nuclear smuggling and threat cases.

Highly Enriched Uranium (HEU) Transparency Implementation monitors the conversion and blend-down of Russian weapons-usable HEU to LEU product delivered to the U.S for sale by the United States Enrichment Corporation (USEC). This program implements the nonproliferation aspects of a February 1993 agreement

between the U.S. and the Russian Federation covering the U.S. purchase, over twenty years, of LEU derived from at least 500 metric tons of highly enriched uranium removed from dismantled Russian nuclear weapons.

International Nuclear Safety and Cooperation improves safety for Soviet-designed reactors in nine former Soviet-bloc countries. The program works to improve the capabilities of plant operators, improve physical plant conditions, and provide technical assistance to plant and regulatory personnel consistent with international practices.

Fissile Materials Disposition conducts activities in both the U.S. and Russia to dispose of surplus weapons-grade fissile materials that pose a threat to the U.S. if acquired by hostile nations or terrorist groups for the manufacture of bombs. In the U.S., activities include the design and construction of the **Pit Disassembly and Conversion Facility (PDCF)**, the **Mixed-Oxide (MOX) Fuel Fabrication Facility**, and the **Plutonium Immobilization Plant**, to dispose of plutonium via the hybrid strategy documented in the January 1997 Record of Decision. For corresponding Russian plutonium disposition efforts specified in the September 2000 Plutonium Management and Disposition Agreement between the U.S. and the Russian Federation, activities include the design of modifications to the plutonium conversion facility and the MOX lead test assembly facility. The U.S. Uranium Program funds the transfer (and down-blending) of surplus U.S. Highly Enriched Uranium (HEU) to USEC and Tennessee Valley Authority (TVA) for peaceful use as fuel for commercial reactors.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Defense Nuclear Nonproliferation (FY 2001 \$873.9; FY 2002 \$773.7).....- \$100.2

Although the FY 2002 request is 11.5 percent below the FY 2001 appropriated level, it represents a \$61.0 million (8.5 percent) increase over the FY 2000 level. The request reduces R&D activities by 17 percent, and Russian nonproliferation programs by three percent. Highly Enriched Uranium (HEU) disposition proceeds as planned, U.S. plutonium disposition proceeds at a reduced rate, and Russian plutonium disposition proceeds with the use of prior year balances. The pace of fissile materials disposition activity has been slowed to accommodate an on-going government-wide review of Russian programs to determine the future scope of these activities.

Nonproliferation and Verification R&D (FY 2001 \$244.5; FY 2002 \$206.1).....- \$38.4

The FY 2002 request includes:

- **Chemical and Biological National Security** (FY 2001 \$40.2; FY 2002 \$28.2) to continue to develop technologies urgently needed by domestic emergency personnel in response to the threat of terrorism- \$12.0
- **Nonproliferation and International Security Center (NISC)** at Los Alamos (FY 2001 \$17.0; FY 2002 \$35.8) continues with construction scheduled for completion in FY 2002, at a total estimated cost (TEC) of \$58.8 million..... + \$18.8
- **Proliferation Detection** (FY 2001 \$65.1; FY 2002 \$40.1) supports remote effluent and physical detection and enabling technologies. This decrease will terminate Lidar Systems work other than the prototype unmanned aerial vehicle based system, and complete termination of the Hyperspectral Systems program..... -\$25.0
- **Deterring Proliferation and Nuclear Explosion Monitoring** (FY 2001 \$111.2; FY 2002 \$96.9) supports radiation and nuclear materials detection, micro technologies, and satellite and ground-based nuclear explosion monitoring. A

decrease in ground-based systems shifts funds to Satellite-based Systems (FY 2001 \$48.5, FY 2002 \$54.6) to enable accelerated U.S. Air Force delivery schedule of global positioning system satellites. Slows development of new radiation detection materials and nuclear materials analysis techniques in the Deterring Proliferation Program..... - \$14.3

- **Supporting activities** (FY 2001 \$11.0; FY 2002 \$5.0) Decrease curtails SBIR activities -\$6.0

International Nuclear Safety and Cooperation (FY 2001 \$19.4; FY 2002 \$13.8) - \$5.6

The request provides for completion of one full-scope training simulator each, in Russia, Ukraine, and Slovakia, and for operational safety improvements at plants in Russia and Ukraine. The largest part of the decrease in funding reflects the completion of work on safety parameter display systems for the RBMK; and Novovoronezh Unit 5 reactors in Russia, and Ignalina Unit 2 in Lithuania.

HEU Transparency Implementation (FY 2001 \$14.6; FY 2002 \$14.0) - \$0.6

The request continues collection and analysis of monitoring and other data to help provide overall confidence that the Russians are converting HEU from dismantled nuclear weapons into LEU. The decrease will require the closing of the Permanent Presence Office (PPO) in Novouralsk, Russia, for three months of the year. The FY 2002 budget maintains limited access to the Ural Electrochemical Integrated Plant (UEIP) down-blending operations.

Arms Control (FY 2001 \$148.6; FY 2002 \$101.5) - \$47.1

The FY 2002 request provides:

- **Policy and Analysis** (FY 2001 \$22.7; FY 2002 \$20.7) provides for nonproliferation treaty and agreement policy formulation, international security initiatives, and regional security focusing on South Asia, Northeast Asia, and the Middle East..... -\$2.0
- **Reduced Enrichment Research and Test Reactor** (FY 2001 \$6.6; FY 2002 \$6.6) funds development of fabrication techniques for research and test reactor fuels of very high density, low enrichment uranium for use in research reactors unable to use current technology LEU fuels. Enable Russia to complete its RERTR program by supporting Russian institutes participating in the program, providing reactor analysis and fuel expertise from the U.S., and jointly assessing the feasibility of converting Soviet-designed highly-enriched uranium fueled reactors to use LEU fuels..... \$0
- **International Security** (FY 2001 \$35.0; FY 2002 \$11.0) provides assistance to **Kazakhstan** (FY 2001 \$15.8, FY 2002 \$8.9) to monitor and prepare for long-term security and storage requirements for plutonium-bearing spent fuel located at the **Aktau Breeder Reactor** at a reduced level reflecting the stretch out of completion; and technical assistance to **North Korea** to minimize corrosion of spent nuclear fuel cans at Nyongbyon. Decrease is due to reduction of the **Separated Civil Plutonium** (FY 2001 \$14.8, FY 2002 \$0.0) activities in Russia to support higher priority activities, and completion of the initial analysis on the **Spent Fuel Storage and Geological Repository in Russia** effort (FY 2001 \$ 2.4, FY 2002 \$0.0).....- \$24.0
- **Nuclear Cities Initiative (NCI)** (FY 2001 \$26.6; FY 2002 \$6.6) to cooperate with MINATOM, commercial entities, and local and state governments to create civilian ventures in one of Russia's ten closed nuclear cities. The funding will meet current commitments in a single nuclear city - \$20.0
- **International Proliferation Program (IPP)** (FY 2001 \$24.1; FY 2002 \$22.1) to continue to facilitate and promote employment and economic development opportunities for displaced nuclear weapons scientists and engineers who were part

of the Russian nuclear weapons complex. Efforts focus on cooperative projects involving DOE laboratories and research institutes in Russia, Ukraine, Kazakhstan and Belarus - \$2.0

- **Export Control Operations** (FY 2001 \$13.6; FY 2002 \$14.6) supports new fast-track negotiations on plutonium separation technologies, new studies on globalization of the U.S. nuclear industries, and addresses an increasing number of export applications. The increase expands the **Second Line of Defense** (FY 2001 \$2.4, FY 2002 \$4.0) program, which seeks to help the Russian Federation State Customs Committee detect and deter illicit trafficking of nuclear materials at borders.....+ \$1.0
- **Treaties and Agreements** (FY 2001 \$3.1; FY 2002 \$3.1) to support negotiations of the Nuclear Nonproliferation Treaty, Comprehensive Test Ban Treaty, Fissile Material Cutoff Treaty, Chemical Weapons Conventions and Biological Weapons Conventions support requirements of an immediate nature to secure WMD materials, technology and expertise. \$0
- **International Safeguards** (FY 2001 \$16.7; FY 2002 \$16.7) to provide technical assistance in developing verification capabilities for monitoring the spent nuclear fuel placed in cans at Nyongbyon, **North Korea**, and sustainability support at the 13 NIS sites where MPC&A upgrades were completed. \$0

International Materials Protection, Control and Accounting (FY 2001 \$169.7; FY 2002 \$138.8).....- \$30.9

The FY 2002 request provides for activities to secure Russian weapons-usable nuclear material by upgrading security where material is currently located or consolidating material at Russian sites where enhanced security systems have already been completed, and increase efforts to consolidate material and blend-down HEU at civilian sites (+\$8.4). Decreases at Russian Navy sites (-\$39.5) reflect completion of MPC&A upgrades at the majority of sites where warheads are stored on a permanent basis, and the estimate that temporary warhead sites may require fewer MPC&A upgrades. Security concerns and upgrades requirements of the remaining 30 warhead sites (mostly temporary storage sites) will be assessed and implemented through visits by U.S. personnel. Because of the high-risk reduction value of these efforts to protect weapons grade material, these decisions to reduce funding in this area will be subject to on-going evaluation and review by program personnel.

Fissile Materials Disposition – (FY 2001 \$226.1; FY 2002 \$248.1) + \$22.0

- **U.S. and Russian Surplus Plutonium Disposition** activities (FY 2001 \$195.3; FY 2002 \$198.1) to complete the **U.S. MOX Fuel Fabrication Facility** design (FY 2001 \$25.9; FY 2002 \$63.0), partially offset by proceeding with the **Pit Disassembly and Conversion Facility** design (FY 2001 \$20.0; FY 2002 \$16.0) at a reduced rate and suspension of the **Plutonium Immobilization Plant** design (FY 2001 \$3.0; FY 2002 \$0.0). The scope and schedule for this program will be reviewed as part of the Administration's multi-agency review of Russian programs..... +\$2.8
- **Highly-Enriched Uranium (HEU) Program** (FY 2001 \$30.8; FY 2002 \$50.0) includes funds for the Off-specification **HEU Blend Down Project** for capital improvements (FY 2001 \$20.9; FY 2002 \$24.0) at the **Savannah River Site** and associated operating expenses. This effort is responsive to Defense Nuclear Facilities Safety Board recommendations and is a key element in a DOE interagency agreement with the Tennessee Valley Authority to supply uranium from off-specification HEU. Other HEU activities include shipping surplus HEU to USEC, surplus HEU planning and project management, inventory management, and certification and procurement of new shipping containers. + \$19.2

DEFENSE NUCLEAR NONPROLIFERATION

Note: The above amounts do not include use of already appropriated prior year balances from the Omnibus Consolidated and Emergency Supplemental Appropriation Act, 1999 (P.L. 105-277) for expenditures in the Russian Federation to implement a United State/Russian accord for the disposition of excess weapons plutonium. Defense Nuclear Nonproliferation has proposed the use of \$57 million from this appropriation (FY 2001 \$15; FY 2002 \$42.0).

Program Direction (FY 2001 \$51.5; FY 2002 \$51.5)..... \$0
The FY 2002 request of \$51.5 will support 277 FTEs, and associated travel and support services.

Naval Reactors – National Nuclear Security Administration

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 |
|----------------------------|----------------------------------|----------------------------------|-----------------------------------|---------------------|
| Naval Reactors..... | 669,637 | 687,560 | 688,045 | +485 +0.1% |

PROGRAM DESCRIPTION

The mission of **Naval Reactors (NR)** is to provide the Navy with safe, long-lived, militarily-effective nuclear propulsion plants, and to ensure their continued safe and reliable operation to meet the nation’s defense requirements.

The Program’s responsibility extends to all aspects of naval nuclear propulsion — from technology development through reactor operations, and ultimately to reactor plant disposal. These efforts are critical to the continued success of the numerous reactors operating in submarines and surface ships, which comprise 40 percent of major Navy combatants. The Program is also developing the reactor plants for the VIRGINIA class submarine and a planned new aircraft carrier, CVNX. Naval Reactors is responsible for approximately the same number of reactors as the entire U.S. commercial nuclear power generating industry and almost as many reactors as the next two largest commercial nuclear power generating nations in the world combined (France and Japan).

Naval Reactors maintains an integrated, comprehensive, and far-sighted analytical, developmental, and testing effort for existing and future reactor plants. This is accomplished by continuously testing, verifying, and refining reactor technology, and integrating new technologies and techniques into existing system and component designs to improve overall reactor plant performance, reliability, and longevity; rigorously testing materials, fuel, cores, components, and systems; and developing simplified, more affordable reactors with improved power capabilities, increased endurance, and added dependability.

These continuing development efforts are yielding greater capabilities. Major efforts for the near future include upgrades to existing components and equipment to help extend operating lifetimes and improve overall reactor plant performance; development of the reactor for the Navy’s new CVNX aircraft carrier; and development / testing of the next-generation reactor components and systems for the Navy’s new VIRGINIA class attack submarine, including the first designed life-of-the-ship core, which will obviate the need for expensive refuelings; and the development of a new concept steam generator, which should greatly reduce corrosion concerns.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Naval Reactors (FY 2001 \$687.6; FY 2002 \$688.0).....+\$0.4

The FY 2002 request supports the following:

Naval Reactors Development (FY 2001 \$667.2; FY 2002 \$665.4)..... - \$1.8

Naval Reactors Development covers Program operations and infrastructure, and is divided into six major areas. The budget request for these areas is detailed below.

- **Plant Technology (FY 2001 \$118.2; FY 2002 \$116.0)** funds work on developing, testing and analyzing components and systems which transfer, convert, control and measure power created by the reactor to maximize plant reliability and performance. Focus areas include: steam generator and energy conversion technologies, reactor

NAVAL REACTORS

instrumentation equipment, reactor plant analyses, and reactor plant configuration and component development..... - \$2.2

- **Reactor Technology and Analysis** (FY 2001 \$216.9; FY 2002 \$226.0) works to ensure safe and reliable operation of existing reactors and to develop new reactors with improved power capabilities, endurance, reliability and efficiency, and greater simplification. Areas of focus include: core and reactor component designs & manufacturing processes, control rod drive mechanisms and reactor equipment designs and testing, physics testing, and reactor safety and shielding analysis. The change in funding is due to fabrication of manufacturing prototypes to demonstrate and qualify new fuel systems and assembly processes required for next generation cores.....+ \$9.1
- **Materials Development & Verification** (FY 2001 \$124.6; FY 2002 \$130.9) funds will be applied to develop, test and qualify materials for use, or continued use, in the harsh reactor environment; and to extend materials in use to new applications. Focus areas include: core and reactor structural materials, plant materials, and irradiation testing and evaluation. FY 2002 change reflects work to apply advanced monitoring, control, and irradiation technologies to enable further advanced fuel testing at the Advanced Test Reactor, located at the Idaho National Engineering and Environmental Laboratory+ \$6.3
- **Evaluation and Servicing** (FY 2001 \$149.6; FY 2002 \$132.3) operates, maintains and services prototype reactors and the advanced test reactor to provide for testing of materials, components, cores and systems under actual operating conditions. This funding also covers inactivation of shutdown prototype reactors as well as environmental remediation work. The FY 2002 request decreases to reflect progress toward completion of major Kesselring Site inactivation work in both the S3G and D1G plants, along with the final phase of Windsor Site inactivation work- \$17.3
- **Facility Operation** (FY 2001 \$42.2; FY 2002 \$47.0) consists of capital equipment and general plant projects funding to maintain Program infrastructure.....+ \$4.8
- **Construction** (FY 2001 \$17.3; FY 2002 \$13.2) funding will be applied to two ongoing major construction projects: the Expended Core Facility Dry Cell with loading station modifications, and a major office building replacement - \$4.1

Program Direction (FY 2001 \$20.3; FY 2001 \$22.6) +\$2.3

The FY 2002 request is for salaries, benefits, travel, and expenses for the Program's federal employees.

Office of the Administrator – National Nuclear Security Administration

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|----------------------------------|----------------------------------|----------------------------------|-----------------------------------|---------------------|--------|
| Office of the Administrator..... | 350 | 9,978 | 15,000 | +5,022 | +50.3% |

PROGRAM DESCRIPTION

The **National Defense Authorization Act for FY 2000**, Public Law 106-65, established a semi-autonomous agency within the Department of Energy, the **National Nuclear Security Administration (NNSA)**. The Administrator of the NNSA serves as one of two Under Secretaries reporting to the Secretary of Energy.

The Office of the NNSA Administrator provides corporate direction and oversight of the NNSA operations to support the mission requirements of the **Offices of Defense Programs, Defense Nuclear Nonproliferation, and Naval Reactors**, consistent with the principles of protecting the environment, and safeguarding the safety and health of the public, and the workforce of the NNSA. The Office of the Administrator coordinates NNSA activities with other DOE programs, conducts legislative affairs, public affairs, and acts as liaison with other federal agencies, state, tribal and local governments and the public. The Office of the Administrator also provides resource management support for NNSA budget formulation, guidance, and execution; personnel and procurement management; and the administration of contracts. The Office of the Administrator will implement a planning, programming, and budgeting system in accordance with sound financial and fiscal management principles. The NNSA will streamline operations to ensure the accomplishment of program objectives in a cost-effective manner while providing a senior management focus on the infrastructure requirements of the facilities of the NNSA laboratories and plant complex.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Office of the Administrator (FY 2001 \$10.0; FY 2002 \$15.0)..... +\$5.0

The FY 2002 request for the Office of the Administrator supports NNSA's second full year of operation and work to become a fully functional unified entity with responsibility for all of the Department's national nuclear security functions. Particular effort is being given to develop the unified planning, budgeting and management process necessary for the NNSA enterprise.

The increase of \$5.0 million includes: \$2.0 million for federal salaries, \$2.0 million to provide space for the consolidation of the NNSA staff for more effective, integrated and efficient operations, and \$1.0 million for travel and support services.

Security and Emergency Operations – Other Defense Activities

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|--|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| Security and emergency operations | | | | | |
| Nuclear safeguards and security..... | 94,690 | 117,188 | 121,188 | +4,000 | +3.4% |
| Security investigations..... | 32,664 | 32,927 | 44,927 | +12,000 | +36.4% |
| Corporate management information program..... | — | — | 20,000 | +20,000 | N/A |
| Program direction..... | 82,919 | 80,422 | 83,135 | +2,713 | +3.4% |
| Subtotal, Security and emergency operations..... | 210,273 | 230,537 | 269,250 | +38,713 | +16.8% |
| Less security charge for reimbursable work..... | — | — | -712 | -712 | N/A |
| Total, Security and emergency operations..... | 210,273 | 230,537 | 268,538 | +38,001 | +16.5% |

PROGRAM DESCRIPTION

The **Office of Security and Emergency Operations (SO)** develops the policies and provides programmatic direction governing the protection of national security and other assets entrusted to the Department of Energy. SO also provides safeguards and security training and field assistance to ensure the efficient and effective implementation of Departmental security policy. Subprograms include:

Nuclear Safeguards and Security (NSS) provides policy, programmatic direction and training associated with DOE's nuclear weapons, nuclear materials, classified information and facilities. The NSS program also funds the Chief Information Officer's cyber security program and the Critical Infrastructure Protection (CIP) program. The CIP program works with industry to implement plans to protect against, mitigate, respond to, and recover from attacks that would significantly disrupt our nation's energy infrastructure.

Security Investigations provides funding for background investigations for all DOE federal and contractor personnel who require access authorizations for classified information or access to Special Nuclear Materials due to the nature of their official duties. The program relies on the Federal Bureau of Investigation and the Office of Personnel Management to complete background investigations.

Program Direction provides for salaries, benefits, travel, support services, and related expenses associated with the overall management, direction, and administration of the following programs: Nuclear Safeguards and Security; Classification/Declassification; the Chief Information Officer (CIO); Plutonium, Uranium, and Special Material Inventory; Foreign Visits and Assignments; Critical Infrastructure Protection; Resource Management; and the Office of the Director.

Corporate Management Information Program (CMIP) is a new decision unit that supports the Department's corporate investment initiative to replace or modernize outdated corporate information systems at DOE. CMIP provides a managed, disciplined, and cost-effective way to modernize DOE corporate business systems in a coordinated manner using new and emerging technologies and practices under the direction of the Department's CIO. This program was previously funded in the Departmental Administration account.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Security and Emergency Operations (FY 2001 \$230.5; FY 2002 \$268.5).....+\$38.0

The FY 2002 budget request for Security and Emergency Operation enhances the Department's security posture by increasing funding for Security Investigations and improving the security infrastructure supported by the Nuclear Safeguards and Security program. The FY 2002 request also includes \$20 million for the Department's Corporate Management Information Program.

Nuclear Safeguards and Security (FY 2001 \$117.2; FY 2002 \$121.2).....+ \$4.0

The FY 2002 request upgrades and enhances Nuclear Materials Accountability Systems (FY 2001 \$2.5; FY 2002 \$4.9) and the Foreign Access Tracking System. The request also provides for modest increases for training, Headquarters guards, and additional support offset by small reductions for physical security.

Security Investigations (FY 2001 \$32.9; FY 2002 \$44.9)..... + \$12.0

The FY 2002 increase for Security Investigations supports policy changes requiring personnel in certain critical positions to have background investigations to be conducted by the Federal Bureau of Investigations that are costlier than Office of Personnel Management investigations. Additional funds are requested to support a significantly higher reinvestigation workload projected in FY 2002.

Corporate Management Information Program (CMIP) (FY 2001 \$0.0; FY 2002 \$20.0)..... + \$20.0

In an effort to more fully integrate the Department's Information Management resources and initiatives, the CMIP will be funded in Security and Emergency Operations beginning in FY 2002. The program is currently funded in Departmental Administration.

Program Direction (FY 2001 \$80.4; FY 2002 \$83.1)..... + \$2.7

The FY 2002 requested increase supports requirements for desktop information technology (\$2.0 million) and work for others (\$0.7 million) that were previously funded in the Departmental Administration account.

Advanced Accelerator Applications – Other Defense Activities

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 |
|---|----------------------------------|----------------------------------|-----------------------------------|------------------------|
| Advanced accelerator applications..... | — | 33,925 | — | -33,925 -100.0% |

PROGRAM DESCRIPTION

The **Advanced Accelerator Applications (AAA)** program, an activity managed by the Office of Nuclear Energy Science and Technology, is designed to investigate the use of high-energy accelerator-based systems to reduce the radioactive toxicity and volume of spent nuclear fuel. The Administration is reviewing U.S. energy policy and related research priorities. As such, until these priorities are clearly identified, the Department will not request funding in FY 2002 for major new energy initiatives.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Advanced Accelerator Applications (AAA) (FY 2001 \$33.9; FY 2002 \$0) - \$33.9

In FY 2001, the AAA program was initiated to pursue research and development on an accelerator-based technology with the potential to reduce the radioactive toxicity and volume of civilian spent nuclear fuel. The Administration is reviewing U.S. energy policy and related research priorities. As such, until these priorities are clearly identified, the Department will not request funding in FY 2002 for major new energy initiatives.

Independent Oversight and Performance Assurance – Other Defense Activities

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 |
|--|----------------------------------|----------------------------------|-----------------------------------|---------------------|
| Independent oversight and performance assurance..... | 12,083 | 14,904 | 14,904 | — |

PROGRAM DESCRIPTION

The **Independent Oversight and Performance Assurance (OA)** program is the Department's exclusive focal point for independent evaluation and analyses of safeguards, security, emergency management, and cyber security and other critical functions at DOE sites. The program helps ensure the effectiveness of these crucial national security efforts by providing the Secretary and senior DOE managers with assessments of the effectiveness of Departmental policies and performance in the areas of safeguards, security, emergency management and cyber security. The program:

- Provides a consistent, multi-disciplinary, credible process for independently evaluating the effectiveness of safeguards and security programs.
- Promotes actions that prevent recurrence of security problems.
- Ensures that follow-up and corrective actions for safeguards and security, cyber security, and emergency management oversight activities are effective.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Independent Oversight and Performance Assurance (FY 2001 \$14.9; FY 2002 \$14.9)..... + \$0.0

The FY 2002 request will continue independent oversight and performance assurance activities at this year's funding level. In FY 2002, the Program will:

- Conduct safeguards and security (FY 2001 \$6.1; FY 2002 \$5.9) evaluations at 20 major DOE sites to independently assess the status of programs and establish a baseline of findings to track and measure improvement at sites throughout the Department -\$0.2
- Perform 2 to 3 special reviews and studies (FY 2001 \$0.6; FY 2002 \$0.6) of policies, programs, and their implementation to identify needed program corrections..... \$0
- Perform continuous cyber security inspections (FY 2001 \$0.9; FY 2002 \$0.9) and no-notice reviews at 14 major DOE sites to detect vulnerabilities that could be exploited by hackers and to ensure these vulnerabilities are corrected by line management \$0
- Perform inspections of critical emergency management operations (FY 2001 \$0.8; FY 2002 \$0.8) at 10 major DOE sites, including Headquarters. Follow-up reviews will be conduct to ensure corrective actions are effective \$0
- Provides funding for the federal staff (FY 2001 \$6.5; FY 2002 \$6.7) and includes pay, benefits, travel, training, and the Working Capital Fund +\$0.2

Environmental, Safety and Health – Other Defense Activities

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| Environment, safety & health | | | | | |
| Office of Environment, safety and health (defense)..... | 78,670 | 85,736 | 76,307 | -9,429 | -11.0% |
| Employee compensation initiative..... | — | 17,000 | 15,000 | -2,000 | -11.8% |
| Program direction..... | 21,542 | 22,554 | 23,293 | +739 | +3.3% |
| Subtotal, Environment, safety and health..... | 100,212 | 125,290 | 114,600 | -10,690 | -8.5% |
| Use of prior year balances..... | — | — | -10,000 | -10,000 | N/A |
| Total, Environment, safety and health..... | 100,212 | 125,290 | 104,600 | -20,690 | -16.5% |

PROGRAM DESCRIPTION

The **Office of Environment, Safety and Health (EH)** advises the Secretary of Energy on the status of the health and safety of DOE workers, the public, and the environment near DOE facilities. By statute, DOE assumes direct regulatory authority for safety and health and EH plays a critical role by performing independent oversight of the Department's nuclear safety, worker safety, and radiation protection of the public programs. DOE is externally regulated for compliance with applicable environmental laws administered by other Federal agencies. Accordingly, EH serves as DOE's advocate to assure the Department's interests are reflected in the formulation of environmental regulations and standards. EH develops environment, safety, and health directives and policies; performs Price-Anderson enforcement, and funds radiation health studies. EH also assists workers in obtaining information and medical records when applying for benefits under the **Energy Employees Occupational Illness Compensation Program Act of 2000**.

Funding for EH is provided in two accounts within the Energy and Water Development Appropriation: Energy Supply and Other Defense Activities. Defense-related activities of the Office of Environment, Safety and Health include:

Oversight works as an independent entity to promote constructive change in the Department's environment, safety, and health management programs through a continuous cycle of independent assessments, event response, follow-up validation, and Price-Anderson Enforcement activities. This program includes analysis of Integrated Safety Management implementation.

Health Studies promotes and assures the health of current and former DOE workers and communities and supports efforts to understand the health effects of radiation on humans through four major activities: Occupational Medicine, Public Health Activities, Epidemiologic Studies, and International Health Programs.

The **Radiation Effects Research Foundation (RERF)** is jointly funded by the U.S. and Japanese governments to investigate the effects of radiation exposure on survivors of the atomic bombings of Hiroshima and Nagasaki. RERF collects data for peaceful purposes, on the medical effects of radiation on humans and provides the basis for establishing radiation protection standards and practices worldwide.

The **Energy Employee Occupational Illness Compensation (EEOIC)** program was initiated in FY 2001 to compensate eligible workers for occupational illnesses associated with work at DOE nuclear production facilities. The authorization, in the FY 2001 National Defense Authorization Act, determined that DOE's responsibilities include: 1) verifying claimant employment with DOE or predecessor agencies, contractors or subcontractors; 2) assisting workers in gathering exposure, job history, and medical records necessary to file for benefits; 3) designating companies that meet the statutory definition of "atomic weapons employers" and "beryllium vendors;" and 4) conducting reviews by independent medical panels to determine eligibility for state compensation benefits.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Defense Environment, Safety and Health (FY 2001 \$125.3; FY 2002 \$104.6).....- \$10.7

Oversight (FY 2001 \$8.0; FY 2002 \$9.4).....+ \$1.4

The FY 2002 request supports an independent program of environment, safety, and health inspections; event response; updates on the progress of corrective actions; and analysis of safety trends. The **Enforcement** program will continue to enforce nuclear safety rules under the Price-Anderson Amendments Act. The request supports increased environmental audits at high-risk sites, **environmental compliance audits** and increased capability to respond to safety concerns, allegations, and accidents.

Health Studies (FY 2001 \$52.5; FY 2002 \$53.4).....+ \$0.9

Continues the **Marshall Islands** medical surveillance program (FY 2001 \$6.3; FY 2002 \$6.3), joint **U.S.-Russian studies** of radiation health effects (FY 2001 \$4.5; FY 2002 \$4.5), epidemiological surveillance of **DOE Workers** (FY 2001 \$2.3; FY 2002 \$ 2.3), and the **Radiation Emergency Accident Center/Training Site** program (REACTS) (FY 2001 \$0.3; FY 2002 \$0.3). The request includes a net increase for the expansion of the beryllium medical surveillance program within the **DOE Former Workers** program (FY 2001 \$14.7; FY 2002 \$15.4), which provides occupational medical surveillance throughout the complex; and the transfer of associated information technology support (FY 2001 \$0; FY 2002 \$3.5) from the Energy Supply account. Decrease reduces funding for public health activities (FY 2001\$22.3; FY 2002 \$19.3), and the Medical Surveillance Information System (FY 2001\$0.35; FY 2002 \$0.1).

Radiation Effects Research Foundation (RERF) (FY 2001 \$13.4; FY 2002 \$13.5).....+ \$0.1

Maintains monitoring activities of the effects of radiation resulting from the atomic bombings of **Hiroshima** and **Nagasaki** and promotes the welfare of the atomic bomb survivors in conjunction with the United States and the Japanese Agreement.

Energy Employees Occupational Illness Compensation (FY 2001 \$17.0; FY 2002 \$15.0)..... - \$2.0

Supports efforts of current and former DOE workers or survivors to obtain information and medical records when applying for employment related benefits. The decrease reflects changes to the program and different DOE responsibilities with regard to the Department of Labor and the Department of Health and Human Services.

Gaseous Diffusion Plants (FY 2001, \$12.0; FY 2002, \$0.0).....- \$12.0

The Secretary of Energy directed EH to conduct a number of environment, safety and health reviews, and to expand the existing worker medical surveillance program at the gaseous diffusion facilities. These reviews concluded that current operations do not present an immediate risk to workers or the public, however, significant “legacy” issues remain concerning past practices. These reviews will be essentially completed in FY 2001, and no additional funding is required in FY 2002.

Use of Prior Year Balances.....- \$10.0

The FY 2002 budget assumes the use of \$10 million from prior year appropriations. These balances are associated with the Energy Employee’s Compensation Initiative. Because this program got off to a late start, following the passage of the legislation authorizing the program, the Department will have these balances available to partially offset this programs requirement of \$15 million in FY 2002.

Program Direction (FY 2001 \$22.6; FY 2002 \$23.3).....+ \$0.7

Provides funding for the current level of federal staff at 185 FTEs and includes pay, benefits, travel, and training. The funding increase is for cost-of-living adjustments.

Worker and Community Transition – Other Defense Activities

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|
| Worker and community transition..... | 24,009 | 24,446 | 24,446 | — |

PROGRAM DESCRIPTION

The **Office of Worker and Community Transition (WT)** was formed in September 1994, in accordance with Section 3161 of the Defense Authorization Act of 1993, to ensure the fair treatment of workers and communities affected by changing Department of Energy missions. The Worker and Community Transition program supports contractor work force restructuring activities related to the defense mission, and provides local impact assistance to those communities affected by DOE work force restructuring.

The program has successfully managed the reduction of about 51,300 contractor personnel between FY 1993 and FY 2000. More than two-thirds of the separations to-date were voluntary, with an average (including workers separated through attrition) separation cost of approximately \$14,900 per position. When attrition is excluded, average separation costs have been approximately \$20,400. Annual savings to-date from these reductions is estimated to exceed \$3.6 billion in salaries and benefits.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Worker and Community Transition (FY 2001 \$24.4; FY 2002 \$24.4) \$0

The FY 2002 request maintains the FY 2001 appropriated level, however, the allocation is shifted to emphasize work force restructuring as a priority in response to anticipated restructuring at DOE Environmental Management sites.

Work Force Restructuring (FY 2001 \$4.9; FY 2002 \$10.7).....+ \$5.8

Work force restructuring includes reviewing and approving restructuring plans and actions, providing enhanced benefits to separated workers, coordinating work force planning activities to retain critically needed skills, and assisting field offices in labor negotiations. The program works to mitigate the impacts on displaced workers while humanely and cost-effectively managing the transition to a reduced work force to better meet ongoing mission requirements. The request would provide enhanced benefits for approximately 2,000 workers at sites to be determined.

Community Transition Assistance (FY 2001 \$16.6; FY 2002 \$10.5)..... - \$6.1

This program develops policies for community transition, and assists communities affected by Departmental changes with economic development planning and plan implementation activities to produce alternative replacement employment sources in affected communities. The request is expected to create about 1,100 jobs in FY 2002. Approved community transition projects have created or retained nearly 25,000 jobs as of the end of FY 2000.

Program Direction (FY 2001 \$3.0; FY 2002 \$3.2).....+ \$0.2

The program plans to reduce staffing by one FTE in FY 2002. Program Direction also supports the Asset Management Program that assists DOE senior management to develop a corporate strategy for the acquisition and disposition of materials and assets in response to new and changing DOE program missions.

Office of Hearings and Appeals – Other Defense Activities

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|-------------------------------------|----------------------------------|----------------------------------|-----------------------------------|---------------------|-------|
| Office of hearings and appeals..... | 2,989 | 2,993 | 2,893 | -100 | -3.3% |

PROGRAM DESCRIPTION

The **Office of Hearings and Appeals (OHA)** is responsible for all of the Department's adjudicatory processes other than those administered by the Federal Energy Regulatory Commission. The program receives funding in both the Energy and Water and Interior and Related Agencies Appropriation Bills. The program's jurisdiction includes: Freedom of Information Act and Privacy Act Appeals, evidentiary hearings to determine an employee's eligibility for a security clearance, appeals and initial agency decisions on whistle blower complaints, and requests for exception from DOE regulations and orders, such as reporting requirements to Departmental elements.

This section discusses OHA activities within the jurisdiction of the Energy and Water Appropriation. The program is also requesting funds (\$2.0 million) in the Interior Appropriation, discussed later in this document, for a total FY 2002 request of \$5.0 million.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Office of Hearings and Appeals (FY 2001 \$3.0; FY 2002 \$2.9)..... - \$0.1

\$2.9 million of new authority in Other Defense Activities is requested to investigate and adjudicate whistle blower complaints and to consider appeals of other Departmental actions, including determinations issued under the Freedom of Information and Privacy Acts and adverse security clearance determinations. In addition, \$2.0 million of new authority is requested under the Interior Appropriation is requested to finance remaining oil overcharge activities (EPCA).

- **Personnel Compensation and Benefits** expenses (FY 2001 \$2.4M; FY 2002 \$2.3)-\$0.1
- **Other Related Expenses** (FY 2001 \$0.6; FY2002 \$0.6) primarily provided within the Department's Working Capital Fund, including rent, supplies, printing and communications, and information technology \$0
- **Travel** (FY 2001 \$0.08; FY 2002 \$0.08)..... 0

Environmental Management

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|--------------|
| Environmental Management | | | | | |
| Defense Environmental Restoration & Waste Management.. | 4,586,227 | 4,965,955 | 4,548,708 | -417,247 | -8.4% |
| Defense Facilities Closure Projects..... | 1,062,177 | 1,080,331 | 1,050,538 | -29,793 | -2.8% |
| Defense Environmental Management Privatization..... | 82,609 | -32,000 | 141,537 | +173,537 | +542.3% |
| Non-defense Environmental Management..... | 301,579 | 279,195 | 228,553 | -50,642 | -18.1% |
| Uranium Facilities Maintenance and Remediation..... | 336,109 | 392,502 | 363,425 | -29,077 | -7.4% |
| Subtotal. Environmental Management..... | 6,368,701 | 6,685,983 | 6,332,761 | -353,222 | -5.3% |
| Uranium Enrichment D&D Fund Discretionary Payments..... | -420,000 | -419,076 | -420,000 | -924 | -0.2% |
| Total, Environmental Management..... | 5,948,701 | 6,266,907 | 5,912,761 | -354,146 | -5.7% |

PROGRAM DESCRIPTION

The **Environmental Management (EM)** program manages the safe clean up of the environmental legacy from fifty years of operating the nation's nuclear weapons production and federally sponsored nuclear-related research. The program manages the remediation of sites contaminated by defense and civilian activities, and receives appropriations in separate defense and non-defense accounts.

The EM program strives to: protect worker health and safety to reduce risks; maintain compliance with all applicable requirements and enforceable milestones or schedules established in agreements; and to work cooperatively with regulators, stakeholders, local community officials, and Tribal Nations.

The FY 2002 budget addresses the major cleanup problems outlined in environmental agreements and other essential requirements. There are, however, individual sites where cleanup is being deferred in favor of reducing higher-risk problems elsewhere. This budget request places its first priority on protecting the health and safety of EM's workers and the public as well as continuing to mitigate high risks. Maintaining compliance is also a priority, and will require that we continue an open and frank dialogue with regulators to ensure that EM is pursuing the most efficient and cost-effective solutions to cleanup and compliance needs, and sequencing work appropriately. To address this challenge, EM is continuing to strengthen project management, ensuring that work is governed by sound scientific principles, and implementing contracting strategies that drive cleanup work to be completed safely, on-schedule, and within budget.

Consistent with this overarching philosophy, a number of key projects will receive particular emphasis in FY 2002, including:

- Design and construction of the Hanford Waste Treatment and Immobilization Plant Project (formerly the Tank Waste Remediation System), a vitrification plant to immobilize the high-risk, highly radioactive waste at the Hanford Site in Washington—funding for this project has shifted from a privatization project to the Post 2006 Completion—Office of River Protection account;
- Vitrify highly radioactive waste at the Savannah River Site in South Carolina and a selection of technology to pre-treat a portion of that waste;
- Maintain schedule to cleanup and close the Rocky Flats Environmental Technology Site in Colorado and the Fernald Environmental Management Site in Ohio;

ENVIRONMENTAL MANAGEMENT

- Place the Portsmouth Gaseous Diffusion Plant in Ohio safely in cold-standby;
- Ship transuranic waste to the Waste Isolation Pilot Plant in New Mexico to support closure or compliance requirement, including shipments from the Idaho National Engineering and Environmental Laboratory in support of the Idaho Settlement Agreement;
- Stabilize spent nuclear fuel or move spent nuclear fuel from wet to dry storage at a number of site across the EM complex; and
- Give priority to waste receiving sites (i.e., Nevada Test Site and the Waste Isolation Pilot Plant) to maintain other sites' shipping schedules.

The Office of Environmental Management is funded through five separate appropriations accounts: **Defense Closure Projects** (FY 2001 \$1,080M; FY 2002 \$1,051M); **Defense Environmental Restoration and Waste Management** (FY 2001 \$4,966M; FY 2002 \$4,549M); **Defense Environmental Management Privatization** (FY 2001 - \$32M; FY 2002 \$141.5M); **Non-Defense Environmental Management** (FY 2001 \$279M; FY 2002 \$229M), and **Uranium Facilities Maintenance and Remediation** (FY 2001 \$393M; FY 2002 \$363M).

In FY 2002, the request reflects the addition of new activities including: (1) **the Uranium Facilities Maintenance and Remediation** appropriation established by Congress in FY 2001; (2) a **Post-2006 Completion/Office of River Protection** program within the Defense Environmental Restoration and Waste Management appropriation; (3) an **Excess Facilities** program in both the defense and non-defense appropriations; and (4) **Safeguards and Security** activities in the Defense Facilities Closure Projects and Defense Environmental Restoration and Waste Management appropriations.

Defense Facilities Closure Projects

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|--|----------------------------------|----------------------------------|-----------------------------------|---------------------|--------------|
| Defense Facilities Closure Projects | | | | | |
| Site closure..... | 1,001,524 | 1,025,680 | 1,004,636 | -21,044 | -2.1% |
| Safeguards and security..... | 60,653 | 54,651 | 45,902 | -8,749 | -16.0% |
| Total, Defense Facilities Closure Projects..... | 1,062,177 | 1,080,331 | 1,050,538 | -29,793 | -2.8% |

PROGRAM DESCRIPTION

The **Defense Facilities Closure Projects** site closure account supports sites where the goal is to complete cleanup by the end of FY 2006, with no further DOE mission, other than surveillance and maintenance, is envisioned. Defense Facilities Closure Projects provides funding in two categories: Site Closure and Safeguards and Security. This account includes funding for projects managed by the Ohio Field Office i.e., (Mound, Ashtabula, Battelle Columbus Laboratory, Fernald) and the Rocky Flats Environmental Technology Site.

HIGHLIGHTS OF PROGRAM CHANGES (\$ in millions)

Defense Facilities Closure Projects (FY 2001 \$1,080.3; FY 2002 \$1,050.5)..... - \$29.8

Site Closure (FY 2001 \$1,025.7; FY 2002 \$1,004.6).....- \$21.1

Ohio (FY 2001 \$406.3; FY 2002 \$376.0)- \$30.3

- **Ashtabula** (FY 2001 \$16.2; FY 2002 \$9.7) The Ashtabula Environmental Management Project site is owned and operated by Earthline Technologies (formerly the RMI Titanium Company) and is contaminated with radiological and hazardous materials resulting from previous operations for DOE to shape radioactive materials. The FY 2002 request will deactivate two facilities and support remediation work being performed. Upon completion, the site will be released to Earthline Technologies for unrestricted use. The decrease reflects a shift to higher priority activities. - \$6.5
- **Columbus Environmental Management Project** (FY 2001 \$16.1; FY 2002 \$10.1) The Columbus Environmental Management Project includes two geographic areas (King Avenue and West Jefferson). The original scope of decontamination activities at King Avenue has been completed. The **West Jefferson** site decommissioning effort involves three major buildings and approximately six acres of external grounds. The FY 2002 request: continues remote-handled transuranic waste shipments to the receiving site; initiates demolition of Building JN-3; continues characterization of West Jefferson external areas; provides project management support and required core environmental activities; and surveillance and maintenance activities. Upon completion, the site will be returned to the private owner. The decrease reflects a shift to higher priority activities. -\$6.0
- **Fernald** (FY 2001 \$283.5; FY 2002 \$285.3) The Fernald Environmental Management Project site encompasses 1,050 acres where high purity uranium metal products were produced at the site for DOE and its predecessor agencies from 1951 to 1989. Thorium was also processed, but on a smaller scale, and is still stored on-site.

Uranium processing operations were limited to a fenced, 136 acre tract known as the Production Area. In FY 2002, the program will: continue facility shutdown of non-nuclear facilities; complete shipments of all nuclear materials; process two billion gallons of wastewater/groundwater; process and ship 92,570 cubic meters of waste pit material to the permitted disposal facility; submit Administration Complex Draft Implementation Plan and Integrated Remedial Design Package for Area 3B/Area 4B to the Environmental Protection Agency; and draft the Remedial Action Work Plan for the Waste Retrieval Operations. A net increase supports: additional decontamination and decommissioning; additional activities associated with the accelerated waste retrieval project currently under contract; and the start of Title I and II design for the Silos 1 and 2 waste remediation contract. If the contractor can complete the overall project by December 2006, they can earn the maximum incentive fee.+\$1.8

- **Mound (FY 2001 \$90.5; FY 2002 \$70.9)** The Miamisburg Environmental Management Project manages the Mound Plant, located on 306 acres in Ohio. The plant was built in the late 1940's to support research and development, testing, and production for the Department's defense nuclear weapons complex and energy research program, until 1994. The request will continue: critical path activities to support deactivation and decontamination of the Mound tritium complex; off-site disposition of transuranic waste and off-site disposition of remediation-generated low-level waste; and complete one soil release site assessment and one soil release site cleanup. The decrease reflects a shift toward higher priority activities.-\$19.6

Rocky Flats (FY 2001 \$619.4; FY 2002 \$628.6).....+ \$9.2

The Rocky Flats Plant was established by the Atomic Energy Commission in 1951 as one of seven production plants in the U.S. Weapons Complex. The Rocky Flats Plant played an integral part in the nation's nuclear defense in that it manufactured nuclear weapons components from materials such as plutonium, beryllium, and uranium. The current Rocky Flats mission encompasses the management of the site waste and special nuclear materials and their removal from the site. This includes deactivation, decommissioning and demolition of the site facilities; and cleanup, closure and conversion of the site for beneficial use in a manner that is safe, responsible, physically secure, and cost-effective. The FY 2002 request maintains site closure for FY 2006.

The request will: continue D&D activities and packaging of 620 "3013" containers of plutonium metal/oxide; shipment of 2,824 cubic meters of transuranic waste to the **Waste Isolation Pilot Plant**; provide for site-wide landlord/infrastructure activities; and store, treat, and dispose of mixed low-level waste, low-level waste, and hazardous waste off-site. The net increase reflects enhanced deactivation and remediation activities.

Safeguards and Security (FY 2001 \$54.6; FY 2002 \$45.9)..... - \$8.7

The Safeguards and Security Program ensures appropriate levels of protection for EM facilities and cleanup sites. The FY 2002 request provides for protection of DOE security concerns, anticipates evolving threats, and maintains a balance of the security mission with the operation of the Fernald, Miamisburg, and Rocky Flats sites. The decrease reflects reconfiguration of activities to reduce the footprint of protected areas at Rocky Flats.

Defense Environmental Restoration and Waste Management

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| Defense Environmental Restoration & Waste Management | | | | | |
| Site/project completion..... | 1,011,424 | 1,070,489 | 911,986 | -158,503 | -14.8% |
| Post 2006 completion | | | | | |
| Waste treatment and immobilization plant..... | 105,673 | 376,171 | 500,000 | +123,829 | +32.9% |
| Other office of river protection..... | 334,739 | 379,557 | 312,468 | -67,089 | -17.7% |
| Other post 2006 completion..... | <u>2,364,918</u> | <u>2,418,047</u> | <u>2,107,733</u> | <u>-310,314</u> | <u>-12.8%</u> |
| Total, Post 2006 completion..... | 2,805,330 | 3,173,775 | 2,920,201 | -253,574 | -8.0% |
| Science and technology..... | 229,766 | 252,112 | 196,000 | -56,112 | -22.3% |
| Excess facilities..... | — | — | 1,300 | +1,300 | N/A |
| Safeguards and security..... | 196,554 | 202,996 | 205,621 | +2,625 | +1.3% |
| Program direction..... | <u>361,706</u> | <u>363,196</u> | <u>355,761</u> | <u>-7,435</u> | <u>-2.0%</u> |
| Subtotal, Defense Environmental Restoration & Waste Mgmt..... | 4,604,780 | 5,062,568 | 4,590,869 | -471,699 | -9.3% |
| Less security charge for reimbursable work..... | — | -5,244 | -5,391 | -147 | -2.8% |
| Use of prior year balances and other adjustments..... | <u>-18,553</u> | <u>-91,369</u> | <u>-36,770</u> | <u>+54,599</u> | <u>+59.8%</u> |
| Total, Defense Environmental Restoration & Waste Mgmt..... | 4,586,227 | 4,965,955 | 4,548,708 | -417,247 | -8.4% |

Site/Project Completion

PROGRAM DESCRIPTION

The **Defense Site/Project Completion** account provides funding for projects expected to be completed by FY 2006 at sites or facilities where a DOE mission will continue (e.g. nuclear weapons stockpile stewardship) beyond FY 2006. The principal Defense EM cleanup sites are managed by: the Albuquerque; Idaho; Oakland; Richland; and Savannah River Operations Offices; and the Office of River Protection which focuses on cleanup of tank wastes near the Columbia River in Washington.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Site/Project Completion (FY 2001 \$1,070.5; FY 2002 \$912.0)..... - \$158.5

- **Albuquerque** (FY 2001 \$61.5; FY 2002 \$39.5) The Albuquerque Operations Office supports cleanup activities at: the **Kansas City Plant**, Missouri; the **Pantex Plant**, Texas; **Sandia National Laboratory**, California and New Mexico; the **Pinellas Plant**; Florida; and the **South Valley Superfund Site**, New Mexico. The FY 2002 request continues: groundwater treatment and monitoring at the Kansas City and Pantex Plants; remediation at Sandia National Laboratory, including the excavation of the Chemical Waste Landfill and the Classified Waste Landfill; and annual payments for Pinellas post-contract medical, pension, and other contractor worker benefits. The net decrease reflects transfer of funds to higher priority activities, completion of all previously planned remediation projects at the Pantex Plant, and a reduction in legal expenses needed for contractual obligations with the plant operator for the South Valley Superfund Site. - \$22.0
- **Idaho** (FY 2001 \$99.1; FY 2002 \$58.7) The **Idaho National Engineering and Environmental Laboratory** safely manages the disposal of on-site mixed low-level, low-level, hazardous, and other wastes. The FY 2002 request: continues treatment and disposal of mixed low-level, low level and hazardous wastes; completes final design and initiates construction activities for the **Catholic Protection System**; and completes funding for the **Health Physics**

Instrument Laboratory. The net decrease reflects: the transfer of transuranic waste activities to Post 2006 Completion; support for higher priority activities; and completion of the Electrical and Utility Systems Upgrade Project. - \$40.4

- **Oakland** (FY 2001 \$2.0; FY 2002 \$0.8) The Oakland Operations Office manages waste cleanup activities at the **Lawrence Livermore National Laboratory**. The FY 2002 request initiates full-scale operation of the **Decontamination and Waste Treatment Facility**. The decrease reflects completed construction of the Decontamination and Waste Treatment Facility - \$1.2
- **Richland** (FY 2001 \$475.7; FY 2002 \$419.6) The Richland Operations Office, Hanford Site treats, manages cleanup activities at facilities associated with the production of nuclear materials during the Cold War. The FY 2002 request focuses on cleanup outcomes and includes: packaging of stabilization plutonium; continued surveillance and maintenance activities to ensure safe operation of associated facilities for stored special nuclear materials; support for International Atomic Energy Agency non-proliferation activities at the **Plutonium Finishing Plant**; continued stabilization of plutonium nitrate solutions; continued limited clean-out of B Cell; and continued centralized program and surveillance and maintenance activities to ensure safe operation of the **K Basins**, fuel conditioning facilities and equipment, and the canister storage building. Projects will be restructured to direct funded infrastructure, emergency preparedness, analytical services and information resources. The decrease supports higher priority activities at the Office of River Protection..... - \$56.1
- **Office of River Protection** (FY 2001 \$1.3; FY 2002 \$2.0) The Office of River Protection maintains safe operation of the underground high-level waste storage tanks at the Hanford site and manages construction and operation of a tank waste complex to clean up Hanford's highly radioactive tank wastes. The increase reflects a full year of design activities. + \$0.7
- **Savannah River** (FY 2001 \$430.9; FY 2002 \$391.4) The Savannah River Site treats and disposes of legacy materials and wastes resulting from nuclear materials produced during the Cold War. The FY 2002 request: continues management and stabilization of "at risk" spent nuclear fuel and nuclear materials in the **F and H Areas** in support of Defense Nuclear Facilities Safety Board Recommendations 94-1 and 2000-1, and decontamination of Building 772-F; initiates construction of the **Americium/Curium Vitrification project**; upgrades the old **HB-Line ventilation system**; stabilizes plutonium scrub alloy from Rocky Flats and receives transuranic waste from Mound. The net decrease reflects completion of the following projects: upgrade of the H-Tank Farm Storm Water Systems, Regulatory Monitoring and Bioassay Lab; Tank Farm Support Services lines; CFC HVAC Chiller Retrofit project; and the K-Area Nuclear Material Storage Modification subproject. It also reflects cancellation of the Actinide Packaging and Storage Facility subproject; and support for higher priority activities. - \$39.5

Post 2006 Completion

PROGRAM DESCRIPTION

The Post 2006 Completion account focuses on projects currently planned to require funding beyond FY 2006. The principal Defense EM cleanup activities will be carried out by: the Albuquerque, Idaho, Nevada, Oakland, Oak Ridge, Richland, and Savannah River Operations Offices; the Carlsbad Field Office; and the Office of River Protection, which focuses on the cleanup

of tank wastes near the Columbia River in Washington. A variety of multi-site activities are also supported, including the EM program's contribution to the Uranium Enrichment Decontamination and Decommissioning Fund.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Post 2006 Completion (FY 2001 \$3,173.8; FY 2002 \$2,920.2) - \$253.6

- **Albuquerque** (FY 2001 \$89.6; FY 2002 \$75.7) The Albuquerque Operations Office manages cleanup activities at **Los Alamos National Laboratory** (LANL), the Albuquerque Nuclear Materials Stewardship Office and the Off-Site Recovery Program. The FY 2002 request: continues to store, sort, segregate, and repackage transuranic waste; characterize and store mixed low-level waste; and continues remediation activities, groundwater investigations and deep well installations at LANL. The Off-Site Source Recovery Program will continue to recover excess sealed sources from DOE's Naval Reactors program. The request also provides for Agreements-In-Principle and supports the Albuquerque Nuclear Material Stewardship Project. A net decrease reflects a shift toward higher priority activities. - \$13.9
- **Carlsbad** (FY 2001 \$190.9; FY 2002 \$164.6) The Carlsbad Field Office manages the **Waste Isolation Pilot Plant (WIPP)** for safe disposal of transuranic waste and maintains an effective system for the transportation of transuranic waste. The FY 2002 request for the WIPP will fully support contact-handled mixed transuranic waste shipments from: **Rocky Flats, Idaho National Engineering and Environmental Laboratory, Savannah River** and the **Argonne National Laboratory-East**. WIPP will maintain a receipt rate of 14 contact-handled transuranic waste shipments per week during FY 2002. The net decrease reflects a reduction in the number of shipping sites and scope of the WIPP Disposal Phase Certification and Experimental Program..... - \$26.3
- **Idaho** (FY 2001 \$303.5; FY 2002 \$276.6) The **Idaho National Engineering and Environmental Laboratory** manages and disposes of high-level radioactive waste, transuranic waste, and spent nuclear fuel. The FY 2002 request continues: characterization, treatment, and disposal of transuranic waste to **WIPP**; remediation, waste management, landlord/infrastructure activities; analysis of spent nuclear fuel; and initiates conceptual design for a sodium-bearing waste treatment project. The decrease reflects: changes in priorities within the cleanup program and new planning of specific assessment and cleanup activities; review planned General Plant Projects work scope; and completion of the Three Mile Island-2 spent nuclear fuel transfer. - \$26.9
- **Nevada** (FY 2001 \$87.2; FY 2002 \$82.8) The Nevada Operations Office manages waste cleanup activities at inactive sites and facilities contaminated as the result of historic nuclear testing activities conducted at the **Nevada Test Site, Tonopah Test Range, Nellis Air Force Range** in Nevada, and eight other locations in five states. The FY 2002 request: supports modeling of underground test areas; completes 22 release site assessments and three remedial actions; characterizes, segregates, and repackages TRU/Mixed TRU; maintains the capability to dispose both on-site and off-site low-level waste; and continues Agreements-In-Principle and grants. The decrease reflects reduced drilling for data collection purposes. - \$4.4

- **Oakland** (FY 2001 \$47.5; FY 2002 \$34.5) Activities managed through the Oakland Operations Office, plan and implement remediation and waste treatment, storage, and disposal activities at the **Lawrence Livermore National Laboratory (LLNL)** in California and the **Knolls Atomic Power Laboratory** in New York. The FY 2002 request supports ongoing projects at LLNL including: continued operation and maintenance of groundwater treatment; and commercial disposition of mixed low-level waste and low-level waste. The decrease reflects: completed installation of several groundwater treatment systems and characterization phases for a majority of operable units at Site 300; and reduced characterization activities at the Separations Process Research Unit at the Knolls Atomic Power Laboratory. - \$13.0
- **Oak Ridge** (FY 2001 \$277.4; FY 2002 \$244.1) Activities managed by the Oak Ridge Operations Office, direct and monitor environmental restoration, waste management operations, and materials stabilization activities on the Oak Ridge Reservation and at several off-site locations. The FY 2002 request supports: continued disposition of legacy waste at the Oak Ridge Reservation; management and integration activities for the **Environmental Management Waste Management Facility** privatization project; disposal of low-level waste and mixed low-level waste at commercial facilities; and remediation, surveillance, and maintenance activities at Y-12, the Oak Ridge National Laboratory, and the East Tennessee Technology Park. Funding for FY 2002 also supports: the transport of six shipments of spent nuclear fuel to the **Idaho National Engineering and Environmental Laboratory**; remedial action at ORNL Main Plant Surface Impoundments A and B; removal of contaminated sediments in direct contact with groundwater adjacent to **White Oak Creek**; continued conversion of uranium on sodium fluoride traps to an oxide for repackaging and storage; and initiation of flush and fuel salt removal of the **Molten Salt Reactor**. The net decrease reflects: completion of the Bethel Valley Metal Recovery Facility D&D; completion of significant early actions at ORNL; and support for higher priority activities. - \$33.3
- **Richland** (FY 2001 \$222.5; FY 2002 \$164.6) Activities managed by the Richland Operations Office, Hanford Site, clean up soil contamination along the Columbia River in the central area; decontaminate and decommission surface facilities; and monitor, mitigate, and remediate chemical and radioactive contaminants that have migrated into the vadose zone and groundwater beneath the site. The FY 2002 request supports: cleanup and safe disposal of surface contamination along the **Columbia River**; monitoring, mitigation, and remediation of chemical and radioactive contaminants that have migrated into the vadose zone and groundwater beneath the site; management of large volumes of liquid and solid wastes generated as a result of site cleanup; management of the site infrastructure for the duration of the cleanup; providing hazardous materials and emergency response training at the HAMMER facility; and implementation of the science and technology roadmap for the integration of vadose zone and groundwater activities. The decrease supports higher priority activities at the Office of River Protection. - \$57.9
- **Office of River Protection** (FY 2001 \$755.7; FY 2002 \$812.5) The Office of River Protection manages the safe operation of the underground high-level waste storage tanks in Hanford, WA; and construction and operation of the tank waste complex to complete the cleanup of Hanford's highly radioactive tank waste. The FY 2002 request: maintains **Tank Waste Characterization** program capability and capacity to support safe operations including caustic and comparability analysis; mitigates tank safety issues for high priority Watch List tanks; continues to operate, maintain, and upgrade tank farm facilities to safely receive and store waste; operates the single-shell tank interim stabilization program; continues design activities for waste retrieval

systems; and provides program management services and oversight for the **Waste Treatment Immobilization Plant**. The plant design will be continued and some long-lead materials will be procured with requested funds. The increase continues design and initiates construction activities for the **Low Activity Waste Facility**, the **Pretreatment Facility**, and the **High-Level Waste Facility** components of the plant.+\$56.8

- **Savannah River** (FY 2001 \$702.7M; FY 2002 \$586.0M) Activities managed by the Savannah River Site treat and dispose of the legacy materials and wastes resulting from the production of nuclear materials during the Cold War. The FY 2002 request continues: management of spent nuclear fuel; stabilization and storage of nuclear materials; surveillance and maintenance activities; receipt of foreign (33 casks) and domestic (21casks) research reactor spent nuclear fuel; vitrification of at least 150 canisters of high level-waste at the **Defense Waste Processing Facility**; operation of a **Melt and Dilute Technology Demonstration Facility** for treatment of spent nuclear fuel; design and start construction of a **Salt Processing Pilot Plant** facility; disposal of mixed, low-level and hazardous waste; completion of five site release assessments; and landlord activities. The net decrease reduces funding for environmental remediation, waste management activities, high-level waste removal, and support activities.- \$116.7
- **Multi-Site** (FY 2001 \$77.8; FY 2002 \$58.8) Multi-Site activities provide management and direction for various crosscutting EM and DOE initiatives; establish and implement national and departmental policy; and conduct analyses and integrate activities across the DOE complex. The FY 2002 request supports: Headquarters technical support efforts; Environmental and Regulatory Analysis; Hazardous Waste Operator (HAZWOPER) training; and Emergency Preparedness. The decrease reflects: transfer of the stewardship program to the Science and Technology program, a reduction in the need for safety expertise to meet requirements of the Defense Nuclear Facilities Safety Board Recommendation, reduced training under the DOE Hazardous Worker Training Grant Program, and a shift toward higher priority activities. - \$19.0

D&D Fund deposit (FY 2001 \$419.0; FY 2002 \$420.0) +\$1.0
 These funds provide the EM Program’s contribution to the Uranium Enrichment Decontamination and Decommissioning Fund.

Science and Technology

PROGRAM DESCRIPTION

The **Science and Technology** program develops new technologies to improve environmental cleanup capabilities. The Science Program conducts basic research to provide new approaches to solve the Department’s environmental cleanup problems. Through the application of technological discoveries, this basic and applied research program offers the promise of accelerated cleanup at reduced cost. The program conducts four major focus areas including: Transuranic and Mixed Waste (formerly Mixed Waste); Radioactive Tank Waste; Subsurface Contaminants; Deactivation and Decommissioning; and Nuclear Materials. The Transuranic and Mixed Waste focus areas address the technical needs identified for management of high-level waste and closure of tanks. The Subsurface Contaminants focus area provides solutions that address difficult remediation problem areas. The Transuranic and Mixed Waste focus areas develop technologies that address the mixed low-level and mixed transuranic waste needs. The Deactivation and Decommissioning focus area addresses development, demonstration and deployment of new and innovative deactivation and decommissioning technologies.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Science and Technology (FY 2001 \$252.1; FY 2002 \$196.0)- \$56.1

- **Radioactive Tank Waste Remediation** (FY 2001 \$55.6; FY 2002 \$55.8) Request focuses on systems to retrieve and transfer sludges and tank waste residues to enable continued processing and tank closure and improve high-level immobilization processes through increased waste loading, new canister decontamination methods and advanced melter design. + \$0.2
- **Subsurface Contaminants** (FY 2001 \$40.7; FY 2002 \$32.5) Request supports work in dense non-aqueous phase liquids to better understand long-term movement and fate of these contaminants; technologies to improve longer-life surface caps, landfill stabilization, and verification and monitoring systems; and characterization, monitoring, modeling and analysis of source contaminants. - \$8.2
- **Transuranic and Mixed Waste** (FY 2001 \$31.9; FY 2002 \$23.1)..... - \$8.8
Request supports work to characterize radionuclide components in boxes destined for disposal to WIPP or another RCRA subtitle C facility, and development of a high temperature treatment systems option.
- **Deactivation and Decommissioning** (FY 2001 \$27.1; FY 2002 \$17.5)
Request focuses on multi-site deployment of improved and innovative technologies for underwater visual inspection; improved technologies to deactivate and decommission radionuclide separation facilities; and improved innovative technologies to deactivate and decommission fuel and weapon component fabrication facilities. - \$9.6
- **Nuclear Materials** (FY 2001 \$7.9; FY 2002 \$9.5)..... + \$1.6
Request focuses on developing improved processes to stabilize plutonium left in the weapons production pipelines; development of aqueous processing technologies for residue materials; and development of stabilization, characterization, and packaging technologies for storage and disposal of spent nuclear fuel.
- **Environmental Management Science Program** (FY 2001 \$36.9; FY 2002 \$32.1)..... - \$4.8
Request provides funding for longer-term basic research to solve intractable problems that threaten the successful closure of DOE sites.
- **Idaho Environmental Systems Research and Analysis** (FY 2001 \$21.0; FY 2002 \$0.0)..... -\$21.0
The program supports problem-driven research based on the technology needs and gaps that have been defined by the scientific community in partnership with the sites. No activity is planned for FY 2002.
- **Small Business Innovative Research Program and Technology Applications** (FY 2001 \$23.0; FY 2002 \$17.4)..... - \$5.6
Decreases reflect completion of activities and changes in estimated Small Business Innovative Research assessments.
- **EM Long-Term Stewardship** (FY 2001 \$8.0; FY 2002 \$8.0)..... \$0
Request supports policy and planning; training; outreach; operation, maintenance, and monitoring of physical and institutional controls; and information management.

Excess Facilities (FY 2001 \$0; FY 2002 \$1.3)+ \$1.3

The Defense Excess Facilities Transfer Program is initiated to manage the final disposition of excess contaminated physical facilities to generate significant risk and cost reductions. This program will facilitate the cross-program transfer of excess contaminated facilities from the Offices of Defense Programs and Nuclear Energy, and associated deactivation and decommissioning activities. In FY 2002 the program will support: surveillance and maintenance activities for the Explosive Machinery and Weapons/Explosive Assembly Building 12-024 Complex and Inert Storage Building 12-025, Explosives Filter Area 11-044, and Zone 10 facilities at the **Pantex Plant**; the Critically Experimental Lab (9213) and the Plating Shop (9401-02) at **Y-12**; and the Plutonium Fuel Form Facility, Plutonium Extraction Facility, and Old Met Lab at **Savannah River**. The increase reflects the comparable transfer of funding from the former "owner" of the facility.

Safeguards and Security (FY 2001 \$203.0; FY 2002 \$205.6)+ \$2.6

The Safeguards and Security program ensures appropriate levels of protection for EM facilities and sites. The increase reflects additional protective force staffing access control functions for the Savannah River Technology Center and purchase of capital equipment items and/or general plant project requirements.

Program Direction (FY 2001 \$363.2; FY 2002 \$355.8) - \$7.4

The Program Direction account supports the federal workforce responsible for the overall direction and administrative support of the EM Program, including both Headquarters and field personnel. The Program Direction account provides funding for salaries, benefits, travel, training, support services, and other related expenses for 2,708 FTEs; 2,254 (or 83 percent) of these FTEs are located in field offices.

Defense Environmental Management Privatization

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|----------------|
| Privatization initiatives, various locations..... | 126,609 | 90,092 | 141,537 | +51,445 | +57.1% |
| Use of prior year balances..... | -44,000 | -25,092 | — | +25,092 | +100.0% |
| Rescission..... | — | -97,000 | — | +97,000 | +100.0% |
| Total, Defense Environmental Management Privatization... | 82,609 | -32,000 | 141,537 | +173,537 | +542.3% |

PROGRAM DESCRIPTION

Privatization projects are funded in a non-traditional manner where the contractor assumes most of the up-front risk for a project. DOE attempts to obtain the best price for the desired products and services by using open competition to award fixed-price contracts. The selected contractor is responsible for and owns development of the technologies, equipment, and facilities necessary to deliver the end product. The contractor does not receive payment until specified goals are met and services are rendered. Current privatization projects include: the Idaho Spent Nuclear Fuel Dry Storage Project; the Idaho Advanced Mixed Waste Treatment Facility; the Oak Ridge Transuranic Waste Treatment Project, the Oak Ridge Environmental Management Waste Management Facility, and the Remote-Handled Transuranic Waste Transportation Services Project for WIPP. In addition, the Department proposes two new privatization projects in FY 2002: the Paducah and Portsmouth Disposal Facilities.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Paducah Disposal Facility, Oak Ridge (FY 2001 \$0.0; FY 2002 \$13.3)+\$13.3

The facility will be an on-site disposal cell with an initial capacity of 600,000 cubic yards for near-term remediation waste. It will be a Resource Conservation and Recovery Act (RCRA) compliant, above-grade earthen structure. The contractor will design, construct, operate and cap the disposal facility.

Portsmouth Disposal Facility, Oak Ridge (FY 2001 \$0.0; FY 2002 \$2.0).....+\$2.0

If on-site disposal is selected as an alternative in a Record of Decision, the request proposes to authorize the construction of a suitable facility.

Advanced Mixed Waste Treatment Project, Idaho (FY2001 \$65.0; FY 2002 \$40.0).....- \$25.0

This project will treat and manage 65,000 cubic meters of alpha and TRU mixed waste located in retrievable storage at the INEEL Radioactive Waste Management Complex (RWMC). Cumulative funding through FY 2002 provides for approximately 65 percent of the funding needed for the physical construction phase of this project based on the awarded fixed-price contract. Funding for the construction phase will continue to be requested through 2004.

Spent Nuclear Fuel Dry Storage Project, Idaho (FY 2001 \$25.1; FY 2002 \$49.3).....+ \$24.2

The project will provide licensed interim dry storage for three types of Spent Nuclear Fuel (SNF) at INEEL. Currently the fuel resides in facilities at INEEL, various universities, and at foreign research reactors. This project would place SNF containing approximately 55 metric tons of heavy metal into interim dry storage. Cumulative funding through 2002 provides 44 percent of the capital funding needed. Funding for the construction phase of this project will continue to be requested through 2007.

Transuranic Waste Treatment Project, Oak Ridge (FY 2001 \$0; FY 2002 \$10.8).....+ \$10.8

This project began in August 1998 for the processing of waste for final disposal. Cumulative funding through FY 2002 provides for 100% of the funding needed for the physical construction phase.

Environmental Management Waste Management Facility, Oak Ridge

(FY 2001 \$0; FY 2002 \$26.1) + \$26.1

This project began in December 1999 to design, construct, operate, and cap up to 1.3 million cubic yards of waste. Cumulative funding through FY 2002 provides for 42 percent of the capital funding needed. Funding for the construction phase of this project will continue to be requested through FY 2005.

Non-Defense Environmental Management

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| Non-Defense Environmental Management | | | | | |
| Site closure..... | 63,560 | 52,997 | 43,000 | -9,997 | -18.9% |
| Site/project completion..... | 116,328 | 90,631 | 64,119 | -26,512 | -29.3% |
| Post 2006 completion..... | 129,278 | 135,603 | 120,053 | -15,550 | -11.5% |
| Excess facilities..... | — | — | 1,381 | +1,381 | N/A |
| Subtotal, Non-Defense Environmental Management..... | 309,166 | 279,231 | 228,553 | -50,678 | -18.1% |
| Use of prior year balances..... | -7,587 | -36 | — | +36 | +100.0% |
| Total, Non-Defense Environmental Management..... | 301,579 | 279,195 | 228,553 | -50,642 | -18.1% |

PROGRAM DESCRIPTION

The EM Program manages and addresses the environmental legacy resulting from civilian nuclear energy research. The nuclear energy R&D of the Department, and its predecessors generated waste, pollution, and contamination which pose unique problems, including unprecedented volumes of contaminated soil and water, and a vast number of contaminated structures. Sites on the Non-Defense side of the EM program include: the **Grand Junction Office** in Colorado; the **Uranium Mill Tailings Remedial Action** groundwater projects at various locations mostly in the West; and the **Weldon Springs Site** in Missouri.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Site Closure (FY 2001 \$53.0; FY 2002 \$43.0)..... - \$10.0

Site Closure projects will result in the closure of specific sites by 2006, after which, no further Departmental mission is envisioned except for long-term surveillance and maintenance. This account includes funding for the Weldon Spring Site in Missouri.

- **Oak Ridge (FY 2001 \$53.0; FY 2002 \$43.0)..... - \$10.0**
The Oak Ridge Operations Office manages the **Weldon Spring Site** Remedial Action Project in Missouri. The FY 2002 request completes the Weldon Spring Remedial Action Project and final site restoration. The post remediation activities require long-term surveillance and maintenance.

Site/Project Completion (FY 2001 \$90.6; FY 2002 \$64.1) - \$26.5

The Site/Project Completion account provides funding for projects where cleanup is expected to be completed by FY 2006, at sites or facilities with a continuing DOE mission beyond FY 2006. This account includes projects and sites for the Albuquerque, Chicago, Idaho, Oakland, and Richland Operations Offices.

- **Albuquerque (FY 2001 \$0.5 FY 2002 \$1.4)..... +\$0.9**
The Albuquerque Operations Office supports cleanup activities at **the Lovelace Respiratory Research Institute** in New Mexico. The FY 2002 request continues groundwater monitoring of former environmental restoration sites. The increase supports on-site disposal of hazardous and mixed low-level waste.
- **Chicago (FY 2001 \$44.4; FY 2002 \$32.4) - \$12.0**
The Chicago Operations Office manages EM activities at the Argonne National Laboratory-East (ANL-East) in Illinois, ANL-West in Idaho, and the Brookhaven National Laboratory (BNL) in New York. The goal is to complete remediation of all currently baselined scope activities for Chicago managed sites by FY 2006, and transfer long-term surveillance and maintenance activities to the landlord programs after completion of site cleanup activities. The FY 2002 request supports: remediation and groundwater activities, surveillance and maintenance and characterization for the **Brookhaven Graphite**

Research Reactor at BNL; facility decommissioning and remediation at **ANL-East**; and operation and maintenance activities for soil remediation and monitoring at **ANL-West**. In addition, Potentially Responsible Party payments will be made against DOE's portion of Princeton University Site A/B remediation costs as a Potentially Responsible Party. The net decrease reflects completion of activities and support of higher priority activities.

- **Idaho** (FY 2001 \$29.5; FY 2002 \$14.9).....- \$14.6
The Idaho Operations Office manages non-defense cleanup activities at: the **Idaho National Engineering and Environmental Laboratory (INEEL)**, **Grand Junction Office**, the **Monticello Mill** site, and the **Uranium Mill Tailings Remedial Action Groundwater** project. The FY 2002 request supports interim remedial action and groundwater monitoring for the Monticello mill site, the inactive uranium mill sites, and activities conducted by the Grand Junction Office. At INEEL, activities include initiation and transfer of **Power Burst Facility and Materials Test Reactor** spent nuclear fuel to the Idaho Nuclear Technology and Engineering Center, and continued surveillance and maintenance of the Power Burst Facility and the Materials Test Reactor Canal. Decrease reflects completion of activities at **Monticello Projects** and reflects support of higher priority activities.
- **Oakland** (FY 2001 \$14.7; FY 2002 \$13.9)..... - \$0.8
The Oakland Operations Office manages cleanup activities at the **Lawrence Berkeley National Laboratory (LBNL)**, the **General Atomics Facility**, the **Laboratory for Energy-Related Health Research (LEHR)**, and the **Stanford Linear Accelerator Center (SLAC)**. The FY 2002 request: continues monitoring, maintenance, and operation of groundwater treatments systems at LBNL and SLAC; completes remedial and D&D activities at the LEHR and LBNL; and supports surveillance and maintenance of the irradiated fuel materials at General Atomics. The decrease reflects support of higher priority activities.
- **Richland** (FY 2001 \$1.5; FY 2002 \$1.5).....\$0
The Richland Operations Office manages the cleanup and surveillance and maintenance activities for buildings formerly used by DOE's Office of Nuclear Energy. The FY 2002 request supports stabilization and deactivation of Building 309 and the Plutonium Recycle Test Reactor.

Post 2006 Completion (FY 2001 \$135.6; FY 2002 \$120.0)- \$15.6

The Post 2006 Completion account focuses on cleanup projects currently planned to require funding beyond FY 2006. This account includes projects and sites at the Albuquerque, Chicago, and Oakland Operations Offices.

- **Albuquerque** (FY 2001 \$3.8; FY 2002 \$2.5)..... - \$1.3
The Albuquerque Operations Office supports the recovery of public and private-sector sealed radioactive sources to the **Los Alamos National Laboratory**. The FY 2002 request supports preparation of DOE performance objectives for Greater-than-Class-C Low-Level Waste for review by the U.S. Nuclear Regulatory Commission, and recovery and storage off-site of 1,000 sealed sources. The decrease supports higher priority activities.
- **Idaho** (FY 2001 \$5.1; FY 2002 \$5.4).....+ \$0.3
The Idaho Operations Office supports the Long-Term Surveillance and Maintenance Program at the Grand Junction Office. The FY 2002 request provides for continued surveillance and maintenance activities including the **Atlas Site in Moab, Utah**. The increase supports surveillance and maintenance activities.
- **Oakland** (FY 2001 \$ 17.6; FY 2002 \$13.5).....- \$4.1

ENVIRONMENTAL MANAGEMENT

The Oakland Operations Office manages remediation and waste treatment, storage, and disposal activities at the **Energy Technology Engineering Center (ETEC)**, and the **General Electric Vallecitos Nuclear Center (GE)** in California. The FY 2002 request supports: facility deactivation, cleanup and landlord activities for ETEC; and surveillance, maintenance and negotiation of a cost-shared arrangement with GE. The reduction reflects support of higher priority activities.

- **Ohio (FY 2001 \$105.6; FY 2002 \$95.1)**..... - \$10.5
The Ohio Field Office supports cleanup activities at the **West Valley Demonstration Project** in New York. The FY 2002 request will: complete deactivation of the Vitrification Facility; continue construction for the **Remote Handled Waste Facility**; continue waste retrieval from the head-end cells and other decontamination efforts; initiate deactivation of a spent fuel pool, and continue low-level waste shipments. The net decrease reflects the completion of high-level vitrification and the Spent Nuclear Fuel storage and shipment program.

Excess Facilities (FY 2001 \$0; FY 2002 \$1.4)..... + \$1.4
The Excess Facilities Transfer Program is initiated to manage the final disposition of excess contaminated physical facilities to generate significant risk and cost reductions. This program will facilitate the cross-program transfer of excess contaminated facilities from the Office of Science and the associated deactivation and decommissioning activities. The FY 2002 request supports surveillance and maintenance activities for the **High Flux Beam Reactor** at Brookhaven National Laboratory, and the **Research Services** (Building 9735) and the **Hot Storage Garden** (Building 3597) at the Oak Ridge National Laboratory. The increase reflects the comparable transfer of funding from the former "owner" of the facility.

Multi-Site Activities (FY 2001 \$3.5; FY 2002 \$3.5)..... \$0
The FY 2002 request continues support for the Packaging Certification and Transportation Safety program to better coordinate DOE-wide non-defense program efforts.

Uranium Facilities Maintenance and Remediation

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|--------------|
| Uranium Facilities Maintenance and Remediation | | | | | |
| Uranium enrichment decontamination and decommissioning fund | | | | | |
| Decontamination and decommissioning..... | 235,247 | 263,987 | 241,641 | -22,346 | -8.5% |
| Uranium/thorium reimbursement..... | 64,160 | 71,842 | 1,000 | -70,842 | -98.6% |
| Depleted UF6 conversion project..... | — | — | 10,000 | +10,000 | N/A |
| Total, Uranium enrichment D&D fund..... | 299,407 | 335,829 | 252,641 | -83,188 | -24.8% |
| Other uranium activities | | | | | |
| Maintenance of facilities and inventories..... | 22,235 | 24,062 | 99,000 | +74,938 | +311.4% |
| Pre-existing liabilities..... | 8,946 | 11,305 | 11,784 | +479 | +4.2% |
| Depleted UF6 conversion project..... | 5,521 | 21,306 | — | -21,306 | -100.0% |
| Total, Other uranium activities..... | 36,702 | 56,673 | 110,784 | +54,111 | +95.5% |
| Total, Uranium Facilities Maintenance and Remediation..... | 336,109 | 392,502 | 363,425 | -29,077 | -7.4% |

PROGRAM DESCRIPTION

In FY 2001, Congress directed the consolidation of **Uranium Programs** previously managed by the Office of Nuclear Energy with activities supported by the **Uranium Enrichment Decontamination and Decommissioning (UED&D) Fund**, both to be managed by the Office of Environmental Management. This was done to improve the coordination of activities relating to the three gaseous diffusion plants at: Portsmouth, OH; Paducah, KY; and Oak Ridge, TN; which were used to enrich uranium for defense purposes and civilian reactor fuel.

Currently, the **United States Enrichment Corporation (USEC)** leases and operates the DOE-owned Paducah, KY and Portsmouth, OH plants. The Oak Ridge, TN plant is no longer in operation. DOE is responsible for all costs of the non-leased areas of the former gaseous diffusion plants. Early in 2000, USEC announced its intention to shutdown its Portsmouth, OH operations by June, 2001. In response, the Department has announced a plan to place the Portsmouth Gaseous Diffusion Plant in cold standby.

The Energy Policy Act of 1992 established the Uranium Enrichment D&D Fund to carry out environmental management responsibilities at the nation's three Gaseous Diffusion Plants. These responsibilities include decontamination and decommissioning, remedial actions, waste management landlord requirements, surveillance, and operation and maintenance activities associated with conditions at the plants prior to the presence of USEC. The Fund receives receipts from domestic utilities that are assessed at \$150.0 million per year (in real dollars) for 15 years based on their purchase of uranium enrichment services from the federal government. The remainder of the annual deposit to the Fund is made by the Department and is authorized to come from annual appropriations. The law also requires DOE to develop and administer a reimbursement program for active uranium and thorium processing sites which sold processed ore to the U. S. government.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Uranium Facilities Maintenance and Remediation (FY 2001 \$392.5; FY 2002 \$363.4) **-\$29.1**

The EM Program manages the maintenance, decontamination, decommissioning, and remediation of uranium processing facilities. These are the nation's three gaseous diffusion plants at Paducah, Kentucky; Portsmouth, Ohio; and the East Tennessee Technology Park in Oak Ridge, Tennessee. Other uranium activities supported include: R&D; maintenance of facilities and inventories; pre-existing liabilities; and placement of the Portsmouth Gaseous Diffusion Plant in cold-standby.

Uranium Enrichment Decontamination and Decommissioning Fund

(FY 2001 \$335.8; FY 2002 \$252.6) - \$83.2

Oak Ridge (FY 2001 \$264.0; FY 2002 \$251.6) - \$12.4

East Tennessee Technology Park (ETTP) (formerly K-25) (FY 2001 \$104.1; FY 2002 \$57.8)..... -\$46.3

The East Tennessee Technology Park was built as part of the World War II Manhattan Project and used to enrich uranium for national defense purposes. Enrichment of weapons-grade uranium ceased in 1964. The plant continued to produce low-enriched uranium for commercial nuclear power purposes until 1985, when it was shut down. The FY 2002 request supports: completion and turnover of the Process Building K-33 for industrial use; continued decommissioning of process buildings K-31 and K-29; continued cleanup of K-1070A contaminated burial ground, processing contamination releases from 26 trenches and 62 pits; and support for infrastructure. The decrease reflects completion of significant decommissioning projects; reduced anticipated payments, schedule changes reflecting contractor delays and support for higher priority activities.

Paducah (FY 2001 \$75.9; FY 2002 \$62.2)..... - \$13.7

The Paducah Gaseous Diffusion Plant began operation in 1952 to produce low-assay enriched uranium for use as commercial nuclear reactor fuel. In 1993, uranium enrichment operations were turned over to the United States Enrichment Corporation in accordance with the Energy Policy Act of 1992. The FY 2002 request supports: disposal of 488 cubic meters of low-level waste at commercial permitted facilities; continued remediation of 160 DOE Material Storage Areas; and surveillance and maintenance of the remedial action. The FY 2002 request will enable the Department to implement a FY 2001 Record of Decision at Paducah enabling the final remedial action of sources contributing to the existing northeast and northwest contaminated groundwater plumes; accelerating stabilization activities in the metals plant and feed plant shutdown buildings; and characterizing and disposing of the remaining 9,000 drums of low-level waste. The decreases reflect deferral of low-level waste and mixed low-level waste disposal, reduced storage costs, and support for higher priority activities.

Portsmouth (FY 2001 \$73.9; FY 2002 \$113.9)..... + \$40.0

The Portsmouth Gaseous Diffusion Plant began operation in 1952. In 1993, uranium enrichment operations were leased to the United States Enrichment Corporation in accordance with the Energy Policy Act of 1992. This account supports cleanup of the site. The FY 2002 request supports: completion of X701-B soils remediation and construction of groundwater treatment facilities; continued safe storage of legacy mixed low-level waste and low-level waste; disposal of 2,571 cubic meters of low-level waste and 3,191 cubic meters of mixed low-level waste at commercial permitted facilities; surveillance and maintenance; and litigation expenses. The increases will include additional decommissioning activities; reflect payments for management and operations contract liabilities and revised annual waste management requirements.

Other Activities (FY 2001 \$10.1; FY 2002 \$17.7)..... + \$7.6

The FY 2002 request supports long-term contractor liabilities; the **National Center of Excellence for Metal Recycle**, audit of the Uranium Enrichment Decontamination and Decommissioning Fund, and the **Depleted Uranium Hexafluoride Conversion Facility**. The Depleted Uranium Hexafluoride Conversion Facility has been transferred from Other Uranium Activities.

Uranium/Thorium Reimbursement (FY 2001 \$71.8; FY 2002 \$1.0) - \$70.8

The Uranium and Thorium Reimbursements will be distributed in the Spring of 2002 based on approved unpaid claims submitted through FY 2001. Reimbursements will be based on the review and audits of claims submitted by 13 uranium licensees and one thorium licensee. The decrease is due to the completion of payment of approved Uranium/Thorium licensee claims for cleanup.

Other Uranium Activities (FY 2001 \$56.7; FY 2002 \$110.8) + \$54.1

Oak Ridge (FY 2001 \$56.7; FY 2002 \$110.8)..... + \$54.1

The Oak Ridge Operations Office manages Other Uranium Activities that include research and development, maintenance of facilities and inventories, pre-existing liabilities, and placing the Portsmouth Gaseous Diffusion Plant in cold standby. DOE currently stores 680,000 metric tons of depleted uranium as solid uranium hexafluoride. The FY 2002 request supports: maintenance of the uranium inventory at the **Paducah and Portsmouth Gaseous Diffusion Plants** and the **East Tennessee Technology Park** in Oak Ridge, Tennessee. Funds will also support pre-existing liabilities, including activities and expenses associated with post retirement life and medical benefits and long-term disability benefits. The net increase reflects placement of the **Portsmouth Facility** on cold-standby which includes the cost of winterizing and heating the facility.

Nuclear Waste Disposal (including defense)

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|--|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| Civilian Radioactive Waste Management — Funding | | | | | |
| Defense nuclear waste disposal..... | 111,574 | 199,725 | 310,000 | +110,275 | +55.2% |
| Nuclear waste disposal..... | 228,937 | 190,654 | 134,979 | -55,675 | -29.2% |
| Total, Civilian Radioactive Waste Management..... | 340,511 | 390,379 | 444,979 | +54,600 | +14.0% |

Civilian Radioactive Waste Management — Activities

| | | | | | |
|--|----------------|----------------|----------------|----------------|---------------|
| Site characterization..... | 274,595 | 312,985 | 355,465 | +42,480 | +13.6% |
| Waste acceptance storage and transportation..... | 1,795 | 2,661 | 5,868 | +3,207 | +120.5% |
| Program integration..... | 8,621 | 12,071 | 19,244 | +7,173 | +59.4% |
| Program direction..... | 59,500 | 62,662 | 64,402 | +1,740 | +2.8% |
| Subtotal, Civilian Radioactive Waste Management..... | 285,011 | 390,379 | 444,979 | +54,600 | +14.0% |
| Rescission..... | -4,000 | — | — | — | — |
| Total, Civilian Radioactive Waste Management..... | 340,511 | 390,379 | 444,979 | +54,600 | +14.0% |

PROGRAM DESCRIPTION

The **Office of Civilian Radioactive Waste Management (RW)** fulfills the federal government's responsibility for permanent geologic disposal of commercial spent nuclear fuel and high-level radioactive waste resulting from the nation's atomic energy defense activities. The program provides the leadership in developing and implementing strategies to accomplish this mission that assure public health and safety, protect the environment, and are economically viable. The Department expects to submit a repository site recommendation to the President in FY 2002.

Congress makes two separate appropriations for the Program, one from the Nuclear Waste Fund (Civilian), the other through a Defense Nuclear Waste Disposal appropriation. These appropriations are recorded in separate internal accounts. Although the Nuclear Waste Fund is composed of dedicated utility money, funding to conduct the Waste Management program is appropriated and subject to the total spending limits imposed on all discretionary programs.

Nuclear Waste Disposal (Civilian). The Nuclear Waste Policy Act provides for two types of fees to be levied on the owners and generators of civilian spent nuclear fuel: an ongoing fee of one-tenth of one cent per kilowatt-hour on nuclear electricity generated and sold after April 7, 1983; and a one-time fee for all nuclear electricity generated and sold prior to that date. As of August 31, 2000, a total of \$15.1 billion has been received in the Nuclear Waste Fund, of which \$5.5 billion has been disbursed for a balance of \$9.6 billion.

Defense Nuclear Waste Disposal. Congress provides appropriations for the Defense Nuclear Waste Fund to pay for the disposal of high-level waste generated from atomic energy defense activities. The primary focus of this program is to fund the national defense programs' share of a long-term geological repository for Defense Nuclear Waste.

The **Site Characterization Project** performs the scientific and technical analyses of the candidate site necessary for a suitability determination. Successful completion of the planned scope of work will provide the scientific and technical information needed for a recommendation to the President on site suitability for development of a high-level nuclear waste repository. If the site is determined to be suitable for a geologic repository, a license will be requested from the Nuclear Regulatory Commission.

Waste Acceptance, Storage & Transportation works to: conduct the core activities that will precede removal and transportation of spent nuclear fuel from reactor sites to a federal facility; develop a process for the legal and physical transfer of spent nuclear fuel to the federal government; develop a private sector-based, competitive procurement process for acquisition of waste acceptance and transportation services; and resolve institutional issues with stakeholders.

Program Management and Integration provides management support for programmatic activities. Program Integration provides quality assurance, system integration, regulatory integration, strategic planning, international waste management, program management, human resources and development, independent audits, education and information, and information resources management. The program is also working to advance the nation's nonproliferation objectives with Russia by assisting in the management and oversight of collaborative work to examine permanent disposition options for spent nuclear fuel and radioactive high-level waste.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Office of Civilian Radioactive Waste Management (FY 2001 \$390.4; FY 2002 \$445.0)+ 54.6

The Office of Civilian Radioactive Waste Management Program's activities in FY 2002 reflect the continuing transition, begun in FY 1999, from predominately investigative science to engineering and design. This program conducts: data synthesis, model development and performance assessment, refinement of repository and waste package designs, and preparation for the start of repository construction if the Nuclear Regulatory Commission grants the construction authorization. The FY 2002 budget is based on the presumption that the Secretary will decide, based on information obtained from site characterization and after considering the views and comments of the public, the State of Nevada, and the Nuclear Regulatory Commission; to recommend the site to the President in FY 2002.

The FY 2002 Budget Request of \$444.9M is approximately a 14 percent increase from the FY 2001 budget. The FY 2002 budget supports the activities necessary to proceed further with the Site Characterization project, complete the Site Recommendation Report, accelerate engineering and design work to develop a License Application, and activities required prior to removal and transportation of spent nuclear fuel from reactor sites to a federal facility. The Program will continue to address the technical issues raised by the Nuclear Waste Technical Review Board.

Site Characterization (FY 2001 \$313.0; FY 2002 \$355.5)+ \$42.5

The FY 2002 request allows the program: to complete the **Site Recommendation Report** for the Secretary of Energy to submit to the President; issue a **Final Environmental Impact Statement**; start the development of **license application** for submittal to the Nuclear Regulatory Commission in 2003; and complete a safety analysis to support the repository license application regarding Department-owned spent nuclear fuel and high-level radioactive waste, naval spent nuclear fuel; and plutonium waste forms.

The FY 2002 request is a 13.4 percent increase over the FY 2001 funding. The increase provides for: the design activity needed to complete the license application and the shift from conceptual design to preliminary design, additional testing and analyses to further characterize and quantify the long-term performance of the repository; evaluation of a modification to the design of the potential repository to reduce the maximum temperature reached after closure of the repository; and improved understanding of corrosion processes.

Waste Acceptance, Storage & Transportation (FY 2001 \$2.6; FY 2002 \$5.9).....+ \$3.3

The FY 2002 request provides for the major activities that will precede removal and

transportation of spent nuclear fuel from reactor sites to a federal facility. These activities include: the collection and maintenance of spent nuclear fuel discharge information; development of procedures for verification of spent nuclear fuel parameters; maintenance and implementation of the Standard Disposal Contract; interactions with the Nuclear Regulatory Commission, contract holders, and others concerning nuclear materials safeguards; interactions with stakeholders; issuance of Nuclear Waste Policy Act Section 180(c) Notice of Policy and Procedures; and development of the acquisition process for waste acceptance and transportation equipment and services, including the issuance of a revised draft *Request for Proposal for Waste Acceptance and Transportation Services* for public comment. The FY 2002 request is a 126.9 percent increase over the FY 2001 funding. The increase in funds provides for the preparation of acquisition documents and technical specifications.

Program Integration (FY 2001 \$12.1; FY 2002 \$19.2).....+ \$7.1

Program Integration is comprised of Quality Assurance, Program Management and Human Resources and Administration. This activity provides management support to the Program Director, the Site Characterization Project, and the Waste Acceptance, Storage and Transportation Project. The request supports the use of M&O Contractors to ensure Nuclear Regulatory Commission quality assurance requirements are appropriately incorporated into technical documents and maintain the Qualified Suppliers List and database; ensures development of an integrated waste management system; allows for coordination of policy and interpretation of technical requirements; coordination and participation with external agencies, i.e., Nuclear Regulatory Commission, Environmental Protection Agency, and the Nuclear Waste Technical Review Board; and manage the Nuclear Waste Fund investment portfolio. The FY 2002 funding is a 58.7 percent increase over the FY 2001 appropriated level. The increase supports the use of contractors to ensure Nuclear Regulatory Commission quality assurance requirements are appropriately incorporated into their technical products.

Program Direction (FY 2001 \$62.7; FY 2002 \$64.4) + \$1.7

The FY 2002 request provides for: salaries and benefits of federal civilian employees, travel, building maintenance, rents, communication, utilities, the Working Capital Fund, and support services. Support Services will provide support for preparing chapter revisions to the FEIS and a Comments Resolution Document; develop and make available NEPA documentation; comply with Nuclear Regulatory Commission requirements; develop and provide an independent technical review capability of the work accomplished by the DOE national laboratories and the management and operations contractor, and an independent financial audit of the Nuclear Waste Fund. Funding remains essentially constant due to continued effort on the Nuclear Waste Technical Review Board issues and continued NEPA documentation effort due to the delay in issuing the Site Recommendation Consideration Report. The FY 2002 funding is a 2.7 percent increase over the FY 2001 appropriated level. The majority of the increase is due to cost-of-living adjustment in federal salaries and benefits.

Power Marketing Administrations

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|--|----------------------------------|----------------------------------|-----------------------------------|---------------------|--------------|
| Power Marketing Administrations | | | | | |
| Southeastern Power Administration | | | | | |
| Southeastern power administration..... | 11,579 | 39,454 | 39,354 | -100 | -0.3% |
| Use of prior year balances and other adjustments..... | -3,773 | -35,563 | -34,463 | +1,100 | +3.1% |
| Total, Southeastern Power Administration..... | 7,806 | 3,891 | 4,891 | +1,000 | +25.7% |
| Southwestern Power Administration | | | | | |
| Southwestern power administration..... | 28,664 | 29,226 | 29,838 | +612 | +2.1% |
| Use of prior year balances and other adjustments..... | — | -1,188 | -1,800 | -612 | -51.5% |
| Total, Southwestern Power Administration..... | 28,664 | 28,038 | 28,038 | — | — |
| Western Area Power Administration | | | | | |
| Western area power administration..... | 212,602 | 236,672 | 355,589 | +118,917 | +50.2% |
| Use of prior year balances and other adjustments..... | -20,976 | -71,207 | -186,124 | -114,917 | -161.4% |
| Total, Western Area Power Administration..... | 191,626 | 165,465 | 169,465 | +4,000 | +2.4% |
| Falcon and Amistad Operating and Maintenance Fund..... | 1,309 | 2,663 | 2,663 | — | — |
| Total, Power Marketing Administrations..... | 229,405 | 200,057 | 205,057 | +5,000 | +2.5% |

PROGRAM DESCRIPTION

The **Power Marketing Administrations (PMAs)** sell electricity primarily generated by hydropower projects located at federal dams. Preference for the sale of power is given to public bodies and cooperatives. Revenues from selling the power and transmission services are used to repay annual operating and maintenance costs, capital investments with interest, and other features of certain projects. The Southeastern, Southwestern, and the Western Area Power Administrations use customer receipts and receive appropriations for annual expenses. The Bonneville Power Administration self-finances using revenues.

The **Southeastern Power Administration** markets federal hydroelectric power from 23 Corps of Engineers (Corps) multipurpose projects to an eleven-state area in the southeastern United States. Since Southeastern does not own or operate any transmission facilities, it contracts with regional utilities that own power transmission systems to deliver the federal hydropower to Southeastern's customers.

The **Southwestern Power Administration** operates within a six-state area as a marketing agent for hydroelectric power produced at 24 U.S. Army Corps of Engineers multipurpose projects. To transmit power to its customers, Southwestern maintains 1,380 miles of high-voltage transmission lines, 23 substations, and 46 microwave and VHF radio sites. Direct appropriations support personnel to conduct all activities connected with the marketing and delivery of federally-generated hydroelectric power to customers; maintain transmission lines, substations, and communication systems; and replace equipment at facilities associated with the transmission system.

The **Western Area Power Administration** markets and transmits federal and non-federal electric power to a fifteen-state area from 55 federally-owned hydroelectric power plants operated primarily by the Bureau of Reclamation, the Corps, and the International Boundary and Water Commission. Western also markets the United States' entitlement from a Navajo coal-fired power plant near Page, Arizona. More than half of its funding covers program direction for federal personnel who perform operations, maintenance, and construction activities associated with Western's transmission system and other power marketing activities.

The **Bonneville Power Administration** provides electric power, transmission, and energy services to a 300,000 square mile service area covering eight states in the Pacific Northwest. Bonneville sells, at wholesale, the power produced at 31 federal projects operated by the Corps, the Bureau of Reclamation, and from certain non-federal hydro and thermal generating facilities.

Bonneville, which is self-financed with revenues, funds the expense portion of its budget, the power operations and maintenance costs of the Bureau of Reclamation, and the Corps in the Federal Columbia River Power System. The capital portion of the budget is funded through borrowing from the U.S. Treasury and is repaid with revenues from electric sales.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Southeastern Power Marketing Administration (FY 2001 \$3.9; FY 2002 \$4.9).....+ \$1.0

Southeastern Power Administration's FY 2002 program level is \$39.4 million, of which \$4.9 million is requested in new budget authority and the remaining \$34.5 million is revenue from the sale of electricity for purchase power and wheeling expenses.¹ The \$1.0 million increase in budget authority in FY 2002, reflects that prior year balances are no longer available. Since the net \$3.9 million program in FY 2001 used \$1.1 million of prior year balances, the total program is slightly lower in FY 2002 than in FY 2001.

- **Program Direction** (FY 2001 \$5.0; FY 2002 \$4.9) The net decrease reflects salary and benefit increases of \$0.2 million, offset by a decrease of \$0.3 million in other related expenses. The funding covers program direction requirements for 42 FTEs..... - \$0.1
- **Purchase Power and Wheeling** (FY 2001 \$34.5; FY 2002 \$34.5) The escalation of energy prices and the reduced level of energy banking that other electric utilities are willing to provide requires Southeastern to use \$34.5 million in revenues from the sale of electricity for purchase power and wheeling expenses. Southeastern will also encourage its customers to use alternative financing arrangements, such as net billing, bill crediting, and reimbursable authority to finance the delivery of power. The \$34.5 million is offset by collections from the recovery of PPW expenditures..... \$0

Southwestern Power Marketing Administration (FY 2001 \$28.0; FY 2002 \$28.0)..... \$ 0

Southwestern Power Administration's FY 2002 program level is \$29.8 million, funded by \$28.0 million in budget authority and \$1.8 million in power revenues to pay for the purchase of power and wheeling activities.²

- **Program Direction** (FY 2001 \$18.4; FY 2002 \$18.7) The net increase accommodates the cost-of-living increase, within grade increases, and anticipated rate increases for contract services, and decreases for other related expenses, such as Working Capital Fund and Capital Acquisitions. The funding covers program direction requirements for 177 FTEs. + \$0.3
- **Operations and Maintenance** (FY 2001 \$3.8; FY 2002 \$3.3) The decrease in maintenance costs reflects the funding of five circuit breakers,

¹ This compares to a FY 2001 program level of \$39.5 million funded by \$3.9 million in new budget authority, \$34.5 million in power revenues, and \$1.1 million in prior year balances utilized to defray program requirements.

² This compares to a FY 2001 program level of \$29.2 million funded by \$28.0 million in budget authority, \$0.3 million in power revenues, and \$0.9 million in prior year balances.

transformers, and post insulators through an alternative financing arrangement based on participation in the Southwest Power Pool/Regional Transmission Organization. - \$0.5

- **Construction** (FY 2001 \$6.8; FY 2002 \$6.0) The net decrease is due to lower design work costs, reduced breaker bay additions, the use of alternative financing arrangements for the switch replacements program, purchasing fewer vehicles, and replacing the mobile radio system. - \$0.8
- **Purchase Power and Wheeling** (FY 2001 \$0.3; FY 2002 \$1.8) Southwestern will use \$1.8 million in revenues from the sale of electricity for purchase power and wheeling expenses. The escalation of energy prices and the reduced level of energy banking available from other electric utilities requires Southwestern to increase the use of power revenues to market and deliver hydroelectric power. Southwestern will also continue to work with its customers through alternative financing arrangements (net billing, bill crediting, and reimbursable authority) to fund these activities. + \$1.5

Western Area Power Marketing Administration (FY 2001 \$165.5; FY 2002 \$169.5)+ \$4.0

Western Area Power Administration's FY 2002 Construction, Rehabilitation, Operation and Maintenance program is \$355.6 million, to be funded by \$169.5 million in budget authority. In addition, Western will use \$186.1 million in revenues from the sale of electricity for purchase power and wheeling expenses. The budget authority request provides \$114.4 million for Western's program direction, which provides salaries, benefits, and related costs for 1,052 FTEs who perform operation, maintenance, and power marketing activities; \$37.8 million for operation and maintenance program to provide material, supplies, equipment, and technical services in support of the interconnected power system; \$16.1 million for construction and rehabilitation activities, including replacements and upgrades of the existing infrastructure; and \$1.2 million for the Utah Reclamation, Mitigation, and Conservation account.

There is no appropriation request for Boulder Canyon Project activities as the Colorado River Dam Fund provides for operation and maintenance activities associated with the Boulder Canyon Project. The Colorado River Dam Fund is a revolving fund operated by the Interior Department's Bureau of Reclamation. Authority for Western to obligate directly from the Colorado River Dam Fund comes from Section 104 (a) of the Hoover Power Plant Act of 1984. The FY 2002 program covers the following seven activities.

- **Program Direction** (FY 2001 \$106.4; FY 2002 \$114.4) The Construction, Rehabilitation, Operation and Maintenance program includes \$114.4 million for 1,052 FTEs. The increase covers 22 additional FTEs to meet new requirements of the Federal Energy Regulatory Commission, the North American Electric Reliability Council, and the Western Systems Coordinating Council; accommodates cost-of-living and grade increases; and increased support services for architectural/environmental assessment studies associated with Western's Construction and Rehabilitation program. + \$8.0
- **Operations and Maintenance** (FY 2001 \$36.0; FY 2002 \$37.8) The net increase replaces an aerial manlift and a crane, as well as equipment

purchases associated with the requirement for Western to move its communications equipment into more narrow bands by 2004.+\$1.8

- **Construction and Rehabilitation** (FY 2001 \$23.1; FY 2002 \$16.1) The majority of the decrease is due to reduced substation projects, and to a lesser extent to the completion of transmission line and terminal facilities projects..... - \$7.0
- **Purchase Power and Wheeling** (FY 2001 \$65.2; FY 2002 \$186.1) The FY 2002 increase reflects the doubling in price of purchase power for the Pick-Sloan Missouri Basin; an increase in support purchases due to below-normal reservoir levels, poor hydro conditions, and dam safety work at the Colorado-Big Thompson project; and the depletion in FY 2001 of Central Valley Project energy banked with PG&E. This funding is completely offset by collections from the recovery of PPW expenditures. Western will continue to work with its customers through alternative financing arrangements (net billing, bill crediting, and reimbursable authority) to fund these activities..... + \$120.9
- **Utah Reclamation, Mitigation, and Conservation Account** (FY 2001 \$5.9; FY 2002 \$1.2) In FY 2002, Western will deposit \$1.2 million in the Utah Reclamation, Mitigation and Conservation account to cover administrative expenses of the Commission. The Western contribution decreased since there are sufficient balances in the account to cover construction activities..... - \$4.7
- **Falcon and Amistad Maintenance Fund** (FY 2001 \$2.7; FY 2002 \$2.7) A total of \$2.7 million is requested for the operation and maintenance of the hydroelectric facilities at the Falcon and Amistad dams. The \$0.2 million increase in salaries and benefits is offset by reductions in upgrades, replacements, or rehabilitation of equipment \$0
- **Colorado River Basins Power Marketing Fund** (FY 2001 -\$21.0; FY 2002 -\$26.0) Operation of the Colorado River Basins Power Marketing program, a revolving fund, will use \$275.6 million in spending authority from offsetting collections, with a staffing level of 268 FTEs. Offsetting collections realized from the fund in FY 2002 are projected at -\$301.6; providing a positive offset to the Department's bottom line of -\$26.0..... - \$5.0

Bonneville Power Marketing Administration (FY 2001 \$324.5; FY 2002 \$374.5) + \$50.0

The FY 2002 Bonneville Power Administration budget includes \$374.5 million in borrowing authority for capital investments. These investments provide electric utility and general plant maintenance associated with the Federal Columbia River Power System's transmission services, capital equipment, hydroelectric projects, conservation, and capital investments in environment, fish, and wildlife.

More than 60 percent of capital investments in FY 2002, \$236.7 million, are for the Transmission Business Line to provide for additions, upgrades, and replacements to the federal transmission system; for pollution prevention and abatement activities in compliance with environmental laws and regulations; and to mitigate environmental risks associated with operation of the power system. Under the Power Business Line, \$89.9 million is allocated for additions, improvements, and replacements of existing U.S. Bureau of Reclamation and Corps of Engineers hydroelectric projects in the Pacific Northwest. Funding of \$34.7 million is allocated to resource protection, enhancement, and mitigation of Columbia River Basin fish and wildlife losses

attributed to the development and operation of federal hydroelectric projects on the Columbia River and its tributaries. Capital Equipment and Capitalized Bond Premium, which provides for the acquisition of automatic data processing equipment, software, and special-use equipment, are funded at \$8.0 million and \$5.2 million, respectively. Bonneville funding covers program direction requirements for 2,867 FTEs.

- **Power Business Line** (FY 2001 \$103.2; FY2002 \$124.6) The increase is to improve power system reliability of U.S. Bureau of Reclamation and U.S. Army Corps of Engineers hydroelectric projects and to implement additional high priority fish and wildlife projects..... + \$21.4
- **Transmission Business Line** (FY 2001 \$193.0; FY2002 \$236.7) The increase is for major construction activities to reinforce the Northern Intertie in the Puget Sound area to allow a full return of power due to Canada under a treaty; for construction of the Red Mountain substation; and for system replacement projects, including completion of projects to meet Reliability-Centered Replacement practices and initiating replacement of the Celilo Converter station control system. + \$43.7
- **Capital Equipment/Capitalized Bond Premium** (FY 2001 \$28.3; FY2002 \$13.2) Capital equipment provides for furniture and equipment, as well as telecommunications and ADP equipment and software. Enhancements to BPA's Business Solutions Project continues to improve financial, materials, and work management processes, and accounts for the decrease in lower capital equipment costs..... - \$15.1

Federal Energy Regulatory Commission

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|--|----------------------------------|----------------------------------|-----------------------------------|---------------------|----------|
| Federal Energy Regulatory Commission | | | | | |
| Energy markets..... | 59,613 | 58,765 | 61,997 | +3,232 | +5.5% |
| Energy projects..... | 42,141 | 46,006 | 43,594 | -2,412 | -5.2% |
| Program support..... | 73,196 | 70,429 | 75,564 | +5,135 | +7.3% |
| Subtotal, FERC..... | 174,950 | 175,200 | 181,155 | +5,955 | +3.4% |
| FERC revenues..... | -174,950 | -175,200 | -181,155 | -5,955 | -3.4% |
| Total, Federal Energy Regulatory Commission..... | — | — | — | — | — |
| Fees and Recoveries, Federal Energy Regulatory Commission | | | | | |
| Fees & recoveries in excess of annual appropriations..... | -17,552 | -25,279 | -26,241 | -962 | -3.8% |

PROGRAM DESCRIPTION

The **Federal Energy Regulatory Commission** (Commission) regulates key interstate aspects of the electric power, natural gas, oil pipeline, and hydroelectric industries. The Commission chooses regulatory approaches that foster competitive markets whenever possible, assures access to reliable service at a reasonable price, and gives full and fair consideration to environmental and community impacts in assessing the public interest of energy projects.

The United States has faced a series of energy problems over the past year, including increased prices for both electricity and natural gas, and shortages of electricity in California. Resolving these problems will require development of coordinated, long-term policies for energy supply, energy demand, and risk management. On the supply side, the Commission will encourage capacity increases, full development of market institutions, and the continued vitality of the non-federal hydroelectric industry. Because a lack of demand response strongly affects wholesale markets, the Commission will encourage an approach that puts demand responses on the same footing with supply responses in wholesale electric power markets. The Commission will ensure that the structure of wholesale power markets allows the use of a wide range of risk management techniques for both buyers and sellers.

The Commission has three key priorities: ensuring that regional transmission organizations are functioning over as much of the country as possible, as soon as possible; supporting infrastructure development; and supporting a strong hydropower industry. To meet these priorities, the Commission will abide by the following principles: relying on competitive markets wherever possible, respecting the role of states, and strictly respecting the limits of its jurisdiction by law.

To operate efficiently, the Commission is working to: reduce the burden on those who work with it, both regulated companies and others, through E-commerce and reduced filing requirements; improve customer service through faster decisions and work processing; and develop the staff expertise to deal with new problems resulting from changing energy industries.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Federal Energy Regulatory Commission (FY 2001 \$175.2; FY 2002 \$181.2)+ \$6.0

The Commission's FY 2002 request funds 1,200 FTEs, the same number estimated for FY 2001. FERC will recover the full cost of its operations through a system of annual charges and fees, resulting in a net appropriation of \$0 for FY 2002.

The FY 2002 budget request reflects a cost of living increase over FY 2001. Otherwise, it requests no increase in funding or FTEs. With this budget, the Commission will respond to the immediate challenges that have grown in the past year as well as longer-term challenges. First, competition is changing the nature of the natural gas and electric industries. As a result, the Commission must understand the market more fully and respond to new issues faster, even as it continues to fulfill its traditional responsibilities. Second, the Commission's energy projects programs (natural gas pipeline construction and hydropower) also are subject to industry competition, which creates an ever-increasing need to act quickly. With energy projects, the Commission's challenge is to address a greater number of difficult environmental and landowner issues, while keeping to the tightest time frames possible. Finally, all government agencies must become more accountable for the results of their programs. The challenge for the Commission is to develop regulatory programs to match changing industries while simultaneously improving service and lowering real costs.

Fossil Energy Research and Development

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| Fossil Energy Research and Development | | | | | |
| Clean coal power initiative..... | — | — | 150,000 | +150,000 | N/A |
| Fuels and power systems | | | | | |
| Central systems..... | 112,688 | 199,135 | 61,000 | -138,135 | -69.4% |
| Distributed generation systems—Fuel cells..... | 43,373 | 52,584 | 45,124 | -7,460 | -14.2% |
| Sequestration R&D..... | 8,941 | 18,746 | 20,677 | +1,931 | +10.3% |
| Fuels..... | 19,844 | 23,423 | 7,000 | -16,423 | -70.1% |
| Advanced research..... | 22,811 | 30,137 | 26,000 | -4,137 | -13.7% |
| Total, Fuels and Power Systems..... | 207,657 | 324,025 | 159,801 | -164,224 | -50.7% |
| Gas..... | 30,809 | 45,029 | 21,000 | -24,029 | -53.4% |
| Petroleum..... | 55,748 | 66,874 | 30,499 | -36,375 | -54.4% |
| Cooperative research and development..... | 7,193 | 8,071 | — | -8,071 | -100.0% |
| Fossil energy environmental restoration..... | 10,000 | 9,978 | 9,500 | -478 | -4.8% |
| Import/export authorization..... | 2,173 | 2,295 | 1,000 | -1,295 | -56.4% |
| Program direction and management support..... | 75,479 | 80,086 | 70,000 | -10,086 | -12.6% |
| Plant and capital equipment..... | 2,600 | 3,891 | 2,000 | -1,891 | -48.6% |
| Advanced metallurgical processes..... | 5,000 | 5,214 | 5,200 | -14 | -0.3% |
| Subtotal, Fossil Energy Research and Development..... | 396,659 | 545,463 | 449,000 | -96,463 | -17.7% |
| Use of prior year balances..... | — | -4,000 | — | +4,000 | +100.0% |
| Total, Fossil Energy Research and Development..... | 396,659 | 541,463 | 449,000 | -92,463 | -17.1% |

PROGRAM DESCRIPTION

The **Fossil Energy** research and development program enhances U.S. economic and energy security by: (1) managing and performing energy-related research to promote efficient and environmentally sound production and use of fossil fuels; (2) partnering with industry and others to advance clean and efficient fossil energy technologies toward commercialization, and; (3) supporting the development of information and policy options that benefit the public. To ensure that federally funded research and development technologies and analyses are relevant to market and public needs, and transferred to commercial applications, the Office of Fossil Energy (FE) participates in joint partnerships with industry utilizing mechanisms such as cost-shared contracts and cooperative research and development agreements.

The Office of Fossil Energy is also responsible for administering the Elk Hills School Lands Fund, operating the Strategic Petroleum Reserve and the Naval Petroleum Reserves, and oversight responsibility for the Clean Coal Technology Demonstration Program, all of which are described elsewhere in this document. Applied research is supported by Fossil Energy Research and Development activities which includes the following:

Through a new **Clean Coal Power Initiative**, the Department will increase involvement of the private sector and academia to help conduct and direct research toward the most critical barriers to expansion of coal use for power generation in the United States. This cooperative effort will require industry to share in the cost of research work, with the industry share increasing as technologies approach commercial stages. The new coal research, development, and demonstration initiative will be funded at \$150 million. Technologies will be selected with the goal of accelerating development and deployment of coal technologies that will economically meet environmental standards, while increasing the efficiency and reliability of coal power plants.

The Fuels and Power Systems program is developing new technologies that will: (1) achieve operating efficiencies of over 60 percent; (2) reduce emissions of air toxics and particulate matter in existing and future

plants; (3) lead to economically viable ways to capture and store greenhouse gases; and, (4) produce alternative transportation fuels and chemicals. The primary activities in this area fall under five categories:

Within Central Systems, the Office of Fossil Energy is pursuing technologies that improve the performance and capacity of new and existing power plants. These new systems will also be substantially cleaner than systems in use today. The Central Systems program includes several advanced power systems based on coal combustion or coal gasification in addition to advanced environmental control technologies. Many of these technologies will evolve into the high-tech modules that will comprise the *Vision 21* pollution-free energy plant of the future. As these new systems mature, they will produce spin-offs that will benefit a wide variety of industrial applications.

Vision 21 is the core of the Office of Fossil Energy's long-range power research program and draws from several research areas. Through this program, DOE hopes to develop a new type of power facility that will virtually eliminate environmental concerns over the future use of fossil fuels. A *Vision 21* plant would be fueled by coal, natural gas, or perhaps biomass or municipal waste. It would emit virtually none of today's air pollutants and produce no harmful solid or liquid wastes. A complete *Vision 21* prototype is 10 to 15 years into the future, but many of the critical technology modules are already taking shape, and some are likely to be adopted by industry within the next few years.

In contrast to central power systems that supply power to entire regions, **Distributed Generation Systems** produce generally smaller amounts of electricity near the end user. One type of distributed generation system, fuel cells, continues to hold much promise as an on-site generator of electricity, meeting requirements for high efficiency, premium-quality power, and environmental protection. A high priority in this program will be to begin completing efforts that represent more than 20 years of development and are now within two years of achieving their objectives. Another element of the program is to co-fund competitively selected industrial teams that will develop new types of all-solid-state fuel cells that can break through the cost barrier currently limiting widespread market acceptance.

Carbon Sequestration, the capture and storage of carbon gases, could offer an affordable option in the future to address climate change concerns. The major thrust in FY 2002 will center around exploratory research on novel and innovative concepts for greenhouse gas emission mitigation such as increasing the carbon uptake of terrestrial plants or soils, advanced carbon dioxide separation and capture concepts, and storing greenhouse gasses in geologic formations or in the deep ocean. The Department recognizes the importance of continuing to study future options for reducing the buildup of greenhouse gases that will be low cost and environmentally safe.

The **Fuels** program will concentrate on the continued development of improved ceramic membranes for synthesis gas production, and advanced technologies to produce premium carbon and industrial products from coal.

Advanced Research projects seek a greater understanding of the physical, chemical, biological and thermodynamic barriers that limit the use of coal and other fossil fuels. The program funds two categories of activity. The first is a set of crosscutting studies and assessment activities in environmental, technical and economic analyses, coal technology export and integration program support. The second includes fundamental and applied research programs that focus on developing the technology base critical to the development of super-clean, very high efficiency coal-based power and coal-based fuel systems.

Perhaps more than any domestic fuel, **Natural Gas** is being counted on to fuel America's increasing demands for clean energy. By 2020, the United States may be consuming 60% more natural gas than it does today, perhaps as much as 35 trillion cubic feet per year. Yet, much of the nation's natural gas resource is locked in complex, difficult-to-reach formations that will require advanced technologies, especially as conventional supplies of gas begin to decline in the next decade. Funding in this program supports new technologies that can tap non-conventional gas resources and help the nation meet its long-term gas supply needs at reasonable prices.

Also included in this portion of the budget are activities that address the growing concern over the nation's aging gas infrastructure and provide the advanced tools, materials, and mechanical technologies that can improve the maintenance of existing gas pipelines and storage facilities and position the gas industry to make needed expansions in the future.

The U.S. depends on imports for over half of its oil supplies and by 2020 this dependence is projected to increase to more than 64 percent. At the same time, nearly two-thirds of all oil found in the U.S. remains unproduced and much of it is beyond the capabilities of today's petroleum technology. In FY 2002, DOE's **Petroleum** technology research will focus on new tools and technologies that oil producers can use in the next decade to explore for and produce oil from more difficult formations or from resources that are in environmentally sensitive regions. DOE will also fund a strong technology transfer program to provide smaller, independent oil producers with better tools and knowledge to improve production from marginal U.S. fields.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Fossil Energy Research and Development (FY 2001 \$545.5; FY 2002 \$449.0).....-\$96.5

The FY 2002 request for research and development activities is \$449.0 million. The budget request takes into consideration the ongoing policy review by the Vice-President's Energy Group and maintains core R&D with an emphasis on cost-sharing and industry collaboration. Program activities focus on the research, development and demonstration of technologies that can enter the marketplace within the next few years. Major projects and initiatives for FY 2002 include:

Clean Coal Power Initiative (CCPI) (FY 2001 \$0.0; FY 2002 \$150.0)+\$150.0

The Administration is requesting \$150.0 million for joint government/industry-funded research, development and demonstration of new technologies to enhance the reliability and environmental performance of coal-fired power generators. The CCPI will also develop the technological foundation for the next generation of even cleaner, more efficient technologies for both new power plants and for modernizing older ones. The CCPI builds and expands upon the Power Plant Improvement Initiative initiated in FY 2001. This appropriation is part of a ten-year, \$2 billion commitment to clean coal R&D.

Fuels and Power Systems (FY 2001 \$324.0; FY 2002 \$159.8).....-\$164.2

Central Power Systems (FY 2001 \$199.1; FY2002 \$61.0).....-\$138.1

- **Innovations for Existing Plants (FY 2001 \$20.1; FY 2002 \$18.0)** funding will support development of ultra clean combustors under the *Vision 21* program and eliminates a program aimed at optimizing the performance of coal-fired power plants in China and Turkey-\$2.1
- **Advanced Systems (FY 2001 \$84.2; FY 2002 \$43.0)** *Low Emission Boiler Systems* will continue by using prior year funding; the applicable combustion technology under the *Indirect Fired Cycle* program is being folded into other areas of *Advance Systems*; *Integrated Gasification Combined Cycle* program continues at the FY 2001 level; the *Pressurized Fluidized Bed* program is transitioning to focus on combustion hybrid technology, gas stream cleanup, and gas conditioning in support of *Vision 21* activities; work on utility-scale *Turbines* draws to a close; and activity under the \$95 million *Power Plant Improvement Initiative* is funded under the new Clean Coal Power Initiative.-\$41.2
- **Power Plant Improvement Initiative (FY 2001 \$94.8; FY 2002 \$0.0)** which focused on demonstrating advanced coal-based power technologies to address electricity reliability issues has been refocused. These activities will continue, with additional funding, under the Clean Coal Power Initiative.....-\$94.8
- **Distributed Generation-Fuel Cells (FY 2001 \$52.6; FY 2002 \$45.1)** funding will be used to complete efforts to demonstrate a commercial-scale molten carbonate fuel cell power plant system, and a solid-oxide fuel cell/turbine hybrid prototype. The Department plans to narrow its focus in FY 2002, shifting from generic research to the development of a low cost five-kilowatt solid state fuel cell.-\$7.5

- **Sequestration R&D** (*FY 2001 \$18.8; FY 2002 \$20.7*) allows the program to continue emphasizing this promising research. In FY 2002 the program will complete proof-of-concept scale research on a number of applied R&D options being investigated as part of prior solicitations +\$1.9
- **Fuels** (*FY 2001 \$23.4; FY 2002 \$7.0*) program continues development of ceramic membranes for synthesis gas production. No funding is requested for the steelmaking process as the program will be completed in FY 2001.-\$16.4
- **Advanced Research** (*FY 2001 \$30.1; FY 2002 \$26.0*) continues to pursue research in support of the *Vision 21* concept of a power and fuels complex. The decrease in funding reflects the use of prior year funds in FY 2001 to install a high-speed computer data line to expand the computational capability at the National Energy Technology Laboratory (NETL) -\$4.1
- Gas (FY 2001 \$45.0; FY 2002 \$21.0)**-\$24.0
 - **Exploration & Production** (*FY 2001 \$14.2; FY 2002 \$9.3*) activities focus on development and demonstration of new technologies for reservoir imaging systems, drilling, and production that increase production while reducing costs, including the development of the world's first microwave-processed drill bit and composite drill pipe. Efforts will also include locating zones that provide economic rates of flow of gas trapped in low-permeability and naturally fractured reservoirs to reduce the cost of production in these non-conventional reservoirs. Arctic research will be coordinated under the new Arctic Research Program -\$4.9
 - **Gas Hydrates** (*FY 2001 \$9.9; FY 2002 \$4.7*) funding allows the program to continue the characterization of Arctic and offshore hydrate resources with the U.S. Geological Survey, Naval Research Laboratory, and academic institutions. Funding to support the FY 2001 solicitation for joint industry projects in seafloor stability, resource characterization and feasibility has been reduced and no new projects will be initiated in FY 2002. Even so, this request will permit experiments that can lead to safe petroleum operations in hydrate areas.-\$5.2
 - **Infrastructure** (*FY 2001 \$8.1; FY 2002 \$5.1*) continues activities to ensure the reliability of the domestic natural gas pipelines and gas storage facilities. FY 2002 activities include the development of advanced storage technologies for high deliverability facilities and smart systems that will enhance pipeline inspections and repairs.-\$3.0
 - **Emerging Processing Technology** (*FY 2001 \$10.1; FY 2002 \$0.2*) provides continued support for the international center for information on natural gas technologies. Ongoing work related to synthetic gas is funded within the Coal & Power Systems–Fuels program. The Department is not requesting funds to continue the coalmine methane or low-quality gas upgrading activities in order to direct funding towards higher priority activities within the Fossil Energy-\$9.8
 - **Effective Environmental Protection** (*FY 2001 \$2.6M; FY 2002 \$1.6M*) continues development and demonstration of technologies and methods that will improve the economics and environmental performance of all facets of gas supply. In FY 2002, the program will sustain its emphasis on technologies that improve responsible development of gas resources on public lands-\$1.0

Petroleum – Oil Technology (FY 2001 \$66.9; FY 2002 \$30.5).....-\$36.4

- **Exploration & Production (FY 2001 \$28.8; FY 2002 \$20.3)** activities include demonstration of safe, economic slimhole drilling technology in Arctic conditions and methods for locating and producing oil from highly fractured reservoirs or ultra-deep deposits. The program plans to reduce research on oil basin analysis, smart well technology, advanced recovery methods, and fundamental technologies for frontier oil production. -\$8.5
- **Reservoir Life Extension/Management (FY 2001 \$14.7; FY 2002 \$4.9)** will focus on near-term technology development and assistance to small, independent operators. No new large-scale government-industry field demonstrations are planned; however, evaluation of past field trials will be completed and the results shared with private operators. -\$9.8
- **Effective Environmental Protection (FY 2001 \$10.8; FY 2002 \$5.3)** continues to develop technologies and practices that reduce the cost of effective environmental protection and compliance, focusing especially on areas that will improve responsible development of gas resources on public lands. The program will reduce work with the states and other federal agencies to streamline regulations -\$5.5
- **Emerging Processing Technology Applications (FY 2001 \$2.6; FY 2002 \$0)** The diesel biodesulfurization project for producing low sulfur diesel fuel will be completed in FY 2001..... \$-2.6
- **Ultra Clean Fuels (FY 2001 \$10.0; FY 2002 \$0.0)** Focused research and development related to coal-based transportation fuels will be funded within the Fuels & Power Systems–Fuels program -\$10.0

Cooperative Research and Development (FY 2001 \$8.1; FY 2002 \$0)..... -\$8.1

The program traditionally supported 50/50 cost-shared R&D projects with private industry. Although no funding is requested for FY 2002, the Office of Fossil Energy (FE) will continue to pursue cooperative research with other government agencies, academic institutions, and private industry within each of its technology line items.

Import/Export Authorization (FY 2001 \$2.3; FY 2002 \$1.0)..... -\$1.3

In FY 2002, the request of \$1.0 million will support the salaries and benefits of 7 FTEs who manage the regulatory review of natural gas imports and exports, exports of electricity, the construction of electric transmission lines which cross U.S. international borders, and exercise regulatory oversight of powerplant conversions pursuant to the Powerplant and Industrial Fuel Use Act of 1978.

Program Direction (FY 2001 \$80.1; FY 2002 \$70.0).....-\$10.1

- **Headquarters (FY 2001 \$16.9; FY 2002 \$14.7)..... -\$2.2**
Provides salaries, benefits, travel and contractor services for 80 FTEs at Headquarters.
- **Energy Technology Center (FY 2001 \$63.2; FY 2002 \$55.3)..... -\$7.9**
Provides salaries, benefits, travel expenses and contractor services for 281 FTEs at the field sites, including the National Energy Technology Laboratory (with sites in Morgantown, WV, Pittsburgh, PA, and Tulsa, OK).

Naval Petroleum and Oil Shale Reserves

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|---|----------------------------------|----------------------------------|-----------------------------------|---------------------|----------------|
| Naval Petroleum & Oil Shale Reserves | | | | | |
| Naval petroleum & oil shale reserves..... | 24,740 | 22,371 | 22,371 | — | — |
| Use of prior year balances..... | -24,740 | -20,775 | -5,000 | +15,775 | +75.9% |
| Total, Naval Petroleum & Oil Shale Reserves..... | — | 1,596 | 17,371 | +15,775 | +988.4% |

PROGRAM DESCRIPTION

The Department of Energy has historically managed, operated, protected, maintained, and produced oil and gas from Reserves to achieve the greatest value and benefits to the United States. The mission continues with the last two remaining **Naval Petroleum and Oil Shale Reserves** properties: Naval Petroleum Reserves Numbered 2 and 3. All other reserves have been either divested or transferred.

Production of Naval Petroleum Reserve (NPR) No. 3 (Teapot Dome) located near Casper, Wyoming, will be maintained at maximum efficient rates. Under the Rocky Mountain Oilfield Testing Center (RMOTC) program, the Naval Petroleum and Oil Shale Reserves offers the site to the oil industry for use as a working laboratory on a cost-sharing basis. The program is continuing efforts to privatize RMOTC in FY 2002. In the meantime, work at Teapot Dome will focus on environmental remediation in preparation for the lease, sale, transfer to the Department of Interior (DOI), or other divestment when the oil field reaches the end of its economic life as authorized by Public Law 105-261.

NPR-2, located in Kern County, California, is a producing oil field from which NPOSR collects lease royalties. Lease management responsibilities, as well as environmental oversight, resource assessment, and royalty evaluation, continue.

Pursuant to the National Defense Authorization Act for FY 1996, the Department completed the sale of NPR-1 (Elk Hills) in FY 1998, generating gross receipts of \$3.65 billion. The Department established a \$300 million contingency fund for the purpose of finalizing the Government's equity interests with Chevron USA, the co-owner of the Elk Hills property.

Public Law 105-85 required the transfer of administrative jurisdiction of Naval Oil Shale Reserve No. 1 (NOSR-1) and NOSR-3 to the Department of the Interior (DOI) for leasing. The transfer of the undeveloped lands (NOSR-1) was accomplished upon enactment, November 18, 1997. The developed portions (NOSR-3) were transferred on May 1, 1999, coinciding with the DOI's leasing of these lands. The properties, located in Garfield County, Colorado, are adjacent to one another.

During FY 2000, legislation was passed to affect the transfer of 84,000 acres of the Naval Oil Shale Reserve No. 2 to the Northern Ute Tribe. The Federal government retains a 9% royalty interest from future energy production on the lands, which would go into a fund to help clean up and remove 10.5 million tons of radioactive uranium mill tailings near Moab, Utah. Additional environmental protections for a 75-mile stretch of the Green River were put into place. The transfer of this land is the largest voluntary return of land to Native Americans in the lower 48 states in more than a century.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Naval Petroleum Reserves (FY 2001 \$1.6; FY 2002 \$17.4).....+\$15.8

Except for new authority of \$1.6 million for engineering studies for a subterranean oil production facility, new appropriations were not required for FY 2001 because the sale of Elk Hills enabled NPOSR to use large amounts of prior year balances for ongoing programmatic needs. The Department has requested new budget authority in FY 2002 because the remaining unobligated balances of approximately \$5.0 million are inadequate to fully fund all of the NPOSR program requirements for the year.

NPR-1 and NPR-2 (FY 2001 \$4.8;FY 2002 \$5.1).....+\$0.3

Post-sale closeout activities will continue at NPR-1, along with oversight of the NPR-2 property and associated leases during FY 2002. Program requirements at NPR-1 are offset by the use of \$2.0 million in prior year balances.

NPR-3 and RMOTC (FY 2001 \$9.5; FY 2002 \$7.2).....-\$2.3

NPR-3 is projected to operate economically through FY 2005, depending upon oil prices and the stability of production. The funding level for the operation of the Rocky Mountain Oilfield Testing Center (RMOTC) continues to decrease as the program continues its transition towards privatization. However, funding for environmental remediation activities will increase at NPR-3 in anticipation of the Department's eventual lease, sale, or transfer of the property as authorized in Public Law 105-261.

Program Direction (FY 2001 \$8.0; FY 2002 \$9.9).....+\$1.9

Program direction provides for salaries, benefits, and all expenses such as supplies, travel, support services, and final equity determination management. Nearly \$3.0 million in prior year funds will be used to support equity finalization requirements, which have increased in cost due to extensions in the process and legal challenges.

Revenues (FY 2001 \$7.8; FY 2002 \$6.8).....-\$1.0

Ongoing program operations generate revenues from the sale of crude oil, natural gas, and associated hydrocarbons. Deposits to the Treasury Miscellaneous Receipts Account are estimated to be \$6.8 million in FY 2002. The estimated decrease in revenues to the Treasury reflects slightly lower estimated production levels due to normal decline curves, and slightly lower crude oil prices.

Elk Hills School Lands Fund

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 |
|----------------------------------|----------------------------------|----------------------------------|-----------------------------------|---------------------|
| Elk Hills School Lands Fund..... | — | 36,000 | 36,000 | — |

PROGRAM DESCRIPTION

The National Defense Authorization Act for Fiscal Year 1996, Public Law 104-106, authorized the settlement of longstanding “school lands” claims to certain Elk Hills lands by the State of California. The Settlement Agreement between the Department and the State, dated October 11, 1996, provides for payment of nine percent of the net sales proceeds generated from the divestment of the government’s interest in Elk Hills, subject to the appropriation of funds. Under the terms of the Act, a contingency fund containing nine percent of the net proceeds of sale has been established in the U.S. Treasury and is reserved for payment to the State, subject to the appropriation of funds.

The first installment payment was appropriated in FY 1999. No appropriation was provided in FY 2000, and the FY 2000 Interior and Related Agencies Appropriations Act provided an advance appropriation of \$36.0 million to become available in FY 2001.

The FY 2001 Interior and Related Agencies Appropriations Act provided an advance appropriation of \$36 million to become available in fiscal year 2002, which is being treated as a mandatory spending item in FY 2002 that does not show as discretionary budget authority. The FY 2002 budget requests \$36 million in additional new budget authority for FY 2002. Thus, there will be a total of \$72 million requested for this purpose in FY 2002, meeting the Department’s obligation to request the funds that were due in FY 2000.

Energy Conservation

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|--|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| Energy Conservation | | | | | |
| Building technology, state and community sector | | | | | |
| Weatherization grants..... | 135,000 | 152,664 | 273,000 | +120,336 | +78.8% |
| State energy program grant..... | 33,500 | 37,916 | 38,000 | +84 | +0.2% |
| Research and development..... | 99,190 | 104,562 | 56,141 * | -48,421 | -46.3% |
| Total, Building technology, state and community sector..... | 267,690 | 295,142 | 367,141 | +71,999 | +24.4% |
| Federal energy management program..... | | | | | |
| Industry sector..... | 23,918 | 25,661 | 13,300 | -12,361 | -48.2% |
| Power technology..... | 137,416 | 148,622 | 87,724 | -60,898 | -41.0% |
| Transportation sector..... | 49,555 | 47,346 | 47,346 | — | — |
| Policy and management..... | 228,756 | 255,398 | 239,370 * | -16,028 | -6.3% |
| Total, Energy Conservation..... | 42,866 | 43,274 | 40,100 * | -3,174 | -7.3% |
| Total, Energy Conservation..... | 750,201 | 815,443 | 794,981 | -20,462 | -2.5% |

* These amounts will be modified by a budget amendment to be submitted shortly. Energy Conservation will be decreased by net of \$39,176 thousand. The transportation sector is reduced by offset increases in building technology, state and community sector, research and development; policy and management; and the Energy Supply account.

PROGRAM DESCRIPTION

The **Office of Energy Efficiency and Renewable Energy (EE)** conducts research, development, and deployment to advance energy efficiency and clean power technologies. The overall goal of EE's energy conservation program is to improve efficiency in the use of fossil fuels and electricity, as we develop new and cleaner energy sources. EE's energy conservation programs focus activities in the largest energy consumption sectors of the economy: buildings, industrial use, transportation, power generation, and federal facilities.

Building Technologies works in partnership with industry and government to develop, promote, and integrate energy technologies and practices that make buildings more efficient, productive, and affordable. Buildings account for more than one-third of energy consumption in the U.S., including two-thirds of all electricity generated. DOE aims to accelerate the introduction of highly-efficient technologies and practices through R&D; to increase minimum efficiency levels of buildings and equipment through codes, standards, and guidelines; and to encourage the use of energy efficiency technologies through technology transfer and financial assistance. Building sector programs improve building quality, reduce construction wastes, and help revitalize the communities they serve. The Buildings program also includes the **Weatherization Assistance Program** which delivers cost-effective, energy efficient improvements to lower-income households through a network of state and local partnerships. The **State Energy Program** supports federal/state partnerships that support the transfer of energy efficiency technologies to the State and local levels through formula grants.

The **Federal Energy Management Program (FEMP)** addresses the federal government's role as energy consumer. The government spent almost \$8 billion in 1999 to provide energy to its buildings, vehicles, and operations. The Office of Federal Energy Management Programs (FEMP) reduces Federal energy costs by advancing energy efficiency and water conservation, promoting the use of renewable energy, and assisting federal facilities to manage utility costs and operations. Through alternative financing, technical assistance, and outreach campaigns, FEMP helps federal customers address their energy management needs. FEMP aids in the design and construction of energy efficient buildings; effective operation and maintenance of existing facilities; major retrofits; purchase of energy efficient products; and utility and load management. FEMP leverages both federal and private resources to provide technical and financial assistance to federal agencies.

The **Industry** sector is the nation's largest energy consumer, accounting for 38 percent of all U.S. energy use. Moreover, just nine industries, agriculture, aluminum, chemicals, forest products, glass, metal casting, mining, petroleum, and steel, account for 27 percent of all U.S. energy use and supply over 90 percent of the materials needed for our buildings, transportation, communications, and manufacturing sectors. These industries also present a tremendous opportunity to reduce energy use while increasing productivity and cutting wastes, but they typically invest in R&D at only one-third the rate of the manufacturing sector as a whole.

By developing and adopting more energy-efficient technologies, industry can boost productivity and competitiveness and improve the environment. Through an innovative program, **Industries of the Future**, DOE helps industry develop and apply advanced, energy-efficient technologies and processes. By working with entire industries rather than individual companies, DOE maximizes the energy benefits of technology investments and fosters the formation of partnerships.

The Office of **Transportation Technologies** partners with industry, research organizations, state governments, and other Federal agencies to support development and the use of advanced vehicle technologies and fuels. Through these technologies the U.S. can reduce demand for petroleum; decrease emissions of criteria air pollutants and greenhouse gases; and enable the U.S. transportation industry to sustain a strong, competitive position in domestic and world markets. Moving people and goods accounts for 67 percent of the nation's oil use, and our vehicles remain 95 percent dependent on petroleum. DOE Transportation programs provide support for research, development, and deployment programs, which will reduce oil consumption by achieving significant improvements in vehicle fuel economy, as well as the displacement of oil by other domestic fuels, which are clean and cost-competitive. These R&D programs make significant contributions to research partnerships with the automotive industry (the **Partnership for a New Generation of Vehicles**) and the truck manufacturing industry. The program also manages the **Clean Cities** program, a voluntary initiative, which includes 4,400 organizations working to increase the use of alternative fuels in cities and urban corridors.

In Power Technologies, the Department is leading research efforts to significantly improve energy reliability and power quality through the use of on-site distributed energy resources that reduce energy losses and increase stability of the national grid. The goal of the program is to develop technologies, in cooperation with industry, to facilitate 20 percent of new generation coming from on-site generation by the end of the decade. Moving energy supplies closer to the point of end-use provides advantages in: load management, power quality, high efficiency (utilizing the waste heat) and reliability. This can be important in regions where the national grid is under stress. The program focuses on developing advanced, ultra-clean options for electric power generation and waste heat utilization.

Specific research focuses on the development of: 1) advanced distributed generation – industrial gas turbines, reciprocating engines, and proton exchange membrane (PEM) fuel cells; and 2) thermally-activated technologies – integrated cooling, heating and power (CHP) systems that capture waste heat for cooling, dehumidification, humidification, water heating, and steam heating and drying purposes. These technologies will be fuel flexible to make available a broader range of clean energy choices to consumers. Through the use of packaged systems (integrated generation and waste heat utilization) and advanced controls and communications, high efficiencies (greater than 80 percent) can be achieved with minimal impact on the environment.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Energy Conservation (FY 2001 \$815.4; FY 2002 \$ 794.9).....-\$20.5

The Department's FY 2002 request maintains core energy efficiency related R&D capabilities until ongoing operations can be evaluated against the outcome and priorities that will flow from the Vice President's National Energy Policy Development Group. The request will finish promising R&D projects where investment installments are nearly complete, maximize cost-sharing opportunities and industry participation, while supporting the Administration's overall deficit reduction and tax relief objectives.

Building Technology, State and Community Sector (FY 2001 \$295.1; FY 2002 \$367.1)..... +\$72.0

GRANTS: To support the President's commitment to provide energy assistance to low-income Americans, this budget requests a \$120 million increase in the **Weatherization Assistance Program** (FY 2001 \$152.7; FY 2002 \$273.0); and maintains the **State Energy Program** at the current funding level (FY 2001 \$37.9; FY 2002 \$38.0).

NON-GRANTS: Although the funding request for Non-Grant Buildings Sector activities is reduced by about 46 percent (FY 2001 \$104.6; FY 2002 \$56.1) the program will: maintain existing government-industry roadmaps; conduct targeted R&D in energy efficient building design and engineering, lighting, windows and envelope materials, design tools, emerging technologies; perform statutorily required support for building codes, lighting and appliances standards; and provide community technical assistance, information and outreach. Proposed funding for specific activities include **ENERGY STAR** (FY 2001 \$2.2; FY 2002 \$2.0) that will recruit 400 new retail partners and **Rebuild America** (FY 2001 \$10.9; FY 2002 \$5.9) that will assist over 300 partnerships to incorporate high performance energy-efficient technologies and practices in projects to renovate 60 million square feet of floor space. The FY 2002 request does not provide funding for the Cooperative Programs with States (FY 2001 \$2.0) and the Energy Efficiency Science Initiative (FY 2001 \$3.9).

Federal Energy Management Program (FY 2001 \$25.7; FY 2002 \$13.3)-\$12.4

In FY 2002, the Federal Energy Management Program (FEMP) continues to support the goal of obtaining 2.5 percent of federal facilities' electricity needs from renewable energy sources by 2005. FEMP will also continue efforts to reduce the use of energy in federal buildings by 24 percent by the end of FY 2002 as compared to 1985 energy use.

Industry Sector (FY 2001 \$148.6; FY 2002 \$87.7).....-\$60.9

The request allows for conclusion of R&D projects where investment installments are nearly complete. The request seeks to focus funding on core R&D and to maximize industry participation. Within the **Industries for the Future – Specific** (FY 2001 \$72.4; FY 2002 \$46.4) program that targets the most energy intensive industries, **Forest Products** and **Agriculture** programs are kept level with FY 2001. These two programs develop and deliver advanced technologies to improve energy and process efficiency, environmental performance, sensors and controls, sustainable forestry, and agricultural R&D. The proposed reduction in funding for **Industries of the Future – Crosscutting** (FY 2001 \$61.7; FY 2002 \$31.9) will fund current commitments and generally eliminates new starts. The request does not provide funding for the Cooperative Programs with States (FY 2001 2.0), the Energy Efficiency Science Initiative (FY 2001 \$ 3.9), and the Petroleum Vision (FY 2001 \$2.8) and Supporting Industries (FY 2001 \$ 1.6) under the Industries of the Future program.

Transportation Sector (FY 2001 \$255.4; FY 2002 \$239.4).....-\$16.0

The **Partnership for a New Generation of Vehicles (PNGV)** (FY 2001 \$141.7; and FY2002 \$141.7) will be funded at FY 2001 levels. Within the overall transportation programs, the largest reductions occur in vehicle battery research, technology deployment and the High Temperature Materials Laboratory. The FY 2002 request does not provide funding for the Cooperative Programs with States (FY 2001 \$2.0) and the Energy Efficiency Science Initiative (FY 2001 \$3.9).

Power Technologies (FY 2001 \$47.3; FY 2002 \$47.3)..... \$0

The **Distributed Energy Resources** program aims to develop technologies and systems that will move energy supplies closer to the point of use. This provides the opportunity for more efficient use of waste heat to boost efficiency and lower emissions, and reduces the strain on congested transmission systems. The FY 2002 budget focuses on the development of advanced distributed generation and thermally activated technology R&D programs to raise efficiency and performance while lowering costs and emissions.

Policy and Management (FY 2001 \$43.3; FY 2002 \$40.1)..... -\$3.2

The decreased funding request for FY 2002 reflects: a reduction of four FTEs (decrease of seven at Regional Offices, one at Headquarters offset by an increase of four FTEs at Golden Field Office), a slight increase for contractual services at Headquarters offset by a corresponding decrease at the Regional Offices and the Golden Field Office, and zero funding for the International Market Development Program (FY 2001 \$2.6).

Strategic Petroleum Reserve

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|--|----------------------------------|----------------------------------|-----------------------------------|---------------------|---------------|
| SPR—Facilities development..... | 158,396 | 164,637 | 169,009 | +4,372 | +2.7% |
| SPR petroleum account | | | | | |
| Transfer to Fossil Energy R&D..... | — | -12,000 | — | +12,000 | +100.0% |
| Transfer to SPR facilities development..... | — | -4,000 | — | +4,000 | +100.0% |
| Total, SPR petroleum account..... | — | -16,000 | — | +16,000 | +100.0% |
| Total, Strategic Petroleum Reserve..... | 158,396 | 148,637 | 169,009 | +20,372 | +13.7% |

PROGRAM DESCRIPTION

The **Strategic Petroleum Reserve** (SPR) reduces U.S. vulnerability to economic, national security, and foreign policy consequences of petroleum supply interruptions. SPR reduces the threat of supply disruptions by other nations by being prepared to respond rapidly to add crude oil supplies to world markets at the direction of the President.

The SPR maintains the capability to transition from operational readiness to a sustainable crude oil drawdown of 4.2 MMB/day within 15 days notice. The SPR maintains this continual readiness posture through a comprehensive program of systems maintenance, exercises, and tests. SPR now maintains a storage capacity of 700 million barrels at its four sites and holds an inventory of 541.7 million barrels of crude oil. This inventory provides the equivalent of 53 days of net import protection.

By the end of FY 2001, the inventory will increase to 561.7 million barrels through the **Royalty-In-Kind** cooperative program with the Department of Interior, and the Exchange 2000 Initiative. The Royalty-In-Kind program will provide the equivalent of 28 million barrels of off-shore Gulf Coast royalty oil to SPR in lieu of royalty payments to the U.S. Treasury. Further, the SPR will receive additional inventory via a premium on the 30 MMB of oil exchanged in September 2000. By the end of FY 2002, the 591 million barrels of crude oil in the Reserve will be equivalent to 53 days of net import protection.

In July 2000, the Department of Energy established a **Northeast Home Heating Oil Reserve** to avoid a recurrence of the heating oil supply problems in the region during the winter of 2000. During the establishment of the regional reserve, the Department used its crude oil exchange authority to acquire two million barrels of heating oil and the necessary storage services. The storage capacity and heating oil inventory were in place by early October 2000.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Strategic Petroleum Reserve (FY 2001 \$164.6; FY 2002 \$169.0)..... +\$4.4

The request provides for continued storage site maintenance, operations, security, drawdown testing, and drawdown readiness for the Reserve, in addition to \$8.0 million to continue leasing commercial terminals to hold the two million barrels of federally-owned emergency heating oil. The budget request also includes funding for renewed vapor pressure mitigation activities including geological studies of gas regain and performance specifications for continuous degasification plants (+\$3.4M) and provides full funding for management of the SPR (+\$1.0M)

Clean Coal Technology

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|--|----------------------------------|----------------------------------|-----------------------------------|---------------------|----------------|
| Clean Coal Technology | | | | | |
| Advance appropriation..... | 10,000 | 170,980 | 82,000 | -88,980 | -52.0% |
| Deferral..... | -156,038 | -67,000 | — | +67,000 | +100.0% |
| Transfer to Fossil Energy R&D..... | — | -95,000 | — | +95,000 | +100.0% |
| Total, Clean Coal Technology..... | -146,038 | 8,980 | 82,000 | +73,020 | +813.1% |

PROGRAM DESCRIPTION

The **Clean Coal Technology Program** is an effort jointly funded by the U.S. government and industry to demonstrate the most promising advanced coal-based technologies to use coal cleanly, efficiently (reducing CO₂ emissions), and meet domestic energy needs inexpensively. The program also generates the data needed for the marketplace to judge the commercial potential of these technologies. The program recognizes that the vast and relatively inexpensive U.S. coal reserves are a critical energy resource which can provide a significant economic advantage to the nation. However, these benefits will only be realized when coal can be used in ways which are environmentally responsible and when advanced technology can achieve significantly higher efficiencies than existing commercial power plants.

Begun in 1985 to accelerate the pace at which advanced coal-based utilization technologies would enter commercial service, the program is of limited duration entailing five rounds of competition. Industry, by law, must fund at least 50 percent of each project. Today, the five rounds have been awarded and the average industry cost share is 66 percent of the program's \$5.4 billion in funding. The majority of the projects from the early rounds have been completed and several are being used by industry to meet Clean Air Act requirements. About half of the more complex power generating systems are complete with the remainder moving into construction and/or operation in the next few years. The projects will be ready for re-powering or greenfield applications by 2010.

The technologies being demonstrated in the program are grouped into four primary market applications: Advanced Electric Power Generation Systems, which offer the prospect of much higher efficiency coal-based power plants to meet the energy demands of the nation well into the next century; Environmental Control Devices, which offer more attractive ways to reduce emissions from existing powerplants and industrial facilities both domestically and internationally; Coal Processing for Clean Fuels, which offer coal feedstock conversion to produce a stable fuel of high-energy density to produce steam electricity, or for use as a transportation fuel; and Industrial Applications, which offer superior ways to competitively manufacture key commodities such as steel, in an environmentally responsible manner.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Clean Coal Technology (FY 2001 \$9.0*; FY 2002 \$82.0)..... +\$71.0

* After \$95 million transfer to Fossil Energy R&D

The Clean Coal Technology program operates with previously appropriated funding. There are 38 active projects with a total cost of \$5.2 billion, of which DOE has committed to provide \$1.8 billion. At the close of FY 2002, it is expected that: 31 projects will be completed; three projects will be in operation; three projects in construction; and one project in design. Only one project is expected to have outstanding obligation commitments. In FY 2002, the Clean Coal Technology program will continue the operating phase of the Liquid Phase Methanol project demonstrating the production of clean-burning methanol from coal-derived synthesis gas. Initiate operation of the JEA atmospheric circulating fluidized-bed combustor and the Clean Coal

Diesel project. The program will also continue construction on the Kentucky Pioneer project, a demonstration of the integrated gasification combined cycle which utilizes a gasifier coupled with a molten carbonate fuel cell.

Energy Information Administration

(dollars in thousands)

| | FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 | |
|--|----------------------------------|----------------------------------|-----------------------------------|---------------------|-------|
| Energy Information Administration | | | | | |
| National energy information system..... | 72,368 | 75,508 | 75,499 | -9 | -0.0% |

PROGRAM DESCRIPTION

The **Energy Information Administration (EIA)**, an independent statistical agency, collects, analyzes, produces, and disseminates energy data, analyses, and forecasts covering the full range of fuels and a wide variety of energy issues. Topics include energy reserves, production, consumption, distribution, prices, technology and related international, economic and financial markets. Many of EIA's activities are required by statute, such as developing and maintaining a comprehensive energy database, producing specific reports, and disseminating reports and analysis for a variety of customers. Other activities satisfy inquiries for energy information from policymakers, the energy industry, and the general public.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Energy Information Administration (FY 2001 \$75.5; FY 2002 \$75.5) \$0

EIA's priority is to maintain high quality core energy data programs and forecasting systems needed to provide timely data, analysis and forecasts. The FY 2002 request: 1) completes updating the survey designs for residential and commercial building energy consumption based on the 2000 census; 2) completes the revision of the natural gas and electricity surveys and processing systems to capture changes in these industries due to deregulation and restructuring; and 3) resolves the petroleum data quality issues related to mergers and consolidations. Several lower priority activities are being discontinued or reduced to fund non-discretionary increases in personnel salaries and overhead. In FY 2002, work will be done in the following areas:

- **Oil and Gas** (FY 2001 \$19.8; FY 2002 \$19.6) This activity collects and disseminates weekly, monthly, and annual statistics on the sales, prices, and supply of crude oil and refined petroleum products. The program also produces an annual data series on reserves and production of crude oil and natural gas - \$0.2
- **Coal, Nuclear, Electric, and Alternative Fuels** (FY 2001 \$10.6; FY 2002 \$10.8) This activity collects and disseminates statistics and short-term forecasts for coal, electric, nuclear, and renewable energy information.+ \$0.2
- **Energy Markets and End Use** (FY 2001 \$10.3; FY 2002 \$10.4) This activity analyzes current energy markets; surveys energy consumers in the residential, commercial, and manufacturing sectors; integrates energy supply and demand statistics; conducts financial analysis of the energy industry; and prepares short-term energy forecasts and emergency preparedness statistical information.+ \$0.1
- **Integrated Analysis and Forecasting** (FY 2001 \$9.1; FY 2002 \$8.5) This activity maintains the **National Energy Modeling System** used for mid-term energy supply and demand projections, and policy analysis. The decrease is due to discontinuation of the International Analyses Capabilities Enhancements. - \$0.6
- **Information Technology** (FY 2001 \$9.6; FY 2002 \$9.5) This activity provides EIA-wide computer services, such as development and implementation of EIA's

ENERGY INFORMATION ADMINISTRATION

Common Collection and Processing System; integrates data querying and extraction tools; and develops on-line data analysis tools for use by EIA energy data users. - \$0.1

- **National Energy Information Center** (FY 2001 \$2.3; FY 2002 \$2.4) The Center responds to public inquiries and disseminates EIA information products..+ \$0.1.
- **Statistics and Methods** (FY 2001 \$2.4; FY 2002 \$2.5) This activity provides statistical services for quality assurance, including ensuring methods meet statistical standards and improving survey response rates and data quality; and evaluates the quality and significance of EIA's information.+ \$0.1

Resource Management (FY 2001 \$11.3; FY 2002 \$11.7)+ \$0.4

This activity provides overall management and administrative support, logistic support services, and Working Capital Fund costs.

Economic Regulation

(dollars in thousands)

| FY 2000 Comparable Approp. | FY 2001 Comparable Approp. | FY 2002 Request to Congress | FY 2002 vs. FY 2001 |
|----------------------------------|----------------------------------|-----------------------------------|---------------------|
|----------------------------------|----------------------------------|-----------------------------------|---------------------|

Economic Regulation

| | | | | | |
|-------------------------------------|-------|-------|-------|---|---|
| Office of hearings and appeals..... | 1,992 | 1,996 | 1,996 | — | — |
|-------------------------------------|-------|-------|-------|---|---|

PROGRAM DESCRIPTION

The **Office of Hearings and Appeals (OHA)** is responsible for all of the Department's adjudicatory processes other than those administered by the Federal Energy Regulatory Commission. OHA has jurisdiction which includes: Freedom of Information Act and Privacy Act Appeals, evidentiary hearings to determine an employee's eligibility for a security clearance, appeals and initial agency decisions on whistle blower complaints, and requests for exception from DOE regulations and orders, such as reporting requirements to Departmental elements. These activities are funded within Other Defense Activities in the Energy and Water Development Appropriation.

The program also continues work related to previous enforcement resulting from a wide spectrum of oil pricing and allocation regulations that governed the petroleum industry throughout most of the 1970s. OHA's enforcement work is nearing completion. However, OHA continues to conduct refund proceedings returning petroleum overcharge funds, collected by DOE, to injured parties, states, and the federal government for indirect restitution. Funding for these activities is sought under Economic Regulation in the Interior and Related Agencies Appropriation.

In FY 2002, the program is requesting a total of \$5.0 million, \$3.0 million of which is requested in the Energy and Water Appropriation and is discussed elsewhere in this document. This section discusses activities within the jurisdiction of the Interior Appropriation for which \$2.0 million is requested in FY 2002.

HIGHLIGHTS OF PROGRAM REQUEST (\$ in millions)

Office of Hearings and Appeals ((FY 2001 \$2.0 ; FY 2002 \$2.0)..... \$0

\$2.0 million of new authority under the Interior Appropriation is requested to finance remaining oil overcharge activities (EPCA). This is in addition to \$3.0 million of new authority requested in Other Defense Activities to investigate and adjudicate whistle blower complaints and to consider appeals of other Departmental actions, including determinations issued under the Freedom of Information and Privacy Acts and adverse security clearance determinations.

- **Personnel Compensation and Benefits** expenses
(FY 2001 \$1.5M; FY 2002 \$1.5) \$0
- **Other Related Expenses** primarily provided within the Department's Working Capital Fund, including rent, supplies, printing and communications, and information technology. (FY 2001 \$0.5; FY 2002 \$0.5) \$0