

DEPARTMENT OF ENERGY

The President's Proposal:

- Launches a bold, new hydrogen fuel research and development program and aggressively pursues additional zero-emissions technologies such as fuel cells, fusion power, and carbon sequestration;
- Clears the path to operating a safe nuclear waste repository by 2010;
- Accelerates the cleanup of nuclear waste sites to better protect workers, the public, and the environment; and
- Strengthens the nation's security by reducing the global threat from weapons of mass destruction and by maintaining the nation's nuclear stockpile.

The Department's Major Challenges:

- Reducing and mitigating a projected increase in America's dependence on foreign energy supplies through 2025; and
- Certifying the safety and reliability of the nation's nuclear stockpile without nuclear testing.

Department of Energy

Spencer Abraham, Secretary

www.energy.gov 202-586-8100

Number of Employees: 16,000 federal and 100,000 contractors

2003 Spending: \$19.8 billion

Major Assets: 26 laboratories, four Power Marketing Administrations, 24 other facilities, and 15,323 vehicles.

The Department of Energy (DOE) has four main missions: 1) ensuring a dependable energy supply for the American economy; 2) ensuring a secure, reliable nuclear deterrent for the nation's defense; 3) improving environmental quality related to energy production; and 4) advancing science and technology in energy-related areas. The Department supplements private-sector research efforts to enhance domestic energy production, develop new and cleaner sources of

energy, and improve energy conservation and efficiency. The National Nuclear Security Administration (NNSA) maintains the safety, security, and reliability of the nation's nuclear weapons stockpile, manages nuclear non-proliferation efforts to reduce the threats from weapons of mass destruction, and provides the U.S. Navy with safe, effective nuclear propulsion plants. The Department's environmental quality efforts include cleaning up contamination resulting from over 50 years of nuclear weapons production, and supporting research to reduce contaminants that come from energy and to develop new, non-polluting and sustainable energy sources. DOE advances science by

sponsoring a broad range of basic and applied research, including the operation of scientific research facilities that serve the nation's research community.

Performance Evaluation of Select Programs

The President's 2004 Budget continues to address the nation's energy challenges by allocating resources for DOE programs and activities that demonstrate they are contributing to our energy goals, and by reducing or transferring funding from programs that do not. For the first time, many funding decisions were enhanced by using both the Program Assessment Rating Tool (PART) and the Research and Development (R&D) Investment Criteria as part of the President's Management Agenda. (See the *Performance and Management Assessments* volume for a full discussion of application of the PART and R&D Investment Criteria at DOE and other agencies.) DOE is at the forefront of the Administration's effort to apply these tools. This year, DOE evaluated 31 programs through the PART and, where applicable, the R&D Investment Criteria, comprising nearly 60 percent of the Department's total funding.

The 2004 Budget reflects the application of these tools through funding recommendations based on national priorities and program performance. Selected programs evaluated this year include those summarized in the following table.

Program	Rating	Explanation	Recommendation
Gas Exploration and Production	Ineffective	Many program activities are not unique to the federal government.	Refocus on long-term, high-risk research where the justification for a federal role is strongest and program benefits most broadly applicable.
Basic Energy Sciences	Results Not Demonstrated	Focused and well-managed, the program is developing adequate performance measures.	Maximize use of existing research facilities, support nanoscience initiative, and improve performance measures.
International Nuclear Materials Protection and Cooperation	Effective	Demonstrated results securing fissile material in the former Soviet Union.	Continue to monitor performance against long-term goals; enhance systems for tracking spending.
Wind Energy	Moderately Effective	Contributed to lowering wind energy costs in high-wind speed areas, but difficulty developing adequate annual performance measures.	Emphasize technologies for low-wind speed areas, and develop and apply a consistent methodology for estimating program benefits.

The Department has already taken several steps toward improving the performance and management of its programs:

- The Environmental Management (EM) and Energy Efficiency and Renewable Energy programs conducted top-to-bottom reviews and as a result have streamlined management and started to improve the way decisions are made.
- NNSA established a planning, programming, budgeting and evaluation process to support development of its Future-Years Nuclear Security Program. In addition, NNSA has re-engineered

its management processes and federal workforce to integrate program elements, streamline operations and oversight, and simplify requirements.

- The Department established new qualifications for contract and project managers to strengthen its scrutiny of contractor work and improve performance.

Expanding Energy

Investing in Hydrogen Energy

Americans import over 50 percent of their oil and are expected to import nearly 70 percent by 2025. If the nation is to liberate itself from dependence on imported oil, it must achieve scientific breakthroughs on alternative fuels and technologies. The most promising long-term revolution in energy use is the expansion of hydrogen energy. Transportation accounts for 70 percent of total U.S. oil consumption. Widespread use of hydrogen fuel cell vehicles would reduce U.S. oil imports and increase energy independence. U.S. fuel cell leadership in transportation also could reap enormous economic benefits, as the U.S. auto industry alone accounts for five percent of the U.S. gross domestic product and supports 6.6 million jobs. Also, hydrogen fuel cells, which produce only water as a byproduct rather than the pollutants in gasoline vehicle emissions, can help clean the air we breathe.



The future may be now for hydrogen fuels.

Hydrogen-powered fuel-cell vehicles have the potential to provide energy diversity, fuel economy, and environmental benefits. Since hydrogen can be manufactured from a number of domestic fossil (natural gas and coal), nuclear, and renewable resources, it offers the potential for eventual “freedom” from the nation’s near-exclusive reliance on petroleum for transportation.

The budget includes a major new partnership between the federal government and energy companies to help accelerate widespread use of fuel-cell vehicles by focusing on hydrogen fuel production, storage and infrastructure. This project’s long-range, high payoff research and development efforts could dramatically improve the performance and

cost-effectiveness of hydrogen technologies without displacing private investments.

The new initiative, FreedomFuel, builds upon a program announced in 2002, FreedomCAR (Cooperative Automotive Research), which is aimed at developing viable hydrogen fuel-cell technology for cars by 2015. This budget proposes to spend over \$1.5 billion on FreedomFuel and FreedomCAR over the next five years, including more than doubling DOE’s spending on hydrogen research and development in 2004 alone. This funding will accelerate achieving the national energy security and environmental benefits from widespread use of hydrogen vehicles.

FreedomFuel and FreedomCAR research activities will address the difficult technical and cost challenges faced in commercialization of fuel-cell vehicles. For example, hydrogen fuel cells are currently at least 10 times more costly than today’s internal combustion engines, and hydrogen fuel is five times more costly to produce than gasoline. We need to develop innovative ways to nearly double the amount of hydrogen that can currently be stored on board a vehicle in order to provide a driving range comparable to today’s vehicles without sacrificing cargo space. The Administration intends

to challenge the international community to join efforts to accelerate the world-wide availability and affordability of hydrogen fuel.

Advancing Fusion Energy

The President directed DOE to enter negotiations with international parties—the European Union, Japan, Canada, and Russia—aimed at building the International Thermonuclear Experimental Reactor (ITER). ITER is the essential next milestone on the path towards developing fusion

A Step Towards Fusion Energy

For nearly half a century, the United States has funded an effort to harness thermonuclear fusion. Progress has been slow because of the significant difficulties in controlling “fusion-plasmas” that burn at temperatures of hundreds of millions of degrees. The ITER will provide scientists with access to a “burning plasma” – a plasma in which deuterium and tritium atoms fuse to give off large amounts of energy.

as a commercially viable energy source. Fusion is the process that powers the sun and despite many major technical challenges, it has the potential to be an abundant, safe, and clean energy source. Recent leaps in the scientific understanding of fusion have led many scientific experts, including the U.S. National Academy of Sciences, to recommend construction of the ITER project in order to know whether fusion can produce energy. The President’s decision to enter negotiations to build ITER will position the United States as a vital partner in this international experiment.

The DOE budget includes \$12 million to support the President’s commitment.

Other Presidential Energy Initiatives

The budget continues to fulfill the President’s commitment to increase funding for the Weatherization Assistance Program over the next 10 years in order to cut energy costs of 1.2 million low-income families while conserving energy. The Program Assessment Rating Tool (PART) assessment of this program showed it to be moderately effective. The program’s energy-efficiency measures help save each participating low-income family an estimated \$218 annually on utility bills, at an average one-time cost of about \$2,500. With an average lifespan of 20 years, the improvements generate more than \$4,000 in total utility bill savings per home. This program places priority on serving low-income households that include elderly persons, children, or people with disabilities. The budget proposes to weatherize 126,000 homes in 2004; 3,000 more than 2003, and a 20-percent increase over 2002.

The budget also continues to meet the President’s goal to provide \$2 billion for clean coal research over 10 years, by including \$321 million for research on clean coal technologies. This amount is more than two and a half times that annually requested for this activity in the budgets submitted to the Congress from 1995 through 2000. The PART and R&D Investment Criteria evaluations revealed that the program is focused too heavily on building demonstration power plants. Therefore, the budget proposes to reduce funding for the demonstration component of the program and focus on research and development of new technologies. The budget also proposes to combine all clean coal research under a single program to better manage this research and provide a more transparent budget structure. Also, this proposal will put to work nearly \$500 million for clean coal research that is unexpended.

The budget assumes enactment of the President’s energy tax incentives proposed in the 2003 Budget that will encourage greater energy efficiency and development of renewable resources. These incentives total more than \$8 billion over 10 years and include tax credits for purchases of hybrid and fuel cell vehicles, solar power in residences, and a modification of the tax treatment of nuclear power plant decommissioning costs.

Radioactive Waste Disposal

DOE is charged with disposing of spent nuclear fuel from civilian nuclear power plants and high-level waste from the nation's defense activities. Commercial electric power generation, nuclear weapons production, the operation of naval reactors, and federal research and development activities over the past half century have produced spent nuclear fuel and high-level radioactive waste that have accumulated across the country at commercial reactor sites and storage facilities. For the past 20 years, DOE has investigated Yucca Mountain, Nevada, to determine whether it would be suitable for a geologic repository to dispose of those wastes. In February 2002, the President recommended Yucca Mountain to the Congress as qualified for a construction permit application to the Nuclear Regulatory Commission (NRC) as a nuclear waste repository. And in July 2002, the Congress approved that recommendation.



Home At Last: Yucca Mountain, NV, site of the federal nuclear waste repository.

Filling the Yucca Mountain Repository

More than 161 million Americans live within 75 miles of the 131 sites in 39 states that currently store spent nuclear fuel and high-level radioactive waste. Twenty years ago, the federal government accepted responsibility for the safe geologic disposal of nuclear waste in a remote underground repository. Last year, the President recommended and the Congress approved Yucca Mountain, Nevada as qualified for an application for a construction authorization to NRC as a nuclear waste repository. To protect the public and the environment for the long-term, it is essential that DOE be provided the resources to develop the license application, and when it is approved, support for construction and operation of this repository.

The budget includes \$591 million for the Department's radioactive waste program. This funding will enable DOE to complete work needed for a license application to the NRC in 2004 and develop transportation capabilities needed to initiate repository operations by 2010. As part of the Administration's proposal to extend the discretionary spending caps, the budget proposes a unique Yucca Mountain annual discretionary spending cap adjustment. This adjustment will help ensure that adequate funds are provided every year to complete construction of the repository on schedule.

R&D Investment Criteria at Work

As part of the drive to improve performance of the government, for the past two years DOE has evaluated its applied R&D programs using the R&D Investment Criteria. The R&D Investment Criteria were designed to guide agencies in the selection of projects for federal research dollars. The criteria require R&D managers to demonstrate that their programs are conducting research that is relevant, of high quality, and producing results.

For the 2004 Budget, DOE evaluated a total of 80 individual applied research projects and programs using the R&D Investment Criteria. The resulting information helped support a more thorough evaluation of the portfolio of each DOE research program and guided the budget's allocation of funds among programs. In some cases, the evaluation resulted in shifting funding

from R&D activities supporting technologies that are near commercialization, such as the clean coal demonstrations noted above, to long-term, high-risk/high-payoff R&D, such as research on revolutionary new ways to store large amounts of hydrogen in a small space, which will help advance the introduction of hydrogen fuel cell vehicles.

Application of the criteria also led to recommendations to redirect funding from some activities, either because the case for federal participation was weak or other higher-priority research activities could use these funds more effectively. For example, the budget proposes to:

- increase funding on research activities for a new type of coal power plant that uses coal gasification to increase efficiency and reduce emissions (\$51 million, an increase of \$10 million over 2003), and dedicates \$62 million (an increase of \$18 million over 2003) specifically to the capture and disposal of carbon dioxide emissions. These are activities that have the potential to produce public benefits, such as reduced emissions, where industry has little incentive to invest to achieve these results;
- reduce funding for the Advanced Petroleum-Based Fuel program, which largely supplants investments that private industry would make to achieve the clean air requirements of EPA's regulation on vehicle emissions that take effect between 2004 and 2007; and
- increase funding for the Advanced Fuel Cycle and Generation IV Nuclear Energy Systems initiatives to develop next-generation nuclear reactor and fuel cycle technologies, and continue the government-industry cost-shared Nuclear Power 2010 program. Support for these programs is based on PART assessments that demonstrated strong planning and management structures.

Power Marketing Administrations

The Southeastern, Southwestern, Western, and Bonneville Power Marketing Administrations (PMAs) sell electricity generated at 133 multipurpose federal dams and related facilities located across the country. They also manage more than 33,000 miles of federally owned transmission lines. The budget provides \$185 million for Southeastern, Southwestern, and Western. Bonneville uses internally-generated funds only.

The PART analyses conducted this year showed that the PMAs fulfill many of their legislated responsibilities and meet their dual goals of providing safe and reliable service to customers. Although largely prescribed by law, their marketing functions are not optimally designed and are administratively burdensome. In 2004, the Administration will work toward upgrading their operations.

PMAs receive their power from hydroelectric dams operated by the Corps of Engineers (Corps) and the Department of the Interior's Bureau of Reclamation. In 2004, Southeastern, Southwestern, and Western will propose legislation to directly finance the Corps' power-related operating and maintenance expenses, as Bonneville already does. In past years, the Corps has obtained appropriations to pay these expenses and the PMAs repaid the costs to the U.S. Treasury. Direct funding will enable the Corps to perform needed maintenance and small rehabilitation projects in a more timely way.

The Bonneville Power Administration (BPA) finances its \$4.1 billion annual cost of operations and investments from its annual power revenues and through borrowing from the U.S. Treasury. The budget proposes to increase the current borrowing authority ceiling of \$3.75 billion by \$700 million to enable BPA to finance improvements in its transmission system, conservation, and hydropower activities. BPA will continue to encourage non-federal or joint financing of all its investments in transmission system upgrades and other investments, and will report its evaluation of these alternate financing opportunities to DOE before using its borrowing authority.

The President's National Energy Policy also directs federal agencies to remove constraints on the interstate transmission grid to help ensure that the nation's electricity can flow more freely. In 2002, the Administration and two private companies agreed to secure private-sector financing for

construction of Path 15 transmission facilities that will relieve the transmission bottleneck in northern California. This project is scheduled to be operational in 2004.

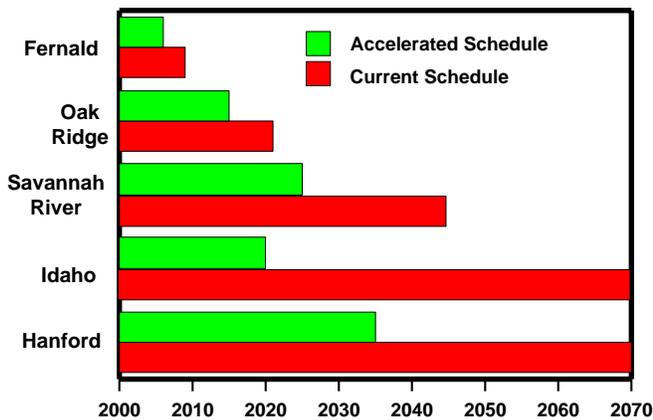
Environmental Management

Decades of nuclear weapons production and energy research left vast amounts of radioactive contamination and hazardous waste at 114 sites in 31 states and one U.S. territory. DOE has completed cleanup at 75 of the sites, but the largest and most challenging site cleanups lie ahead. In 2002, DOE's top-to-bottom review of the Environment Management (EM) program found that the program was focused on managing risk rather than reducing it. It was failing to achieve its risk-reduction mission, unable to effectively control cost and schedule overruns, and experiencing significant problems in project management and contract administration. The EM PART evaluations confirm the findings of the top-to-bottom review that precious time and billions of taxpayer dollars have been lost.

Accelerating Site Cleanup

As of September 2, 2001, DOE estimated it would not complete cleanup of all of its sites until 2070, which was an unacceptable timetable for addressing the risks posed by these sites. Under the Administration's revised cleanup plans, DOE expects to accelerate completion by 30 years, a generation ahead of the previous schedule. It also expects to save about \$37 billion doing so, reducing total remaining cleanup costs from \$184 billion to \$147 billion. DOE's goal is to achieve even greater time and cost savings—to accelerate cleanup by 35 years and save \$50 billion—through additional innovations in cleanup approaches and business processes.

Accelerated Cleanup Schedule



Source: Office of Environmental Management, DOE.

additional analysis and securing necessary approvals from state and federal regulators on the plans, the Department has made progress toward reforming the EM program.

To improve program performance, the 2003 Budget proposed to set aside \$1.1 billion as an incentive for DOE, the states, and federal regulators to revise cleanup plans to accelerate reduction of risk to the public and the environment. Over the past year, the EM program developed revised cleanup strategies for 18 of the 39 sites remaining to be completed. These performance management plans (PMPs) cover a broad range of issues—from new waste treatment and disposal options, to cleaning up the most risky areas first, to simply increasing the number of workers assigned to critical cleanup activities. Although significant issues still need to be resolved, including conducting



Accelerated Depreciation: Demolition of a metals fabrication plant at Fernald was completed in 2002.

Two examples of changes in the PMPs are:

- *Idaho National Engineering and Environmental Laboratory.* Liquid radioactive waste at the Idaho Laboratory has been converted to dry granular material. The plan has been to solidify this material in glass for final disposal by 2070 at a cost of \$7 billion. Under the PMP, this material would be dispositioned without costly additional treatment or increased threat to public health and safety. This would accelerate disposition of this material by 35 years and save about \$6 billion.

- *Hanford, Washington.* The cesium and strontium capsules currently stored in an underwater facility represent 37 percent of the radioactivity at the site. The plan has been to solidify this waste in glass beginning in 2018, with final disposition completed by 2042. Under the PMP, DOE would move the capsules to dry storage by 2008, with ultimate disposition by 2021, 21 years ahead of schedule.

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Innovative Cleanup

The EM program can be improved by technological breakthroughs and innovations in contracting. The program seeks to address both these requirements simultaneously with alternative procurement approaches that move DOE further toward paying for proven performance.

DOE aggressively seeks private sector assistance to substantially accelerate the pace of innovation. Consistent with laws and policies that ensure sound contracting and fiscal responsibility, DOE plans to offer a share of clearly measurable savings with contractors as an inducement for contractors to take financial risks necessary to reduce the cost and timeframe of nuclear waste cleanup.

The budget includes \$7.2 billion for the EM program, an increase of \$244 million over the 2003 Budget and the highest amount ever requested for this program. However, more money and revised plans alone are not enough. The Department recognizes the need to revise its management policies and procedures to achieve the program's cost, schedule, and risk-reduction goals. To this end, DOE has several initiatives underway, including holding contractors responsible for achieving the expected cleanup results and continuing to pursue innovative approaches to cleaning up these sites.

Advancing Science

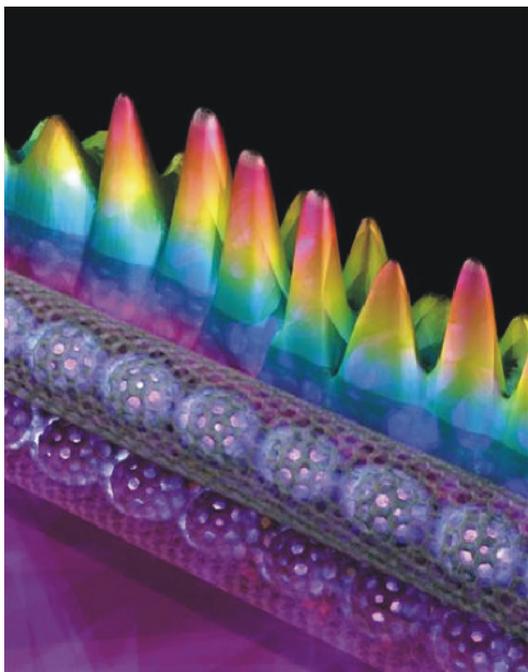
The Department's Office of Science supports a broad array of basic and applied research and operates a variety of unique scientific facilities to support the Department's energy and national security missions. It also supports research in areas such as climate change, genomics, and life sciences. The Office provides more

Nanoscience—by a Nose

The growing nanoscience revolution promises new materials that could affect every aspect of society. For example, carbon nanotubes that are 1,000 times thinner than a human hair may allow engineers to provide storage for tiny fuel cells that would power consumer electronics devices or develop "artificial noses" for sniffing out individual molecules of dangerous chemicals.

than 40 percent of total federal funding for basic research in the physical sciences, and serves as the principal federal funding agency for research in high-energy physics, nuclear physics, and fusion energy sciences. The success of the office's research program has been exceptional. In the past decade alone, nine Nobel Prizes in physics and chemistry have been awarded to scientists for work supported by the Office of Science.

The assessment of the Office of Science programs conducted using the PART analysis and the R&D Investment Criteria revealed that these programs are generally well-managed and focused on appropriate research, but that additional work is needed to better define program performance measures—a problem faced by many basic research programs.



Atomic-scale nanotubes, such as the carbon "peapod" structure shown magnified in this illustration, could lead to computers as small as a pencil eraser.

An important part of the Office of Science's activities is its operation and management of 10 national laboratories and 27 scientific research facilities across the country, including x-ray and optical light sources, supercomputers, fusion devices, and particle accelerators. This suite of research facilities plays a vital national role, as it annually draws over 17,000 users from universities, industry, and government. Facility access is awarded via a merit-based, peer review process.

The 2004 Budget proposes \$3.3 billion for DOE Science programs, a \$55 million increase over 2003. It allocates funds to best performers that provide the broadest benefits to society. The budget does not fund earmarks. The DOE Science budget reflects an increase in proposed research funding across the federal government, especially in the physical sciences, including a 10-percent increase in research, equipment, and facilities at the National Science Foundation (NSF).

The Science budget at DOE gives priority to operating existing user facilities at over 90 percent of maximum capacity. Operating these facilities near capacity will maximize the scientific return by ensuring that they are

available to the scientists who depend upon them to carry out their research.

The budget also includes a broad emphasis on enhancing support for research in the physical sciences across many federal research agencies to ensure that there is an appropriate balance among federal research and development activities. The Office of Science budget enhances nanoscience, computational science, and research at the interface of physics and astronomy. The emphasis on physical sciences within DOE's mission areas will be coordinated with related research supported or conducted by other agencies, such as NSF and the National Aeronautics and Space Administration (NASA).

The budget nearly doubles DOE's investment in new centers for nanoscale science research, complementing the unique capabilities of existing and soon-to-be completed DOE user facilities, as well as the nanoscience efforts of other agencies. The budget also increases support for research on the next generation of high-end computer architectures necessary for cutting-edge simulations in areas such as climate change, fusion plasma physics, and material science.

National Defense

DOE's NNSA mission is to strengthen the security of the United States by applying nuclear energy to military purposes, and by reducing the global threat from weapons of mass destruction. To accomplish the mission, NNSA manages national security-related programs to:

- maintain and enhance the safety, security, reliability and effectiveness of the nation's nuclear weapons stockpile;
- detect, prevent, and reverse the proliferation of weapons of mass destruction and promote nuclear safety world-wide; and
- provide the U.S. Navy with safe, militarily effective nuclear propulsion plants for ships.

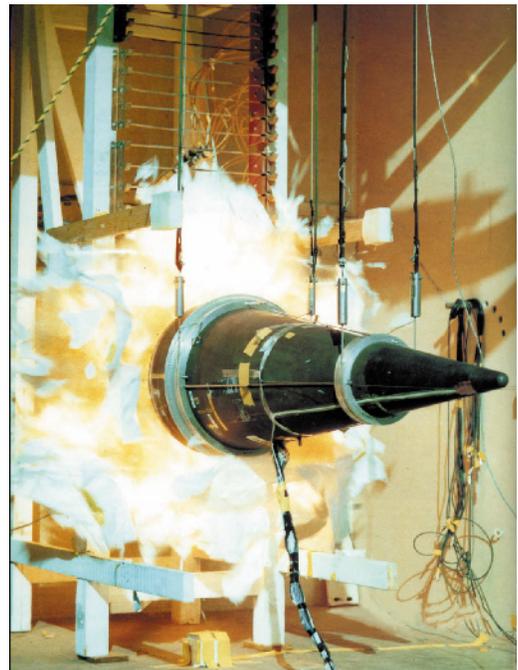
Nuclear Stockpile Stewardship

Since 1993, DOE has maintained confidence in the safety, security, reliability, and effectiveness of the U.S. nuclear weapons stockpile in the absence of nuclear testing with its science-based, stockpile stewardship program. DOE employees oversee contractors that operate programs stretching across a vast complex that includes three national laboratories (Los Alamos, Sandia, and Lawrence Livermore); the Nevada Test Site; and extensive production facilities.

The stewardship program ensures the operational readiness of the nuclear weapons stockpile by relying on improved technology and techniques to detect and predict problems in the aging nuclear stockpile. Using the knowledge from this program, NNSA maintains and refurbishes existing warheads and maintains a manufacturing base that could produce a new weapon if required.

In January 2002, the Administration released the second Nuclear Posture Review (NPR), which laid out the direction for America's nuclear forces over the next decade. The NPR noted that since the end of the Cold War, the nation's nuclear infrastructure had atrophied. Furthermore, an evolving security environment required a flexible and responsive weapons complex infrastructure. To address these concerns, the 2004 Budget reflects a significant increase over the 2003 Budget in the stockpile stewardship program. This increase, along with a multiyear plan supported by sustained, stable funding, will enable NNSA to fulfill the nation's needs for a safe, secure, reliable, and effective nuclear stockpile. The 2004 Budget proposes \$6.4 billion for activities related to maintaining the nuclear weapons stockpile, \$533 million above the 2003 Budget. Efforts underway include:

- Near-term work such as the refurbishing of three weapons that originally entered service in the 1970s and 1980s. Without new warheads entering the inventory, a robust refurbishment program is the only way to maintain the nuclear deterrent with a high degree of confidence.
- Long-term work such as:
 - The Inertial Confinement Fusion Ignition and High Yield program, which includes construction and operation of the National Ignition Facility at Lawrence Livermore National Laboratory in California. This project will provide a 192-beam laser to simulate the conditions of



Components of a Peacekeeper missile are subjected to a wall of fire. Such testing helps determine how aging weapons will perform in the future.

high temperature and pressure that result from a nuclear explosion, so scientists can better understand the expected performance of nuclear warheads.

- Advanced Simulation and Computing efforts involving the largest and fastest computers to perform calculations and nuclear explosion simulations that previously were impossible to perform. These simulations are an integral part of certifying the reliability of the stockpile.
- The plutonium “pit” (bomb core) manufacturing and certification program that will provide the United States with the capability to develop new plutonium pits to replace existing ones whose life expectancy is unknown.

NNSA’s weapons-related programs also encompass:

- infrastructure programs that underpin the stockpile work. Since the Cold War, many facilities have reached the end of their useful lives and NNSA is embarking on an effort to improve conditions throughout the complex to ensure the sustainability of the complex into the future;
- security programs intended to protect the nuclear weapons complex and nuclear weapons and their components within that complex and while in transit; and
- the Nuclear Weapons Incident Response Program that provides first-responder teams in the event of a nuclear emergency.

The United States last produced a new weapon in 1990 and last conducted a nuclear test in 1992. Now, DOE must develop new tools to manage the stockpile without the design and underground testing that supported it since the dawn of the nuclear age. This work will remain critical even as the Department of Defense (DoD) draws down the number of operationally deployed warheads to between 1,700 and 2,200 over the next 10 years.

Managing the Stockpile Stewardship program continues to be an enormous challenge. In response to questions raised by the DOE Inspector General and others concerning poor accountability of government property, abuse of government-issued credit cards, and theft of property at the Los Alamos National Laboratory, the Secretary of Energy insisted that the University of California, the contractor at Los Alamos, take immediate action to remedy the laboratory’s management failures. The University reacted by accepting the resignations of the Laboratory Director and Deputy Director and took other steps to address management problems. The Secretary of Energy also asked the Inspector General to undertake a broader investigation of these allegations and other related matters as appropriate. Furthermore, the Secretary directed the Deputy Secretary and the Under Secretary for Nuclear Security to complete by April 30, 2003 a full evaluation of the University of California’s capacity to operate the laboratory. Among other matters, the evaluation will examine whether the University should continue to hold the Laboratory contract, which it has held for 60 years without competition. The contract was most recently renewed non-competitively on January 18, 2001, two years ahead of schedule. The Secretary has also directed the formation of a Blue Ribbon Commission to develop criteria to be used generally in evaluating when laboratory contracts should be open to competition.

Preventing the Spread of Weapons of Mass Destruction

Preventing the spread of weapons of mass destruction (WMD) continues to be an urgent and top priority. This imperative was made clear after the September 11th, terrorist attacks and the subsequent discovery of signs that terrorists were seeking to obtain WMD.

The gravest danger our Nation faces lies at the crossroads of radicalism and technology. Our enemies have openly declared that they are seeking weapons of mass destruction, and evidence indicates that they are doing so with determination. The United States will not allow these efforts to succeed.

National Security Strategy of the United States of America
September 17, 2002.

In June 2002, with the leadership of the United States, G-8 nations agreed to a new comprehensive nonproliferation effort known as the Global Partnership. To advance this goal, G-8 leaders committed to raise up to \$20 billion over 10 years to fund nonproliferation programs in the former Soviet Union. The United States intends to provide half that total through programs at DOE, DoD, and the Department of State. The Global Partnership program's 2004 budget of nearly \$1 billion is allocated as follows:

- \$459 million in DOE programs to reduce and prevent the proliferation of nuclear weapons, nuclear and radioactive material, and nuclear expertise;
- \$451 million in DoD Cooperative Threat Reduction programs that provide assistance to reduce and prevent the proliferation of weapons of mass destruction, delivery vehicles, material and expertise; and
- \$81 million in Department of State programs to prevent the proliferation of weapons of mass destruction and expertise.

In addition to the Global Partnership programs the NNSA manages nearly \$900 million in other nonproliferation programs for 2004. Highlights include \$609 million to dispose of surplus plutonium in the United States, and \$204 million to conduct research and development of technologies that support nonproliferation efforts.

Naval Reactors

The President's Budget will enable NNSA's Naval Reactors program to continue its success in developing and operating safe, reliable, and effective nuclear-powered warships. The program is responsible for all naval nuclear propulsion work, beginning with technology development, continuing through reactor operation and, ultimately, to reactor plant disposal. The Naval Reactors program is currently developing new nuclear propulsion plants to meet evolving national defense requirements. By the end of 2004, the goal is to complete 100 percent of the design of the next generation submarine reactor and 65 percent of the design of the next generation aircraft carrier reactor. Furthermore, the Naval Reactors program will begin work on its Transformational Technology Core, a reactor core that will deliver a significant energy increase to future submarines. Finally, the program will continue operating 101 naval reactor plants, and will add to its record of 124 million miles safely steamed without a reactor accident or a significant release of radioactivity into the environment.

Update on the President’s Management Agenda

DOE’s status has improved from red to yellow over the past year in Human Capital, Financial Performance, and E-Government. The Department has been at the forefront of the Administration’s efforts to improve agencies’ analysis and management of research and development investments.

	Human Capital	Competitive Sourcing	Financial Performance	E-Government	Budget and Performance Integration
Status					
Progress					

Arrows indicate change in status since baseline evaluation on September 30, 2001.

DOE is carrying out its workforce restructuring plan to ensure that its staff have the right skills, eliminate management layers, and streamline operations. The Department received an unqualified opinion on its 2001 financial statement and DOE’s review of its financial management controls concluded DOE controls have no major weaknesses. DOE has also made significant progress improving its planning and management of capital investments in information technology, including developing better financial information to support investment decisions. It has started private-public competitions on more than 1,100 federal and 1,000 contractor positions toward achieving the President’s competitive sourcing goal.

Initiative	Status	Progress
Better R&D Investment Criteria		

The goal of this initiative is to develop objective criteria to select, fund, and manage R&D programs across the government. The initiative’s red status reflects the limited progress most agencies have made. DOE, which was part of a pilot effort last year, is the exception. It improved the quality of information it uses to evaluate its investments in applied research and development. It is working to improve its use of this tool to manage programs and develop better ways to estimate the benefits of its research. This was the first year other R&D agencies and DOE’s Office of Science applied the criteria to their programs. NASA is recasting its strategic plans and budget to tie directly to the R&D criteria. NSF is changing its budget structure and guidelines used to evaluate its research to reflect the criteria’s intent. See the R&D chapter of the *Analytical Perspectives* volume for additional information on this initiative.

Department of Energy
(In millions of dollars)

	2002 Actual	Estimate	
		2003	2004
Spending			
Discretionary Budget Authority:			
National Defense			
National Nuclear Security Administration	7,619	7,934	8,759
Other Defense Activities	551	445	523
Energy Resources.....	2,697	2,645	2,734
Science and Technology	3,263	3,256	3,311
Environmental Management	6,694	6,994	7,239
Nuclear Waste Disposal	375	591	591
Corporate Management and all other programs	119	199	219
Total, Discretionary budget authority ¹	21,318	22,064	23,376
Mandatory Outlays:			
Existing law.....	-899	-1,344	-1,329
Legislative proposal	—	149	145
Total, Mandatory outlays	-899	-1,195	-1,184

¹ Includes \$0.4 billion in 2002 supplemental funding.