DEPARTMENT OF ENERGY

Annual Performance Plan
FY 2004

SECRETARY OF ENERGY

SPENCER ABRAHAM

Editor's Notes

This is the Department's Initial Annual Performance Plan and accompanies the Department's FY 2004 Budget submission to the Office of Management and Budget (OMB).

The DOE's Power Marketing Administrations is included in this plan. However, the Federal Energy Regulatory Commission (FERC) has prepared a separate GPRA document. See their web page at: http://www.ferc.gov/about/mission/mission-intro.htm.

This plan was prepared by the Office of Program Analysis and Evaluation in the Office of the Management, Budget and Evaluation (PA&E/OMBE) with input from all offices within DOE. The DOE point of contact for this document is Debbie Dayton at (202) 586-8278, debbra.dayton@hq.doe.gov.

Table of Contents

Overview 1

Introduction 2

Government Performance and Results Act Program Activities

Energy

Goal 1. Energy Supplies 12

Goal 2. Energy Conservation and the Environment 74

Goal 3. Energy Infrastructure 98

Goal 4. Long-Term Stewardship of Radioactive Materials 114

Goal 5. Energy Information 120

Defense

Goal 6. Nuclear Weapons Stewardship 126

Goal 7. Control of Weapons of Mass Destruction 142

Goal 8. Defense Nuclear Power 156

Goal 9. Cold-War Era Legacy Cleanup 160

Science

Goal 10. Scientific Advancement 170

Goal 11. Medical Applications 194

Goal 12. Scientific Facilities 200

Management

Goal 13. Management Effectiveness 212

Goal 14. Human Capital Management 224

Goal 15. Information Management 230

Goal 16. Facility Management 234

Goal 17. Site Management 250

Appendices

A. Criteria for the Annual Performance Plan Measures and Targets A-1

B. DOE Office Designations B-1

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U.S. Department of Energy

Overview

This is the Department of Energy's Annual Performance Plan (APP) for FY 2004 and it accompanies the Department's FY 2004 President's Budget to Congress. It allows Congress to examine the results the Department proposes to deliver for the requested FY 2004 budget. This performance plan has been prepared under the Government Performance and Results Act of 1993 ("GPRA" or the "Results Act") and in accordance with Office of Management and Budget (OMB) guidance. This year's performance plan includes six years of performance information. It has "proposed" performance goals for FY 2004, "updated" performance goals for FY 2003 (pending appropriations), and related goals for FY 2002, FY 2001, FY 2000 and FY 1999 with an assessment of their results. The plan is one of the three recurring documents required by the Results Act, namely the Strategic Plan, Annual Performance Plan, and the Performance and Accountability Report. Together, they create a continuing cycle of planning, program execution, and reporting.

Following the Administration's lead on management reform, DOE has integrated its performance measures with the budget. As such, this Annual Performance Plan is an executive level summary of the detailed budget. Additional performance measures may be found in the detailed budget.

We have organized program level performance goals ("Program Strategic Performance Goals" or "PSPGs") by 17 DOE goals, directly linking resources to results. These performance goals give us a basis to separate long-term, "outcome-oriented" performance indicators from annual, "output-oriented" targets. As in the past, we appreciate the comments and constructive feedback we receive from Congress, the General Accounting Office (GAO), and OMB, as part of our continued commitment to making this a useful tool in managing our work.

The Mission of the Department of Energy is:

To promote clean, abundant, affordable, and reliable energy; reduce the global danger from nuclear, chemical, and biological weapons while maintaining the U.S. nuclear stockpile; and advance energy-related sciences for the betterment of mankind.

To implement this mission, the resources requested for FY 2004 are: $23.4 billion.

Introduction

Results for Resources

Our government is committed to improving accountability to the taxpayers through implementation of the Government Performance and Results Act of 1993 (the "Results Act" or GPRA). This law requires agencies to develop strategic plans, annual performance plans, and annual performance plan (APP). This APP has been prepared to meet the law's requirements: (1) establishing performance goals that include the level of performance to be achieved written in meaningful, objective, quantifiable, and measurable form; (2) briefly describing the resources required to meet those performance goals; and (3) describing how performance will be measured and compared with the goals. The President's Office of Management and Budget (OMB) has issued guidance to agencies for preparing these plans, but has provided flexibility in choosing the appropriate format.

DOE's FY 2004 APP builds upon the progress in integrating budget and performance, one of the five initiatives addressed under President Bush's Management Agenda (PMA). The performance goals and targets in this plan are an executive level summary of the goals and targets in the Department's budget. The process of developing performance goals and targets for this plan was an integral part of the budget development process, the program effectiveness scoring process using the Program Assessment Rating Tool (PART), and the R&D investment criteria scoring process.

Consistency with the Strategic Plan and Relationship to the Budget

DOE maintains a close relationship between the Strategic Plan, the APP, and the budget. The Department is currently revising its Strategic Plan and it is due for publication in the Spring of 2003. With this submission of the APP, the performance goals and targets have been rearranged and presented around the 17 DOE goals. This APP begins with the Department's mission statement. The mission is accomplished through 12 operational goals and five management goals. These goals are supported by Program Strategic Performance Goals (PSPGs), which are implemented through GPRA Program Activities, and are rearranged and presented in alignment with the new Strategic Plan.

Performance Measurement Terminology

The *17 Goals* are long-term, outcome-oriented statements written in a manner that allows for future assessment of progress. This Plan has divided these goals into four areas: Energy, Defense, Science, and Management.

Program Strategic Performance Goals (PSPGs) are quantified statements of the intended outcome or output from a major program during the next 3 - 5 years (or a longer period that is appropriate for the program) toward a particular Department goal.

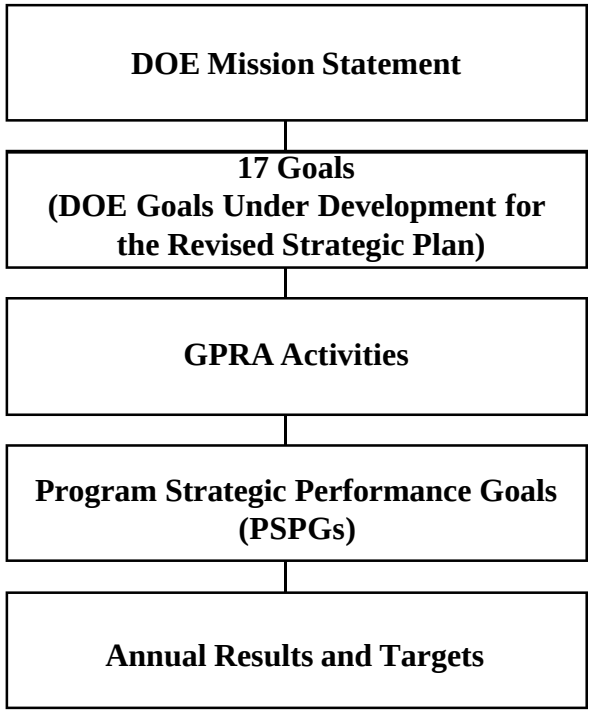
Performance Indicators are quantitative measures of longer-term progress toward the PSPG. A performance indicator demonstrates the effectiveness and efficiency of achieving intended outputs or outcomes. Some examples of performance indicators are: product unit cost, planned versus actual milestones, energy use per square foot in buildings, and citation of DOE research (by fiscal year) in published literature.

Annual Performance Targets are measures of program/subprogram outputs toward the PSPG. Targets are specific statements of fiscal year goals.

The Department policy on performance measurement states that performance measures should be specific, quantifiable, complete, supporting, achievable, concise, written for ease of understanding, comprehensive, auditable, proportional, precise/accurate and meaningful/relevant. Appendix A provides the definition of these criteria.

In this performance plan we present annual targets for six years, FY 2004 – FY 1999. For the budget year, FY 2004, annual targets are "proposed targets." For FY 2003, these targets are "updated targets" but will be revised after the Congressional budget appropriations. For FY 2002 to FY 1999, we include "related results" in accordance with OMB Circular A-11 guidance.

As shown in the figure that follows, the mission is implemented through four levels.



Department of Energy Performance Plan Hierarchy

DOE program activities are aligned with the Department's FY 2004 Budget Request and contain annual performance targets by fiscal year. This approach allows us to clearly link annual performance with annual budget resources and the Strategic Plan goals. We believe this method of linkage allows a clear relationship among budget resources, performance goals, and the Strategic Plan.

Table 1, located at the end of this introduction, lists the Department's 17 goals, GPRA activities, and program strategic performance goals.

This relationship to the Strategic Plan is encoded in the reference numbering of each level. The PSPGs have retained the same numbering convention to ease in the transition to the new goal alignment format. The goals were coded with two letters: NS for National Nuclear Security, ER for Energy Resources, etc. The PSPGs are numbered to indicate the previous Department goal, the strategic objective, and the sequential number of the program strategic performance goal, e.g., ER1-1. A crosswalk between the previous APPs and this APP is at Table 2, also at the end of this section. The GPRA program activities are not numbered because they support multiple PSPGs that can support different strategic objectives in different Department goals.

Organization of this Plan and Presentation Format

In the chapters that follow, we associated each DOE program activity with the PSPGs supported by that activity. Then for each PSPG, we list one or more performance indicators the Department will use to measure long-term progress.

Following the performance indicators, we present a six-year (FY 2004-FY 1999), side-by-side presentation of annual performance results and targets. For FY 2004, we list proposed targets consistent with the budget request. For FY 2003, we have included the updated targets from those proposed in the FY 2003 APP organized under the new PSPGs. Some of the annual targets proposed in the FY 2003 APP did not relate to the new FY 2004 improved targets, and as such are not shown in the side-by-side tables. After the FY 2003 budget appropriations, DOE will make a determination, and with proper explanation, address the presentation or exclusion of these FY 2003 annual targets.

For FY 2002 - FY 1999, we have included related targets with an assessment of their results. A complete description of results for these targets can be found in the Department's FY 2002 Performance and Accountability Report.

Consultation

In preparing this APP, DOE is incorporating improvements based on the GAO and Congressional feedback we received on the FY 1999 through FY 2003 APPs. The general format of the plan is the same as the FY 2003 plan. Consultation with Congress on the content of this plan will be conducted through the Congressional review of the budget.

The Department recognizes that the preparation of this APP is an inherently governmental function. As such, only Federal employees developed the content of the plan, and no non-Federal parties made any contributions.

Planned Improvements in the FY 2004 Plan

The Department is continuing the implementation of its plan to integrate budget and performance, one of the five initiatives under the PMA. The goals and strategies being developed for the Department's revised Strategic Plan will provide an improved linkage of the annual performance measures proposed in this plan. In FY 2002 the Department made further progress in five key areas:

(1) Alignment of performance goals with budget accounts.

(2) Quantifiable/quantified performance goals.

(3) Accountability at all levels of the Department.

(4) Revised criteria for assessing the extent to which the goals were met.

(5) Implementing a new improved performance measures tracking database.

The PSPGs provide a direct linkage between this APP and the major program accounts in the Department's budget. To maintain the emphasis of this plan on the most important programmatic and Administration priorities, the PSPGs presented focus on the Department's key programmatic outcomes and on activities conducted to support the PMA. The Department's budget presents many additional performance measures that cover activities of offices in the Departmental Administration and the program direction accounts.

The Department also made significant progress in making performance goals and targets specific and quantifiable. Our performance goals and targets are improved from prior years. Further, the Department continues to build on the improvements made last year in our FY 2003 APP. Our FY 2004 performance measures are presented along side the FY 2003, FY 2002, FY 2001, FY 2000, and FY 1999 measures, making the progress in each area clear and succinct.

In the area of accountability, the Department has clearly laid down a framework of responsibility for the accomplishment of goals. Accountability means two things. First, line managers "own" specific corporate-level and program-level goals, and they are responsible for achieving those goals. Second, the budget is aligned with the

organization so that it is obvious that the accountable manager has control of the resources necessary to achieve the assigned goal.

Criteria for Assessing our Results

DOE revised the terms and criteria for assessment of past performance in FY 2002. The new terms and criteria minimize subjectivity and improve consistency of application across the Department. We will continue to use the following terms:

Met Goal: Results were acceptable, i.e. 100 percent of the target as defined was met.

Mixed Results: Results were mixed, i.e. target was achieved late, but before the end of fiscal year, or the target was only partially met (80-99 percent).

Not Met: Results were unacceptable, i.e. results were less than 80 percent of the target by the end of fiscal year.

Next Steps for this Plan

This initial APP accompanies the Department's FY 2004 performance-based budget submission to Congress. Although not required under GPRA, but allowed by OMB, the Department will develop a revised performance plan for FY 2003 and FY 2004 based on the appropriated budget.

The Department intends to track progress internally on a quarterly basis and on an annual basis as required by the Results Act, Government Management Reform Act of 1994, the Reports Consolidation Act of 2000, and the DOE Organization Act of 1977.

Validation and Verification of Performance

Validation and verification (V&V) of the Department's performance will be accomplished by periodic reviews, certifications, and audits. Because of the size and diversity of the Department's portfolio, V&V is supported by extensive automated systems, external expert analysis, and management reviews.

For the overall Agency, the Office of Program Analysis and Evaluation in the Office of Management, Budget and Evaluation (PA&E/OMBE), will issue GPRA guidance on reporting in the December timeframe when the staff begins to report on the first quarter status. DOE's end-of-year reporting process includes certifications by heads of organizational elements regarding the accuracy of reported results. The results are reviewed for quality and completeness by PA&E/OMBE, and are reviewed and audited by the Office of the Inspector General. Multiple data sources exist within the program offices performing the work, the National Laboratories, or our contractors. The performance reporting process requires that heads of Departmental elements report the status of the revised final performance measures and certify that the information provided is accurate and complete.

The Department has been using a computer system called SOLOMON to collect and present results and performance since FY 1995. However, in FY 2002, the Department acquired new commercial software for performance tracking. The new system, "Joule" has been fully implemented and is tracking FY 2003 results.

Joule is a system that allows remote data entry, monitoring, and oversight. Data entry is controlled through a password system. Program offices and managers directly update results and performance assessments during the year and the end-of-year information is used for analysis and for preparation of the Performance and Accountability Report.

In accordance with the Federal Managers' Financial Integrity Act of 1992 (FMFIA), the Department will continue evaluations of its management controls in effect during the fiscal year. Our evaluations include an assessment of whether the management controls of the Department were in compliance with the standards prescribed by the Comptroller General. The purpose of these evaluations is to provide reasonable assurance that the management controls are working effectively, that program and administrative functions including the accuracy and reliability of the reporting of performance results are performed in an economical and efficient manner consistent with applicable laws, and potential for waste, fraud, abuse, or mismanagement of assets was minimized.

The Inspector General audits the reporting of Departmental performance and financial information. For FY 1999, FY 2000, FY 2001, and FY 2002 the Department received unqualified audit opinions. The Inspector General continues to note concerns with the presentation of the overview and quality of our performance measures. We believe we have made significant progress in establishing better measures in the FY 2004 plan.

Management Challenges

The Department has been identifying for the President, Congress, and ultimately the public, areas of vulnerability in the operations of Government. DOE's internal control process has been established to identify Departmental Management Challenges and develop plans to address them, under FMFIA. In FY 2002 the internal controls committee continued Performance Management as a management challenge. The Department's performance management processes need to be improved in order to ensure that our programmatic activities are results driven and focused on achieving valid outcome-oriented goals.

Waivers

The Department intends to continue to combine performance reporting with its financial statements. The Department's Performance and Accountability Report, prepared in accordance with the Reports Consolidation Act of 2000, will also meet the requirements for an annual performance report in accordance with the Results Act. The Department has made no request for waivers of administrative requirements to provide managerial flexibility.

Resource Requirements

The Department will only achieve its established goals with adequate financial, human, infrastructure, and technical resources. Financial resources appropriated by Congress have supported the Department's tradition of scientific excellence as evidenced by our innovative solution to some of the most important scientific, national security, energy, and environmental challenges facing America's future.

For FY 2004 the Department is requesting $23.4 billion. Our programs promote National Security through scientific progress; ensuring the availability of secure, clean, and efficient energy resources; cleaning up the legacy of the Cold War; and strengthening the safety and health programs across the DOE complex.

Our human resources include both Federal and contractor personnel. The requested funding includes the cost of 16,090 Full-Time Equivalent (FTE) Federal personnel and approximately 101,000 contractor personnel.

In order to meet the Nation's needs for cutting-edge science, DOE must periodically replace or make major upgrades to aging or outdated major experimental facilities. These needs will be weighed against the benefits from cost-effective modifications to existing facilities to ensure that the maximum national benefits are derived from existing infrastructure—this recognizes, however, that many of these science facilities have a finite useful life.

Undoubtedly, further advances in computation and communication will aide the continuing push toward a more seamless, connected science establishment. Opportunities for laboratory collaboration, remote experimentation, scientific simulation as a potential substitute for more costly experimentation, and sharing and access to vast quantities of scientific data and information will continue to place demands on computation and communication capabilities within the science programs.

Table 1: Linkage Between the Department's 17 Goals listed in the Revised Strategic Plan and Department Activities by Program

Strategic Goal	Description
Energy Goals	
Goal 1: Energy Supplies	Through public-private partnerships, DOE's policy and research will provide the technology capable of developing abundant, reliable, affordable, and environmentally-sound energy supplies.
Goal 2: Energy Conservation and the Environment	Energy use and green-house gas emissions versus the Gross Domestic Product (GDP) are reduced by 40 percent by 2025 compared to 2000 and the growth versus the U.S. population stops by 2025.
Goal 3: Energy Infrastructure	The vulnerabilities and improvements necessary in the Nation's energy infrastructure are well understood and the Government's Power Marketing Administrations are models of implementing recommended improvements.
Goal 4: Long-Term Stewardship of Radioactive Materials	The long-term disposition and monitoring of all U.S. spent nuclear fuel and high-level radioactive waste is planned, provided for, approved, and in progress.
Goal 5: Energy Information	The Department is the definitive source of energy-related information and forecasts.
Defense Goals	
Goal 6: Nuclear Weapons Stewardship	DOE maintains a safe, secure, and reliable nuclear weapons stockpile.
Goal 7: Control of Weapons of Mass Destruction	All weapons of mass destruction are under controls acceptable to the United States Government.
Goal 8: Defense Nuclear Power	The Department of Defense's needs for reliable and militarily effective nuclear power are continuously met.
Goal 9: Cold-War Era Legacy Cleanup	By 2025, all but six sites of the Nation's environmental legacy from the Cold War era are cleaned up risks reduced to levels approved by DOE, NRC and EPA. (BY 2035, DOE's cleanup of the Cold War era legacy will be completed.)
Science Goals	
Goal 10: Scientific Advancement	DOE-sponsored research leads the world in scientific advances in energy-related basic sciences.
Goal 11: Medical Applications	DOE is the recognized leader in the integration of the physical sciences, biology, and engineering, providing innovative interdisciplinary approaches and technologies that improve human health.
Goal 12: Scientific Facilities	DOE is the major provider of the Nation's research facilities for the physical sciences and computation, and contributes unique, vital facilities to the biological and environmental sciences.

Table 1: Linkage Between the Department's 17 Goals listed in the Revised Strategic Plan and Department Activities by Program (continued)

Strategic Goal	Description
Management Goals	
Goal 13: Management Effectiveness	DOE is considered an outstanding steward of taxpayers' dollars.
Goal 14: Human Capital Management	DOE has highly skilled, well-qualified, and diverse workforce capable of successfully completing the missions of the Department of Energy and DOE is a model for responsible treatment of its workers, both current and past.
Goal 15: Information Management	DOE's official internal and contracting processes are paperless and DOE is responsive to communications via all government supported media while protecting privacy and ensuring security.
Goal 16: Facility Management	DOE achieves and maintains a quality, safe and secure, state of the art facility infrastructure that is fully capable of meeting the Department's mission and creates a work environment that will enable the Department to effectively compete with the private sector in attracting and retaining a quality workforce.
Goal 17: Site Management	DOE's real estate holdings (land) are reduced by at least 10 percent (excluding the Nevada Test Site and the Idaho National Engineering and Environmental Laboratory) from its holdings in FY 2000.

Table 2. Crosswalk from the Previous Departmental Goal Numbering Convention to the Revised DOE Strategic Plan Goals in the FY 2004 Annual Performance Plan Location

Previous Numbering Convention	Goal Description	FY 2004 APP Location
National Nuclear Security		
NS1	Maintain and enhance the safety, security, and reliability of the nation's nuclear weapons stockpile to counter the threats of the 21st century. (NA-DP)	Goal 6
NS2	Detect, prevent, and reverse the proliferation of weapons of mass destruction while promoting nuclear safety worldwide. (NA-NN)	Goal 7
NS3	Provide the Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operation. (NA-NR)	Goal 8
NS4	Ensure the vitality and readiness of the NNSA's nuclear security enterprise. (NA)	Goal 6
NS5	Create a well-managed, responsive and accountable organization. (NA)	Removed*
Energy Resources		
ER1	Use public-private partnerships to promote energy efficiency and productivity technologies in order to enhance the energy choices and quality of life of Americans in 2020 relative to 2000 by: reducing the oil intensity of the U.S. economy by 25 percent (compared to 23 percent without EE programs); reducing energy intensity in the U.S. economy by 32 percent (compared to 28 percent without EE programs); and, reducing the need for additional electricity generating capacity by 10 percent (compared to the case without EE programs). (EE)	Goal 2 Except ER1-5 which is located in Goal 3
ER2	Use public private partnerships to bring cleaner, more reliable, and more affordable energy technologies to the marketplace, enhancing the energy choices and quality of life of Americans in 2020, relative to 2000, by: increasing the share of renewable energy to 10 percent (compared to 8 percent without EE programs); increasing the share of renewable-generated electricity to 12 percent (compared to 8 percent without EE programs); and, doubling the share of capacity additions accounted for by distributed power, which increases distributed generation to 11 percent of all electricity generation (compared to 8 percent without EE programs). (EE)	Goal 1
ER3	Reduce the burden of energy prices on low-income families by working with state and local agencies to weatherize at least 123,000 homes per year from 2003 through 2005. (EE)	Goal 2
ER4	Create public-private partnerships to provide technology to ensure continued electricity production from the extensive U.S. fossil fuel resource, including control technologies to permit reasonable-cost compliance with emerging regulations, and ultimately, by 2015, zero emission plants (including carbon) that are fuel-flexible, and capable of multi-product output and efficiencies over 60 percent with coal and 75 percent with natural gas. (FE)	Goal 1
ER5	By 2010, add over 1 million barrels per day of domestic oil production and almost 2 trillion cubic feet (TCF) per year of additional natural gas production as a result of technologies and practices from DOE supported research and development. (FE)	Goal 1
ER6	Maintain the Strategic Petroleum Reserve in a state of readiness to supply oil at sustained rate of 4.4 million barrels per day for 90 days within 15 days notice by the President. (FE)	Goal 1

Table 2. Crosswalk from the Previous Departmental Goal Numbering Convention to the Revised DOE Strategic Plan Goals in the FY 2004 Annual Performance Plan Location (continued)

Previous Numbering Convention	Goal Description	FY 2004 APP Location
Energy Resources (continued)		
ER7	Expand the capability of nuclear energy to contribute to the Nation's near and long-term energy needs by investing in our Nation's nuclear R&D infrastructure and promoting advanced research, such that by December 2004, the average capacity of existing U.S. nuclear power plants will increase from 0 to 92 percent; a new nuclear power plant construction project will be initiated in the United States; and a conceptual design will be developed for a nuclear energy system that addresses the technology issues hindering the worldwide expansion of nuclear power. (NE)	Goal 1 Except Goal ER7-4 in which portions are located Goals 1 and 11.
ER8	Provide national and international energy data, analysis, information and forecasts to meet the needs of the energy decision-makers and the public in order to promote sound policymaking, efficient energy markets and public understanding. (EIA)	Goal 5
ER9	The power marketing administrations ensure Federal hydropower is marketed and delivered while passing the North American Electric Reliability Council's Control Compliance Ratings, meeting planned repayment targets, and achieving a recordable injuries frequency rate at or below our safety performance standard (PMAs)	Goal 3
Science		
SC1	Manage a program that provides world-class, peer-reviewed research results in the scientific disciplines encompassed by the High Energy Physics mission areas, cognizant of the needs of DOE and of the wider scientific community. (Proton Accelerator-Based Physics, Electron Accelerator-Based Physics, Non-Accelerator Physics, Theoretical Physics and Advanced Technology subprograms)	Goal 10
SC2	By 2015, describe the properties of the nucleon and light nuclei in terms of the properties and interactions of the underlying quarks and gluons; by 2010, establish whether a quark-gluon plasma can be created in the laboratory and, if so, characterize its properties; by 2020, characterize the structure and reactions of nuclei at the limits of stability and develop the theoretical models to describe their properties, and characterize using experiments in the laboratory the nuclear processes within stars and supernovae that are needed to provide an understanding of nucleosynthesis. (SC)	Goal 10
SC3	By 2010, develop the basis for biotechnology solutions for clean energy, carbon sequestration, environmental cleanup, and bioterrorism detection and defeat by characterizing the multiprotein complexes that carry out biology in cells and by determining how microbial communities work as a system; and determine the sensitivity of climate to different levels of greenhouse gases and aerosols in the atmosphere and the potential resulting consequences of climate change associated with these levels by resolving or reducing key uncertainties in model predictions of both climate change that would result from each level and the associated consequences. (SC)	Goal 10
SC4	Provide leading scientific research programs in materials sciences and engineering, chemical sciences, biosciences, and geosciences that underpin DOE missions and spur major advances in national security, environmental quality, and the production of safe, secure, efficient, and environmentally responsible systems of energy supply; as part of these programs, by 2010, establish a suite of Nanoscale Science Research Centers and a robust nanoscience research program, allowing the atom-by-atom design of revolutionary new materials for DOE mission applications; and restore U.S. preeminence in neutron scattering research and facilities. (SC)	Goal 10

Table 2. Crosswalk from the Previous Departmental Goal Numbering Convention to the Revised DOE Strategic Plan Goals in the FY 2004 Annual Performance Plan Location (continued)

Previous Numbering Convention	Goal Description	FY 2004 APP Location
Science (continued)		
SC5	Enable advances and discoveries in DOE science through world-class research in the distributed operation of high performance, scientific computing and network facilities; and to deliver, in 2006, a suite of specialized software tools for DOE scientific simulations that take full advantage of terascale computers and high speed networks. (SC)	Goal 10
SC6	Advance the fundamental understanding of plasma, the fourth state of matter, and enhance predictive capabilities, through the comparison of well-diagnosed experiments, theory and simulation; for Magnetic Fusion Energy (MFE), resolve outstanding scientific issues and establish reduced-cost paths to more attractive fusion energy systems by investigating a broad range of innovative magnetic confinement configurations; advance understanding and innovation in high-performance plasmas, optimizing for projected power-plant requirements; develop enabling technologies to advance fusion science, pursue innovative technologies and materials to improve the vision for fusion energy; and apply systems analysis to optimize fusion development; for Inertial Fusion Energy (IFE), leveraging from the Inertial Fusion Confinement (ICF) program sponsored by the National Nuclear Security Administration's Office of Defense Programs, advance the fundamental understanding and predictability of high energy density plasmas for IFE. (SC)	Goal 1
SC7	Provide major advanced scientific user facilities where scientific excellence is validated by external review; average operational downtime does not exceed 10 percent of schedule; construction and upgrades are within 10 percent of schedule and budget; and facility technology research and development programs meet their goals. (SC)	Goal 12 Except SC7-6 which is located in Goal 1.
Environmental Quality		
EQ1	Safely and expeditiously manage waste; clean up facilities and the environment; and stabilize and store nuclear material and spent nuclear fuel, with the intent to complete cleanup of 16 additional sites by the end of 2006 bringing the total number of sites cleaned to 92 out of the total 114. (EM)	Goal 9
EQ2	Obtain requisite licenses, construct and, in 2010, begin acceptance of spent nuclear fuel and high-level radioactive wastes at the repository. (RW)	Goal 4
EQ3	Reduce the number of deaths, injuries and illnesses and environmental releases from environment cleanup and other operational activities such that DOE organization activities remain below their averages established by DOE's last 5 years of data for (1) Total Recordable Case Rate; (2) Occupational Safety Cost Index; (3) Hypothetical Radiation Dose to the Public; (3) Average measurable dose to DOE workers; and, (5) Reportable Occurrences of Releases to the Environment. (EH)	Goal 16
EQ4	Assist DOE contract workers and communities that have been adversely affected as the result of downsizing or closing of Department facilities due to a change in or termination of their program mission by providing (1) separation benefits comparable to industry standards while achieving annual savings that are three times the one-time cost of separation; and, (2) creating and retaining jobs in the communities to absorb the displaced workers. (WT)	Goal 14

Table 2. Crosswalk from the Previous Departmental Goal Numbering Convention to the Revised DOE Strategic Plan Goals in the FY 2004 Annual Performance Plan Location (continued)

Previous Numbering Convention	Goal Description	FY 2004 APP Location
Corporate Management		
CM1	Achieve effective and efficient management of the Department of Energy by implementing the President's Management Agenda initiatives on Strategic management of Human Capital; Competitive Sourcing; Improved Financial Performance; and Budget and Performance Integration. (ME, ED)	Goal 13 Except CM 1-1 which is located in Goal 14.
CM2	Implement the President's E-government initiatives by developing a framework for existing Information Technology and building a roadmap for corporate direction. (CIO)	Goal 15
CM3	Ensure secure, efficient, effective and economical operations of the Department's Information Technology Systems and Infrastructure. (CIO)	Removed*
CM4	Provide analysis of domestic and international energy policy, develop implementation strategies, ensure policies are consistent across DOE and within the Administration, communicate analyses and priorities to the Congress, public, industry, foreign governments, and domestic and international organizations, and enhance the export and employment of energy technologies internationally. (PI)	Removed*
CM5	Reduce adverse security incidents, worker injuries, and environmental releases through policy development, counterintelligence, intelligence, and oversight of the Nation's energy infrastructure, nuclear weapons, materials, facilities, and information assets. (SO, CN, IN, OA)	Goal 16
CM6	Operate a robust review program and provide timely performance information and recommendation to facilitate: (1) implementation of the President's Management Agenda; (2) resolution of Management Challenges; (3) execution of the Secretary's priorities; (4) completion of statutory Inspector General mandates; (5) recovery of monies and opportunities for savings; and, (6) the integrity of the Federal and contractor workforce. (IG)	Removed*

** Internal management goals contribute to the delivery of the programatic goals described in this plan and are no longer presented as outcomes themselves.*

GOAL 1: Energy Supplies

Through public-private partnerships, DOE's policy and research will provide the technology capable of developing abundant, reliable, affordable, and environmentally sound energy supplies.

Description of the Program:

DOE enhances the Nation's energy supplies by conducting R&D in renewable energy, oil and gas, coal, and nuclear energy. In addition, DOE's Strategic Petroleum Reserve is an important source of energy during tight oil supply situations. Energy supply programs are executed in four DOE Offices: Science, Energy Efficiency and Renewable Energy, Fossil Energy, and Nuclear Energy, Science and Technology.

Most of the renewable energy being researched by DOE, including wind and solar is, inherently environmentally sound. DOE's stewardship of the environment is further demonstrated by the research efforts underway in carbon sequestration, and other coal and oil technology programs. Hydrogen, a potential energy carrier for the future, is being advanced by DOE's research and development toward its generation through coal, nuclear, and renewable resources; as well as its delivery and consumption in vehicular and stationary fuel cells that convert the hydrogen to electricity. The use of hydrogen in fuel cell vehicles is included in the discussion of Freedom Car and Vehicle Technologies in Goal 2. The following provides a description of DOE programs designed to achieve the Department's energy supply goal.

ER-2: Renewables:

Hydrogen, wind, hydropower, biomass, solar, and geothermal are the renewable energy sources. The purpose of the Renewable program is to identify and develop unending energy sources for growing U.S. needs. Wind, hydropower, solar, and geothermal offer the most environmentally sound alternatives to today's consumption of fossil fuels and strategies are under development to reduce or eliminate emissions from other renewable resources.

ER-2-1: Renewables (Hydrogen, Fuel Cells, and Infrastructure Technologies):

The mission of the Hydrogen, Fuel Cells, and Infrastructure Technologies Program is to develop hydrogen production, storage, delivery, and fuel cell technologies that are more energy efficient, cleaner, safer, and lower in cost. The long-term aim is to accelerate progress toward an energy future for the Nation where hydrogen plays a more significant role as an energy carrier in all sectors of the economy and all regions of the country. Hydrogen, as an energy carrier, leads to increased energy resource diversity since it can be made from fossil, nuclear, and renewable resources. In the transportation sector, this will lead to less reliance on imported oil and in zero-emission vehicles. In the power sector, hydrogen leads to greater energy efficiency, lower pollutant emissions, including lower carbon emissions.

To accomplish this mission, the program conducts research, development, demonstration, testing, technology validation, technology transfer, standards formulation, and public outreach and education activities. The purpose is to aid in the development of hydrogen energy systems for transportation, distributed stationary power, and portable power applications. Stationary applications in buildings include combined heat and power generation. Transportation applications include fuel cell and hydrogen infrastructure development in support of the FreedomCAR initiative.

ER-2-2: Renewables (Wind Energy and Hydropower:

The Wind Energy and Hydropower program conducts research and development to enhance the level of technology development and deployment of the Nation's fastest growing and the most widely used renewable energy resources.

Wind is the fastest growing form of renewable energy in America. However, unless wind technologies are developed that can generate electricity economically in areas with relatively low wind speeds (e.g., Classes 3 and 4)[1], wind energy development could reach a plateau.

Hydropower is the most widely used form of renewable energy in the world today and accounts for about 7 percent of total electricity generation in the U.S. (77 percent of domestic renewable electricity generation). Those regions of the country that rely primarily on hydropower, from Power Marketing Administration (PMAs), have among the lowest electricity prices. For example, in the Pacific Northwest, up to 80 percent of electricity prices have historically been up to one-third lower than the national average. However, if the environmental performance such as the rate of fish mortalities of existing hydroelectric turbines cannot be improved, the operational capacity of the Nation's fleet of hydropower facilities could be reduced.

ER-2-3: Renewables (Biomass and Biorefinery):

Biomass includes agricultural crops, crop residues, forest resources and residues, dedicated energy crops, and animal wastes. Extracts from biomass can be converted into gaseous, liquid,

[1] Class 3 wind resource areas exhibit an annual average wind speed of 12 miles per hour at 30 feet above the ground. Class 4 have an annual average wind speed of 13 miles per hour at 30 feet above the ground.

and solid fuels for transportation and electric power production. They can also be converted into products such as plastics, coatings, foams, solvents, etc.

The mission of the Biomass and Biorefinery Systems R&D program is to develop new approaches for expanding the use of biomass for energy and industrial products by developing new industrial biorefinery technologies that are cleaner and more efficient, reliable, and lower in cost. The Program develops advanced techniques for several types of conversion processes including hydrolysis, fermentation, chemical conversion, gasification, pyrolysis, and other bioconversion and thermochemical methods for extracting energy and chemicals from biomass, focusing primarily on cellulosic feedstock. It also develops advanced equipment and techniques for expanding the infrastructure for collecting and transporting biomass materials.

The Biomass and Biorefinery Systems R&D program is working with some of the existing biorefineries in technology development and demonstration that will lead to greater biomass utilization. The deployment of advanced technologies can result in new industrial biorefineries that will contribute significantly to the reduction of fossil fuels use, emissions, and costs.

ER-2-4: Renewables (Solar Energy):

Sunlight could be harnessed to a much greater extent if solar energy technologies were more fully developed and affordable. For example, large-scale applications will require overall retail costs of solar power to be in the range of 6 to 9 cents per kWh. This is especially true if the higher cost of providing peak electricity supplies is not reflected in the prices paid by consumers. To meet this cost target, efficiencies for converting sunlight into electricity need to increase, system lives need to be longer to reduce replacement costs, and energy storage devices need to have greater efficiency and lower costs. These accomplishments will require fundamentally different technological approaches than those used in current applications. In addition, manufacturers, utilities, builders, and consumers will need to have more experience with the installation, operation, costs, and benefits of solar energy systems.

The mission of the Solar Energy Program is to find ways to help meet America's energy needs through the development of solar energy devices and systems that are more efficient, reliable, and affordable. Solar energy involves the conversion of sunlight into useful products such as electric power, process heat, hot water, and lighting. This can be accomplished on scales ranging from kilowatts to megawatts and can be used by electric utilities, manufacturing plants, commercial buildings, and residences. The Solar Energy program currently includes development of photovoltaic systems, concentrating solar power troughs and dishes, solar hot water heaters, and fiber optic lights. It also includes balance-of-plant components such as DC to AC power inverters and battery charge controllers.

The technologies developed by this program will provide the Nation with a domestic energy resource that helps meet peak electricity needs, reduces the stress on the critical electricity infrastructure, and helps to mitigate peak electricity price vulnerabilities. As a result, customers can have more choices for meeting their energy needs; utilities can have more choices for operating feeder lines, substations, transmission lines, and central-station power plants; and the Nation can have more flexibility in responding to rising energy prices, growing peak electricity demand changing in security assessments, or future environmental concerns.

ER-2-5: Renewables (Geothermal):

Beneath the surface of the Earth lie vast reservoirs of heat that can be captured and converted into electricity and thermal energy. The mission of the Geothermal Technology Program is to establish geothermal energy as an economically competitive contributor to the U.S. energy supply, capable of meeting a significant portion of the Nation's growing heat and power needs. The Program develops techniques for expanding the Nation's inventory of geothermal energy resources and improves our ability to use those resources by making geothermal technologies cleaner, more efficient, and lower cost.

America's geothermal resources include heat near the earth's surface, the hot water and steam reservoirs that are up to several miles further down, and the molten rock or magma, which lie below that. Much of America's existing geothermal resources are located on Federal lands in the Western states (including Alaska and Hawaii).

In accomplishing its mission, the Geothermal Technology Program will address national priorities for energy, environmental, and security policies. The technologies developed by this Program will provide the Nation with new sources of electricity supply that are highly reliable and cost competitive and do not add to America's air pollution problems or the emission of greenhouse gases. Geothermal electricity generation is not subject to price volatility from changes in global energy markets. Geothermal energy systems use a domestic and renewable source of energy and are not reliant on foreign sources of fuel.

ER-4: Coal:

The Coal and Power Systems research, development, and demostration (RD&D) program addresses the energy and environmental demands of the post-2000 domestic market, including increasing international pressure to reduce greenhouse gas emissions, and helps U.S. industry meet the needs of a currently large and growing export

market, while contributing to national energy security. This program is focused on five performance goals. The first is to develop super-clean emission control systems for SO_2, NO_x, air toxics, and particulate matter that can be applied to existing plants. The second is to develop progressively higher efficiency and cleaner power generation systems, which will ultimately evolve into a "Vision 21" fleet of new power and energy plants with near zero levels of pollutants. The third performance goal is to develop economically competitive technologies for the production of alternative transportation fuels and chemicals. The fourth goal is to evaluate economically viable approaches to carbon sequestration to address climate change concerns. The fifth is for distributed generation systems to lower electricity costs while improving reliability. Included in this category is Clean Fuels R&D, which seeks to create mid- to long-term options for producing fuels for transportation and other end-use sectors from alternative domestic resources, such as coal and natural gas.

ER-5: Domestic Oil and Gas Supply:

The Department's Domestic Oil and Gas Supply Program invests in technology projects and in policy and regulatory analyses designed to ensure the availability of competitively-priced oil and natural gas supplies to support a strong U.S. economy, and to maximize the public benefit of the Nation's oil and gas resources. The Program's R&D activities focus on protecting the environment while enhancing the efficiency of domestic oil and natural gas exploration, recovery, processing, transport, and storage operations. Gas hydrates, a potential source of hydrogen in the future, is also being advanced in this program.

ER-6: Petroleum Reserves:

Petroleum Reserves includes the Strategic Petroleum Reserve (SPR), the Northeast Home Heating Oil Reserve, and the Naval Petroleum and Oil Shale Reserves (NPOSR). The SPR ensures and maintains the readiness capability to draw down and distribute crude oil from the SPR inventory to commercial distribution systems in order to protect the domestic U.S. economy from the impact of energy supply disruptions. SPR executes U.S. obligations to act cooperatively with member nations of the International Energy Agency (IEA) to deter or respond to supply disruptions, which would adversely affect member nations. The NPOSR continues to manage, operate, maintain, and produce three reserve properties under its jurisdiction. The program is relatively small, and no performance goals are included in this Annual Performance Plan. The Energy Policy Act of 2000 (Public Law 106-469), signed on November 9, 2000, authorizes the Secretary of Energy "to establish, maintain, and operate a Northeast Home Heating Oil Reserve containing no more than two million barrels of petroleum distillate." On March 6, 2001, Secretary Spencer Abraham announced the permanent establishment of the Reserve, separate from the Strategic Petroleum Reserve.

ER-7: Nuclear Energy:

The Nation's investments in nuclear energy R&D ensure the benefits that are now routinely expected by the public, and are likely to accrue new benefits. Currently, emission-free nuclear power plants produce 20 percent of our Nation's electricity. The *National Energy Policy* calls for the expansion of nuclear energy in the United States. In support of this policy, the Department's nuclear energy R&D programs address improving the performance of the Nation's current operating nuclear power plants, addressing the key technical issues impacting the expanded use of nuclear energy, deploying new nuclear plants by 2010, and developing advanced reactor and fuel cycle concepts. Nuclear Energy's R&D is conducted under the following programs: Nuclear Energy Plant Optimization; Nuclear Energy Research Initiative; Nuclear Energy Technologies; Advanced Nuclear Medicine Initiative; and Spent Fuel Pyroprocessing and Transmutation.

To retain the capability in the U.S. to conduct research, address pressing environmental challenges, and preserve the nuclear energy option, DOE must work with U.S. university nuclear engineering programs to maintain the education and training infrastructure necessary to develop the next generation of nuclear scientists and engineers. The University Reactor Fuel Assistance and Support program provides funding for U.S. university nuclear engineering programs and university research reactors, which play a critical role in providing this education and training. While the number of nuclear engineering programs and research reactors in the United States has declined precipitously during the 1980s and 1990s, the Nation's need for nuclear engineers and nuclear trained personnel is on the rise due to the lack of large numbers of recent nuclear engineering graduates and the increasing number of retirements in the nuclear field. Demand for nuclear engineers now exceeds supply. Infrastructure programs provide for the management of the Department's vital resources and capabilities at sites and facilities assigned to the Office of Nuclear Energy, Science and Technology (NE). These resources ensure that the Department's unique facilities are available to meet the vital missions of the Federal government, and that these assets are maintained in a safe, secure, environmentally-compliant and cost-effective manner, ensuring the protection of site workers, the public, and the environment.

SC-6 and SC-7: Fusion Energy:

Fusion science is a sub field of plasma science that deals primarily with studying the fundamental processes taking place in plasmas where the temperature and density approach the conditions

needed to allow the nuclei of two low-mass elements, like hydrogen isotopes, to join together, or fuse. When these nuclei fuse, a large amount of energy is released. Fusion science research is organized around the two leading methods of confining the fusion plasma—magnetic, where strong magnetic fields constrain the charged plasma particles, and inertial, where laser or particle beams compress the plasma in ultra-short pulses.

The Fusion Energy Sciences (FES) program within the Department's Office of Science (SC) leads the national research effort to advance plasma science, fusion science, and fusion technology—the knowledge base needed for an economically and environmentally attractive fusion energy source. The FES program has three major components: science, facility operations, and enabling research and development. Research efforts are distributed across efforts at universities, laboratories, and private sector institutions. In addition to a major research facility at Massachusetts Institute of Technology (MIT), there are several smaller experimental facilities located at other universities. There are two other major facilities, located at a national laboratory, and a private sector institution. Enabling research and development supports and improves the technical capabilities for ongoing experiments and provides long-term development for future fusion power requirements.

Program Activity Funding: Energy Supplies				
Program Strategic Performance Goal (PSPG)		**Comparable Appropriation**		
	DOE Office	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
TOTAL FUNDING: The total funding for this goal.		1,450	1,432	1,455
ER2-1: The Hydrogen and Fuel Cell Technology program will: (1) develop and demonstrate distributed hydrogen generation technology that will reduce the cost of producing hydrogen from natural gas from $5.00 per gallon of gasoline equivalent (untaxed) in 2000, when produced in large quantities, to $1.50 per gallon of gasoline equivalent (untaxed) in 2010; 2) Fuel Cell R&D activities will reduce the production cost of the hydrogen- or gasoline-fueled, 50 kW vehicle fuel cell power system (including hydrogen storage) from $275/kW in 2002 to $45/kW in 2010 at production levels of 500,000 units per year (projected cost); 3) Stationary Fuel Cell R&D activities will increase the efficiency of natural gas or propane fueled 50kW stationary fuel cell systems from 29 percent in 2002 to 40 percent in 2010.	EE			
ER2-2: The Wind Energy and Hydropower Program has the following overall performance goals: (1) by 2012, wind energy R&D activities will provide the technologies to reduce the cost of wind powered electricity generation in Class 4 wind areas from 5.5 to 3 cents per kWh ; and (2) hydropower R&D activities will enable commercialization of a fish passage technology capable of reducing turbine-induced fish mortality from 30 percent to 2 percent or less.	EE			
ER2-3: The Biomass and Biorefinery Systems Programs will (1) by 2020, develop and verify gasification technologies which enable the increased efficiency of biopower systems from the current 20 percent efficiency to 30-35 percent; by 2010, complete development and field verify the efficiency of next generation, small, modular, biopower generation systems, with a unit cost reduction of 50 percent from the 11 cents per kWh baseline in 2000 to 5.5 cents per kWh (as stand alone systems outside of the biorefinery); (2) by 2010, develop the bioconversion technologies necessary for reducing the production cost of cellulosic ethanol from $1.40 to $1.22 per gallon, and, by 2020, to $1.00 per gallon, through technology improvements for the co production of ethanol, electricity, and bio-based chemicals (this cost is equivalent to the cost of high value petroleum based additives that refineries must pay in order to produce gasoline that satisfies octane and emission requirements specified by EPA and the automobile manufacturers); (3) By 2010, through collaborative research projects with industry, universities and national laboratories, develop and verify cost competitive, energy efficient, process technologies for biobased products that will enable, by 2020, a domestic market of at least 50 billion lbs per year of biobased products - an increase of more than threefold - from current sales of about 15 billion lbs/yr.	EE			

Program Activity Funding: Energy Supplies				
Program Strategic Performance Goal (PSPG)		**Comparable Appropriation**		
	DOE Office	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
ER2-4: The Solar Program will: (1) by 2006, reduce the cost of grid-tied (battery free) photovoltaic systems to the end user (including operation and maintenance costs) to $4.50 per Watt, from a median value of $6.25 per Watt in 2000, which requires a reduction in the cost of the PV module itself to $1.75 per Watt, compared with a current cost of $2.50 per Watt and would reduce the average cost of electricity generated by PV systems from a current $0.25/kWh to $0.18/kWh; and (2) by 2005, reduce the cost of solar water heating from $0.08/kWh in 2001 to $0.04/kWh.	EE			
ER2-5: By 2010, the levelized cost of power will be reduced from 5-8 cents in 2000, to 3-5 cents/kWh.				
ER4-1: Support the President's Clear Skies Initiative by having technologies ready for commercial demonstration by 2005 with the potential to reduce: mercury by 50 to 70 percent at 70 percent of today's cost of $50,000–$70,000 per pound of mercury; NO_x to less than 0.15 lb/mmBtu at three-fourths the cost of selective catalytic reduction, currently $80–10kW: Particulate Matter (PM) 2.5 by 99.99 percent for less than $50–$70/kW; and acid gases by 95 percent for less than $100–$120/kW. By 2010, test technologies for advanced cooling, mercury reduction by 90 percent at 70 percent of today's cost of $50,000–$70,000/lb of mercury, and 66 percent increase in byproducts utilization.	FE			
ER4-2: By 2008, develop advanced power systems capable of achieving 50 percent thermal efficiency at a capital cost of $1,000/kW or less for a coal-based plant.	FE			
ER4-3: By 2007, demonstrate at a pilot plant scale, technologies to reduce the cost of carbon separation and capture from new coal-based power systems by 75 percent compared to current systems ($200/tonne carbon in year 2000). By 2012, develop technologies that result in less than10 percent increase in the cost of new energy services to separate, capture, transport, and sequester carbon using either direct or indirect systems.	FE			

Program Activity Funding: Energy Supplies				
Program Strategic Performance Goal (PSPG)		**Comparable Appropriation**		
	DOE Office	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
ER4-4: By 2010, increase the robustness of distributed generation and thereby lower vulnerability of the electricity grid by introducing prototypes of: a) modular fuel cells with 10-fold cost reduction ($400/kW) with a 40 to 50 percent efficiency, b) fuel cell-turbine hybrids with 60 to 70 percent efficiency adaptable for coal.	FE			
ER5-1: Develop advanced technologies and employ scientifically based policy options to increase the Nation's economically recoverable resources by 15 TCF for natural gas and 140 million barrels for oil by 2008; reduce future costs of exploration and production by $10 billion. According to the USGS, EIA, and MMS, the economically recoverable oil resource base is estimated to by 120 billion barrels at $18/bbl and 149 billion barresl at $30/bbl; the gas base is estimated to be 740 TCF at $2.00/mcf and 920 TCF at $3.50/mcf in 2002.	FE			
ER5-2: By 2015, conduct scientific analyses and develop and field test a suite of methane hydrate characterization and diagnostic technologies that will provide a reliable inventory of Alaskan methane hydrate resources and resolve global environmental implications of natural methane hydrate instability. By 2008, reduce the cost of producing hydrogen from natural gas by 15 percent.	FE			
ER6-1: Maintain operational readiness of the Strategic Petroleum Reserve (SPR) to drawdown at a sustained rate of 4.4 million barrels per day for 90 days, within 15 days notice by the President, and fill the SPR to its current capacity of 700 million barrels by 2005.	FE			
ER7-1: Deploy new nuclear generation to meet energy and climate goals by enabling an industry decision to deploy at least one new advanced nuclear power plant in the U.S. by 2010 to support the President's goal of reducing greenhouse gas intensity by 18 percent by 2012; completing design of an economic, commercial-scale hydrogen production system using nuclear energy by 2015; and developing a next-generation nuclear system after 2010 but before 2030 that provides significant improvements in proliferation and terrorism resistance, safety and reliability, and economics.	NE			
ER7-2: Maximize energy from nuclear fuel by enabling a decision by 2010 to forgo a second repository while still supporting expanded nuclear power in the U.S. and develop the technology to reduce commercial high-level waste by a factor of four by 2015; and commercializing technology to reduce long-term radiotoxicity and heat load of spent fuel by 2030.	NE			

Program Activity Funding: Energy Supplies				
Program Strategic Performance Goal (PSPG)		**Comparable Appropriation**		
	DOE Office	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
ER7-3: Protect existing nuclear generation to support the National Energy Policy objective to maintain and expand the Nation's electricity generation infrastructure by sponsoring innovative, investigator-initiated R&D to enhance the performance of light-water reactor technology to increase generating output from existing plants by at least an additional 500 megawatts by 2020.	NE			
ER-7-4: Maintain and enhance national nuclear capabilities by producing highly-trained nuclear scientists and engineers to meet the Nation's energy, environmental, health care, and national security needs; preserving critical user facilities in a safe, secure, environmentally-compliant, and cost-effective manner to support national priorities; replenishing Federal technical and management staff with emphasis on obtaining high-caliber junior professionals with diverse backgrounds; and delivering isotope products and services for commercial, medical, and research applications where there is no private sector capability or sufficient capacity does not exist to meet United States needs such that by December 2004, deliveries continue to be made to customers as needed.	NE			
SC6-1: Improve the basis for a reliable capability to predict the behavior of magnetically confined plasma and use the advances in the Tokamak concept to enable the start of the burning plasma physics phase of the U.S. fusion sciences program. (Science and Enabling Technologies subprograms)	SC			
SC6-2: Resolve outstanding science/technology issues and explore options for more attractive magnetic and inertial fusion energy systems (Science and Enabling R&D subprograms).	SC			
SC7-6: Manage facilities operations and construction to the highest standards of overall performance using merit evaluation with independent peer review. (Fusion Facility Operations subprogram).	SC			

Means and Strategies:

ER-2: Renewables:

DOE programs contribute to increasing renewable and distributed energy supplies by reducing the cost of energy from photovoltaic, wind, biomass, fuel cell, and geothermal sources. Cost reductions are achieved by increasing photovoltaic cell efficiency and increasing U.S. photovoltaic manufacturing capability, improving wind turbine materials and design and validating performance; reducing the costs of biomass refining and gasification systems, and decreasing the cost of geothermal drilling and conversion systems. The means and strategy for an increased use of hydrogen in our economy can be accomplished by reducing the cost of fuel cells while further improving conversion technology.

ER-4: Coal:

The program will continue to promote a strategy in power systems R&D that incorporates a focused and collaborative effort between government and industry to achieve the environmental and economic goals of the technologies. It will continue its dissemination of information and data and build on government-industry partnerships to commercialize clean coal technologies. For carbon sequestration, the program will continue to work with domestic and international partners to complete field experiments on promising options.

ER-5: Domestic Oil and Gas Supply:

Four strategies are the focus of efforts in this program: (1) protecting the environment through enhanced design and efficiency of domestic oil and natural gas exploration, recovery, processing, transport, and storage operations; (2) supporting technology paths that private companies cannot risk undertaking alone; (3) providing scientific and technological information and analysis to assist policymakers in their decision-making; and, (4) optimizing environmental protection by contributing to science-based improvements in regulations that reduce uncertainties and costs.

The strategies related to increasing domestic supplies are achieved by: increasing recovery through lower cost drilling, wellbore improvements, and improved stimulation technology; improving geoscience technologies to locate and measure oil and gas within reservoirs; extending the life of mature oil and gas fields and reducing well abandonment; improving technologies for enhanced oil recovery processes; and modeling estimates of potential economic recovery of domestic oil and gas through a range of technologies, economic criteria, and legislative and regulatory scenarios.

ER-6: Petroleum Reserve:

SPR will continue its mission to maintain the operational readiness of the SPR facilities to draw down oil within 15 days of notice by the President at set performance levels. Assurance of this readiness posture will be accomplished through internal readiness reviews, assessments, exercises, and tests. Effectiveness of the SPR to mitigate the economic damage of severe oil supply disruptions on the economy will be influenced by the SPR's size (inventory and capacity) and ability to deliver into the marketplace. The Department has attempted several strategies over the years (e.g., direct purchase, oil exchanges, and storage service agreements with public, private and foreign entities) to acquire oil to complete the SPR fill. FY 1999 and FY 2002 Departmental agreements with the Department of Interior provide for the use of Federal Royalty Oil to fill the SPR to its 700 million barrel capacity with completion of deliveries in FY 2006. Continual monitoring of the SPR's crude inventory for geothermal heating and gas intrusion indicated the necessity for initiating the investment in FY 2002 of vapor pressure (degas) control systems for continuous removal of excess gas from the SPR crude oil inventory. Commencement of full degas plant operations will be in FY 2004. SPR will continue to manage the Northeast Home Heating Reserve and assure readiness to complete draw down of the Reserve within 12 days of a Presidential decision.

ER-7: Nuclear Energy:

The Nuclear Energy Plant Optimization (NEPO) program has supported a key national objective by conducting the cost-shared R&D with industry, to ensure that most of the operating commercial nuclear reactors are available beyond their initial 40-year license period. The Nuclear Energy Research Advisory Committee (NERAC) provides advise to these programs. The NEPO projects are conducted at industrial companies, national laboratories, and universities. Projects will be completed in FY2003 using prior year funds and therefore, no funding was requested for FY 2003.

The Nuclear Energy Research Initiative (NERI) continues to be the cornerstone for renewed interest in nuclear science and technology development in this country. In FY 2004, the Department will continue to conduct investigator-initiated, peer-reviewed research and development at universities, industrial companies, and national laboratories to address the principal obstacles to the expanded use of nuclear energy (i.e., cost, safety, waste, and non-proliferation), advance the state of nuclear technology for a competitive marketplace, and help maintain a nuclear science and technology infrastructure to meet future challenges.

During the FY 2004, the Department will continue the bilateral cost-shared research in cooperation with other nations. These cooperative projects are focused on scientific research, and advanced technology development to improve the cost and enhance the safety, proliferation resistant, and

waste management of advanced nuclear energy systems. The NERAC Subcommittee on Long-Range Planning provides advice on the conduct of the NERI research and development program for Nuclear Energy Research.

The Nuclear Power 2010 Program is a joint government/industry cost-shared program to develop advanced reactor technologies and demonstrate new regulatory processes leading to the initiation of private sector construction of new nuclear power plants in the United States in 2005, and operation by 2010. The recommendations of the Near-Term Deployment Working Group, which have broad industry support, provide the basis for the activities of the Nuclear Power 2010 program.

The goal of the Generation IV Nuclear Energy Systems Initiative is to make nuclear energy, no later than 2030, the most sustainable, cost-competitive, reliable, and secure means of generating electricity through the development of advanced nuclear technologies. Areas of focus include not only safety and cost-competitiveness, but the fuel cycle and overall systems aspects that maximize fuel efficiency, minimizes consumption of structural materials and minimizes the creation of radioactive waste materials.

The University Reactor Fuel Assistance and Support program supports the Nation's science and engineering infrastructure that is vital for the education of future nuclear engineers and scientist. In cooperation with universities and industry, the program also provides fellowships, grants, and scholarships to students pursuing nuclear degrees.

SC6 and SC-7: Fusion Energy:

The science and the technology of fusion have progressed to the point that the next major research step is the exploration of the physics of a self-sustained plasma reaction in a burning plasma physics experiment. An international burning plasma experiment called ITER is the focal point of burning plasma fusion research around the world, and the Administration, through DOE's Fusion Energy Siences (FES) program, has decided to join the negotiations to conduct this experiment. In light of this decision many elements of the fusion program that are broadly applicable to burning plasmas will now be directed more specifically toward the needs of ITER. These elements represent areas of fusion research in which the U.S. has particular strengths relative to the rest of the world such as theory and modeling, and diagnostics. Longer range technology activities will be slowed or terminated to focus on aspects of the present FES program that most directly supports preparations for the realization of the burning plasma device and associated experiments.

All research projects undergo regular peer review and merit evaluation based on procedures set down in 10 CFR 605 for the extramural grant program, and under a similar modified process for the laboratory programs and scientific user facilities. All new projects will be selected by peer review and merit evaluation.

DOE formally peer reviews their scientific user facilities to assess the scientific output, user satisfaction, and the overall cost-effectiveness of each facility's operations, and their ability to deliver the most advanced scientific capability to its user community. Facilities are reviewed using (1) external, independent review committees operating according to the procedures established for peer review of laboratory programs and facilities and (2) a specially empanelled subcommittee of an Advisory Committee. Important aspects of these reviews include: assessments of the quality of research performed at the facility; the reliability and availability of the facility; user access policies and procedures; user satisfaction; facility staffing levels; R&D activities to advance the facility; management of the facility; and long-range goals of the facility.

Facility upgrades and construction projects will keep within 10 percent, on average, of cost and schedule milestones for upgrades and construction of scientific user facilities. FES, construction of major research facilities historically has been on time and within budget.

User facilities will be operated and maintained so that unscheduled operational downtime will be kept to less than 10 percent, on average, of total scheduled operating time. FES's operation of major scientific facilities has ensured that a growing number of U.S. scientists have reliable access to those important facilities.

Collaboration Activities:

ER-2: Renewables:

DOE will continue to collaborate on its wind, hydropower, biomass, solar, and geothermal R&D activity with academia, manufactures, and national laboratories. DOE also collaborates with users for technological validation, systems integration and design. For hydrogen, these activities are carried out in partnership with auto and power equipment manufacturers, energy companies, electric and natural gas utilities, building designers, other Federal agencies, State government agencies, universities, national laboratories, and other stakeholder organizations.

ER-4: Coal:

For all activities, DOE will work collaboratively with other government and industry partners, and participate cooperatively with other countries, for example, through the International Energy Agency in the Greenhouse Gas (IEAGHG) R&D Program and the Clean Coal Technology Center. Significant cost-sharing opportunities are possible through existing and new research agreements.

ER-5: Domestic Oil and Gas Supply:

The impact of the Domestic Oil and Gas Supply program is expanded by: performing R&D activities in partnership with universities, State and local governments, industry, and other stakeholders; using cost-share projects and diverse technology paths to improve chances of success, and to create a direct technology transfer component; seeking synergy of the capabilities of multiple governmental agencies and industry, including the unique capabilities of National Laboratories; collaborating with other agencies to effectively promulgate domestic production technologies; investing jointly with other groups in promising technologies for target resource areas; conducting, with input from National Laboratories; field demonstrations in collaboration with industry, academia, and others; and transfering technologies in cooperation with State and industry organizations, including the Petroleum Technology Transfer Council (PTTC).

ER-6: Petroleum Reserves:

DOE coordinates its activities for the SPR with the White House working group on the SPR, and the Departments of the Interior, and Treasury, as a member of the Interagency Working Group on Oil and Gas. Acquisition of oil through Federal royalty-in-kind oil leases is being coordinated with the Department of Interior's Minerals Management Service. The Defense Contract Management Agency (DCMA) conducts quality and inventory control review for heating oil, stored in DOE's Northeast Home Heating Oil Reserve.

ER-7: Nuclear Energy:

The NERI program encourages research and development collaboration among scientific and engineering researchers at universities, national laboratories and industry to maximize the use of available talent. In addition, the NERI program endorses foreign participation by international nuclear energy research organizations with U.S. participants to help maintain the nuclear option worldwide, and to leverage research funds.

The Department and the Nuclear Regulatory Commission (NRC) coordinate program planning to assure that their research and development activities are complimentary, cost-effective, and without duplication. On the Nuclear Power 2010 Program, the Department is working with the NRC and industry to establish a regulatory framework for advanced gas-cooled reactors by identification of technical issues and research needs. The Department, working with industry, is proceeding on a cost-shared basis to conduct demonstrations of NRC's Early Site Permit process. Arrangements will also be made with industry to demonstrate NRC's combined Construction and Operating License process, and to proceed with certification of advanced light water and advanced gas-cooled reactor designs.

The Department sponsors innovative research and development in cooperation with other countries through the International Nuclear Energy Research Initiative (I-NERI), focused on advanced technologies to improve the cost and enhance the safety, proliferation resistance and waste management of nuclear energy systems. This research is conducted on at least a 50-50 cost-shared basis with international partners.

In FY 2002, the Department continued to emphasize joint collaborative activities in spent fuel recycling research, design, development, and demonstration. Considerable expertise has been developed overseas on these technologies, and the potential for significant cooperation and collaboration is very high. The Department has already held discussions with several potential international partners with expertise in areas of interest to the program, and for which focused cooperative programs would allow the U.S. and partnering countries to achieve their technology goals.

The University program draws upon the experience of university professors through its meetings with the University Working Group, which helps coordinate DOE ad university efforts to improve nuclear engineering education in the U.S.

SC-6 and SC-7: Fusion Energy:

Scientists from the United States participate in leading edge scientific experiments on fusion facilities abroad, and conduct comparative studies to enhance understanding of underlying physics. These include the world's highest performance tokamaks (JET in England and JT-60 in Japan), a stellarator (the Large Helical Device) in Japan, a superconducting tokamak (Tore Supra) in France, and several smaller devices. In addition, the U.S. is collaborating with South Korea on the design of a long-pulse, superconducting, advanced tokamak (KSTAR). These collaborations provide a valuable link with the 80% of the world's fusion research that is conducted outside the U.S.

External Factors Affecting Performance:

ER-2: Renewables:

Program funding, the state of the economy, the availability of conventional supplies, and the cost of competing technologies affect the role of renewables in our energy mix. State and international efforts in the renewable technologies also affect the market. Continuation of federal tax incentives and implementation of other policies at the national level impact the performance of these programs. Among these are national efforts to reduce carbon and criteria emissions.

ER-4: Coal:

Program results may be affected by: world prices for competitive feedstocks and energy technolo-

gies; new and evolving environmental regulations; or any new legislation, in particular, new legislation related to CO_2 and air pollutants that affect coal and gas use. Also, industry restructuring/deregulation issues and uncertainties will continue to challenge coal use. Program results may be particularly affected by both evolutionary and revolutionary approaches to carbon sequestration.

ER-5: Domestic Oil and Gas Supply:

World oil prices, corporate mergers and acquisitions, issues related to access to public lands, and new and evolving environmental legislation and regulation may affect oil and gas program results.

ER-6: Petroleum Reserves:

Performance can be affected by petroleum market conditions and developments in the commercial distribution system (i.e., pipelines, and terminals). Continuing royalty-in-kind transfers during FY 2003 and beyond, in addition to those per the FY 1999 agreement, will be contingent on annual delivery targets negotiated with the Department of the Interior. Performance of the Home Heating Oil Reserve's distribution can be affected by pipeline and transportation ability in the Northeast.

ER-7: Nuclear Energy:

The I-NERI and the Generation IV Nuclear Energy Systems Initiative, including development of the Generation IV Technology Roadmap, are receiving broad international cooperation and support, consistent with the objectives of the programs. The Nuclear Power 2010 Program requires close cooperation with and substantial cost sharing by industry. National energy policy influences all of the research and development programs covered in this performance plan.

If sufficient progress is not demonstrated toward meeting both near-term and long-term environmental commitments for the treatment and disposal of highly radioactive waste, and EBR-II spent nuclear fuel stored at the ANL-W site, the Department's ability to conduct and complete programmatic activities such as the above and the EBR-II Shutdown project could be severely restricted by the State of Idaho. A 1995 Settlement Agreement and Consent Order signed by the DOE and the State of Idaho and the Idaho National Engineering and Environmental Laboratory (INEEL) Site Treatment Plan Consent Order contain DOE waste and environmental commitments that are enforceable by the State of Idaho. Additionally, the Resource Conservation and Recovery Act and other State of Idaho permits that are requisite for ANL-W site operations are contingent upon acceptable progress by DOE in meeting the above commitments, and can be withdrawn or not renewed by the State, if performance is unsatisfactory.

Changing mission requirements from agencies that use radioisotope power systems and risk associated with technological developments could affect the Department's ability to deliver these systems in a timely manner to customer agencies.

Industry participation in the DOE Matching Grants programs is essential to trigger a DOE cost-share for this activity, which supports nuclear engineering education at approximately 25 U.S. universities. The health of and prospects for the nuclear industry influence students' decisions on pursuing a nuclear engineering education.

SC-6: Fusion Energy:

External factors in addition to budgetary constraints that affect the level of performance include (1) changing mission needs as described by the DOE and SC mission statements and strategic plans; (2) scientific opportunities as determined, in part, by proposal pressure and scientific workshops; (3) the results of external program reviews and international benchmarking activities of entire fields or sub fields, such as those performed by the National Academy of Sciences (NAS); (4) unanticipated failures in critical components of scientific user facilities that cannot be mitigated in a timely manner; and (5) strategic and programmatic decisions made by non-DOE funded domestic research activities and by major international research centers.

Planned Program Evaluation:

ER-2: Renewables:

As part of its response to the FY 1999 National Academy of Sciences' National Research Council peer review of the renewable energy program, DOE initiated both an internal and external R&D portfolio review. The internal review relies most on the extensive data available as part of the office's Strategic Management Systems. In addition, each technology program hold program review with stakeholders on a periodic basis. An internal program review for each individual technology program is conducted annually with a Deputy Assistant Secretary. Expert reviewers of renewables programs are not involved in collaborative activities.

In addition, program benefits are estimated using macroeconomic and detailed inudstry-specific models. Modeling assumptions and methods are reviewed externally and the results are compared to results from other programs to determine the best application of R&D resources.

ER-4: Coal:

The program and projects contained within this goal will be evaluated at the annual contractor's meeting.

In addition, program benefits are estimated using macroeconomic and detailed inudstry-specific models. Modeling assumptions and methods are

reviewed externally and the results are compared to results from other programs to determine the best application of R&D resources.

ER-5: Domestic Oil and Gas Supply:

The Office of Natural Gas and Petroleum Technology annually performs an internal review of the R&D portfolio as an integral part of annual budget preparation. Projects are evaluated periodically at contractor review conferences, and as part of road-mapping workshops to determine R&D gaps. National Energy Technology Laboratory (NETL) project managers individually monitor projects with status and major milestone reporting documented in a NETL project database. NETL in-house R&D projects are peer reviewed by external experts from academia and industry. At this time, DOE is developing specific metrics that are applicable to better quantifying and valuing R&D results.

In addition, program benefits are estimated using macroeconomic and detailed industry-specific models. Modeling assumptions and methods are reviewed externally and the results are compared to results from other programs to determine the best application of R&D resources.

ER-6: Petroleum Reserves:

Monthly project reviews and quarterly program reviews, conducted by Federal and contractor personnel of the SPR, provide an important means for evaluating progress against program plans like the SPR Annual Performance Plan and scheduled project management reviews. Budget formulation/execution assessments are regularly conducted throughout the year, including annual budget validations. Other evaluations include: semiannual M&O contractor award fee performance assessments against Work Authorization Directives; on-site reviews each year to verify operational, maintenance and management performance data; and draw down readiness quarterly reviews.

ER-7: Nuclear Energy:

Periodic internal and external reviews evaluate progress against established plans. These reviews provide an opportunity to verify and validate performance. Monthly, quarterly, semiannual and annual reviews consistent with specific program management plans are held to ensure technical progress, cost and schedule adherence, and responsiveness to program requirements.

The NERAC Subcommittee evaluates NERI for Long-Term R&D. NERI projects require quarterly and annual progress reports from the principal investigators, which are reviewed for research progress against stated goals and milestones. In addition, periodic project evaluations are conducted in which principal investigators present to DOE management the results of research progress to date, discuss issues encountered and planned activities. I-NERI is in the program development stage, but will include progress evaluations similar to NERI and oversight provided by a bilateral committee of DOE and members from the participating countries.

Nuclear Power 2010, in addition to the continual review and oversight by DOE management, also receives oversight by NERAC. Additional evaluation measures will also be established with the cooperating and cost-sharing utility and other organizations.

The Generation IV Technology Roadmap project plan provides for a number of intermediate deliverables, culminating in a complete roadmap by March 2003. DOE as well as NERAC and the NERAC Subcommittee on Generation IV Technology Planning will periodically review the products and progress of the Roadmap effort.

The Generation IV International Forum (GIF), made up of representation from member countries, provides guidance to the execution of the Roadmap project in meetings of the GIF Policy and Experts Groups. The Spent Fuel Pyroprocessing and Transmutation program staff discusses progress against established plans at periodic video conferences and on-site program review meetings with field office and contractor representatives. For activities at ANL–W, these conferences will include the Chicago Operations Office Group responsible for ANL and ANL– W staff. In addition, semiannual and annual program reviews are held to verify and validate the performance data. Finally, DOE's Chicago Operations Office Group meets frequently with State of Idaho regulators to review progress against prescribed commitments in State permits, Consent Orders, and the 1995 Settlement Agreement.

SC-6 and SC-7: Fusion Energy:

Progress against established plans is evaluated by periodic internal and external performance reviews. These reviews provide an opportunity to verify and validate performance. Monthly, quarterly, semiannual, and annual reviews consistent with specific program management plans are held to ensure technical progress, cost and schedule adherence, and responsiveness to program requirements.

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Program Strategic Performance Goal

ER2-1: The Hydrogen and Fuel Cell Technology program will: (1) develop and demonstrate distributed hydrogen generation technology that will reduce the cost of producing hydrogen from natural gas from $5.00 per gallon of gasoline equivalent (untaxed) in 2000, when produced in large quantities, to $1.50 per gallon of gasoline equivalent (untaxed) in 2010; 2) Fuel Cell R&D activities will reduce the production cost of the hydrogen- or gasoline-fueled, 50 kW vehicle fuel cell power system (including hydrogen storage) from $275/kW in 2002 to $45/kW in 2010 at production levels of 500,000 units per year (projected cost); 3) Stationary Fuel Cell R&D activities will increase the efficiency of natural gas or propane fueled 50kW stationary fuel cell systems from 29 percent in 2002 to 40 percent in 2010.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Develop a distributed natural gas-to-hydrogen production and dispencing system that can produce 5,000 psi hydrogen for $3.00 per galon gasoline equivalent (untaxed) at the station, when produced in large quantities.	Complete the design of a distributed natural gas-to-hydrogen production and dispensing system.	Construct process development unit of ceramic membrane system for membrane system tests for hydrogen production. (MET GOAL)
Achieve $200/kW for a hydrogen fueled 50kW fuel cell power system (including hydrogen storage). Complete major Go/No Go decision milestone to determine future course of on board fuel processing activities.	Achieve $225/kW for a 50 kW fuel cell power system.	Achieve $275/kW for a 50 kW fuel cell power system. (MET GOAL)
31 percent efficiency at full power for a natural gas of propane fueled 50kW stationary fuel cell system.	30 percent efficiency at full power for a natural gas of propane fueled 50kW stationary fuel cell system. Verify low electricity and hydrogen production cost (<$.08/kWh and $3.60/gal equivalent untaxed when produced in quantity) through cost shared operation of a 50kWe stationary fuel cell and hydrogen co-production facility for six months.	Related results: 29 percent efficiency at full power for a natural gas of propane fueled 50kW stationary fuel cell system.

Performance Indicators

- Cost of hydrogen produced in large quantities.
- Cost of the hydrogen – or gasoline-fueled, 50kW vehicle fuel cell power system.
- Efficiency of natural gas or propane fueled 50kW stationary fuel cell system.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets	There were no related targets	There were no related targets
Complete test and evaluation of a fuel-flexible 50 KW integrated fuel cell power system.	Complete testing of baseline prototype, 50-volt high power lithium-ion modules for use in hybrid vehicles.	By September 1999, in cooperation with industry and other Federal agencies, develop a direct injection power system technical roadmap and a fuel cell power system technical roadmap to integrate fuels and lubricants research and development with development of engine and emission treatment technologies.

Program Strategic Performance Goal

ER2-2 The Wind Energy and Hydropower Program has the following overall performance goals: (1) by 2012, wind energy R&D activities will provide the technologies to reduce the cost of wind powered electricity generation in Class 4 wind areas from 5.5 to 3 cents per kWh ; and (2) hydropower R&D activities will enable commercialization of a fish passage technology capable of reducing turbine-induced fish mortality from 30 percent to 2 percent or less.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Wind: Complete testing of prototypes for first advanced low wind speed technology components, and complete detailed designs under first two public-private partnership projects for full system low wind speed turbine development.	Complete low wind speed turbine conceptual design studies, and fabricate and begin testing advanced wind turbine components optimized for low wind speed application initiated under industry partnership projects.	There were no related targets.
Hydro: Complete biological studies on the effects of blade strike on turbine-passed fish.	Complete the pilot-scale testing of a fish friendly hydroelectric turbine, providing the basis for future full-scale testing at an operational site. Successful testing will provide industry with a proven design, helping attain the 2 percent mortality goal.	

Performance Indicators:

- Cost of wind powered electricity generation.
- Percentage fish mortality of turbines in the current stage of the testing and development process.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Move advanced wind hybrid control system technology developed jointly with USDA Agricultural Research Center to commercial availability. (MET GOAL)	Install and begin testing of two proof-of-concept turbines under the Next Generation Turbine program leading to commercial availability of technology capable of producing electricity at 2 ½ cents per kWh in 15 mph wind resource by 2003. (MET GOAL)	Establish a United States-based commercial firm as an internationally recognized certification agent using testing and design review services provided by the National Wind Technology Center. (MET GOAL)

Program Strategic Performance Goal

ER2-3: The Biomass and Biorefinery Systems Programs will (1) by 2020, develop and verify gasification technologies which enable the increased efficiency of biopower systems from the current 20 percent efficiency to 30-35 percent; by 2010, complete development and field verify the efficiency of next generation, small, modular, biopower generation systems, with a unit cost reduction of 50 percent from the 11 cents per kWh baseline in 2000 to 5.5 cents per kWh (as stand alone systems outside of the biorefinery); (2) by 2010, develop the bioconversion technologies necessary for reducing the production cost of cellulosic ethanol from $1.40 to $1.22 per gallon, and, by 2020, to $1.00 per gallon, through technology improvements for the co production of ethanol, electricity, and bio-based chemicals (this cost is equivalent to the cost of high value petroleum based additives that refineries must pay in order to produce gasoline that satisfies octane and emission requirements specified by EPA and the automobile manufacturers); (3) By 2010, through collaborative research projects with industry, universities and national laboratories, develop and verify cost competitive, energy efficient, process technologies for biobased products that will enable, by 2020, a domestic market of at least 50 billion lbs per year of biobased products - an increase of more than threefold - from current sales of about 15 billion lbs/yr.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Demonstrate integration of biomass conversion and gas cleanup systems for advanced power cycle applications (microturbines and hybrid fuel cells)	Develop an improved enzyme preparation developed by a leading enzyme manufacturer for reducing the cost of producing ethanol from biomass, and update the reference computer model of the production process.	Develop prototype yeast capable of fermenting multiple biomass-derived sugars to meet cost goals for the ethanol/ gasoline blend markets. (NOT MET)
Complete testing of ethanol production from corn fiber in partnership with industry in order to achieve a 3 percent increase in ethanol production from each corn ethanol plant that successfully implements the technology without requiring additional corn feedstock.	Develop an improved enzyme preparation for reducing the cost of producing ethanol form biomass. Evaluate its impact on production costs using an updated computer model of the production process.	

Performance Indicators:

- Cost of biopower systems in cents per kWh.
- Ethanol production costs.
- System efficiency for the production of fuels and chemicals.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Conduct competitive solicitation and select at least one partner for demonstrating the conversion of cellulosic feedstock at a corn ethanol plant. (MET GOAL)	Demonstrate two advanced industrial turbine system engines at end-user sites. (MET GOAL)	Support an industrial partner to complete site preparation and begin construction of industry-owned facility to demonstrate first-of-a-kind cellulosic biomass to ethanol technology from agricultural crop waste. (MIXED RESULTS)

Program Strategic Performance Goal

ER2-4: The Solar Program will: (1) by 2006, reduce the cost of grid-tied (battery free) photovoltaic systems to the end user (including operation and maintenance costs) to $4.50 per Watt, from a median value of $6.25 per Watt in 2000, which requires a reduction in the cost of the PV module itself to $1.75 per Watt, compared with a current cost of $2.50 per Watt and would reduce the average cost of electricity generated by PV systems from a current $0.25/kWh to $0.18/kWh-; and (2) by 2005, reduce the cost of solar water heating from $0.08/kWh in 2001 to $0.04/kWh.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Reduce manufacturing cost of PV modules to $1.95 per Watt (equivalent to a range of $0.18 to $0.23 per kWh price of electricity for an installed solar system).	Reduce manufacturing cost of PV modules to $2.10 per watt (equivalent to $0.19 to $0.24 per kWh price of electricity from an installed solar system).	Reduce manufacturing cost of PV modules to $1.95 per watt (equivalent to $0.18 to $0.23 per kWh price of electricity from an installed solar system). (MET GOAL)

Performance Indicators:

- Cost of electricity from photo voltage.
- Cost of solar water heating.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Develop a 14 percent efficient stable prototype thin-film photovoltaic module. (MET GOAL)	There were no related targets.	There were no related targets.

Program Strategic Performance Goal

ER2-5: By 2010, the levelized cost of power generated from geothermal sources will be reduced from 5-8 cents in 2000, to 3-5 cents per kWh.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Create an initial Enhanced Geothermal System (EGS) with an industry partner and test associated technology needed to monitor and maintain the system.	Begin operation of a small-scale geothermal power plant in the State of New Mexico, adding a new State to those with commercial power facilities and providing field-verification of a new energy conversion system.	Complete design and environmental assessment of a small-scale (300 kW to 1 MW) geothermal power plant for field verification. (MET GOAL)

Performance Indicators:

- The cost of electricity generated (cents/kWh.)
- The number of states with geothermal energy facilities.
- The number of homes and business being supplied with geothermal energy.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Select industrial partners to build two cost-shared geothermal power plants using Enhanced Geothermal System (EGS) technology. (MET GOAL)	Complete two designs of advanced air-cooled condensers for geothermal applications. (MIXED RESULTS)	There were no related targets.

Program Strategic Performance Goals

ER4-1: Support the President's Clear Skies Initiative by having technologies ready for commercial demonstration by 2005 with the potential to reduce: mercury by 50 to 70 percent at 70 percent of today's cost of $50,000–$70,000 per pound of mercury; NO_x to less than 0.15 lb/mmBtu at three-fourths the cost of selective catalytic reduction, currently $80–100kW: Particulate Matter (PM) 2.5 by 99.99 percent for less than $50–$70/kW; and acid gases by 95 percent for less than $100–$120/kW. By 2010, test echnologies for advanced cooling, mercury reduction by 90 percent at 70 percent of today's cost of $50,000–$70,000/lb of mercury, and 66 percent increase in byproducts utilization.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete a total of three initial tests of the leachability and volatilization of mercury from coal byproducts, of advanced separation techniques for combustion ash, and of advanced approaches for cooling.	Initiate projects for developing technologies to address emerging electric utility/water issues and combustion byproducts utilization and disposal.	Complete Phase I report characterizing concentration and composition of ambient $PM_{2.5}$ emissions as input to the EPA $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) review. This data will help identify the impact of emission sources on air quality. (MET GOAL)
Complete 6 initial pilot-scale tests for development of performance data on an advanced concept potentially capable of 90 percent mercury capture. This information will be used in identifying further development needs and opportunities as a potential technological option to achieve anticipated Federal regulations for mercury emission control.	Complete preliminary field testing of alternate mercury control technologies representing at two for achieving 50 percent or greater removal.	
Complete development and dissemination of data on regional fine particulate and fine particulate data analysis methods.	Complete fine particulate monitoring in the Upper Ohio River Valley region; complete field testing of alternative particulate matter collection technologies representing at least two approaches for achieving 99.99 percent removal; initiate research of PM2.5 and mercury transport and deposition.	
	Initiate developmental testing of SCR catalysts for reducing NOx emissions from alternatively fueled boilers.	

Performance Indicators

- Number of tests of technologies that offer reductions in emissions and/or costs of mercury, NO_x, particulate, and acid gasses.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	Complete pilot studies on mercury emission controls that augment existing pollution control technologies, and are expected to reduce mercury emissions by over 50 percent at less than half the cost originally estimated in EPA's December 1997 Report to Congress on Mercury. (MET GOAL)	There were no related targets.
	Complete the first large scale (600MW) test of selective non-catalytic reduction, which will allow coal-fired power plants to satisfy ozone transport (OTAG) requirements for reduction of emissions of oxides of nitrogen and also reduce fine particulate matter. (MET GOAL)	
Deliver to EPA 2 years worth of high-quality $PM_{2.5}$ ambient monitoring data from the upper Ohio River Project. (MET GOAL)		
Issue request for proposals for the commercial scale demonstration of technologies to assure the reliability of the Nation's energy supply from existing and new electric generating facilities. (MET GOAL)		

Program Strategic Performance Goals

ER4-2:By 2008, develop advanced power systems capable of achieving 50 percent thermal efficiency at a capital cost of $1,000/kW or less for a coal-based plant.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete an initial pilot-scale test of an oxygen transport membrane system that has the potential to increase the efficiency and reduce the cost of oxygen-blown integrated gasification combined-cycle systems to 50 percent efficincies at $1,000 kW by 2008.		
Establish a 1-5 ton per day facility capable of determining engineering feasibility, defining technical performance, and establishing operating cost for oxygen separation using membrane technology.	Establish a 1-5 tpd facility capable of determining engineering feasibility, defining technical performance, and establishing operating costs for oxygen separation using membrane technology.	
Complete initial laboratory-scale performance testing of hydrogen separation membranes using simulated gas streams.	Complete initial laboratory-scale performance testing of hydrogen separation membranes using simulated gas streams.	
Complete initial laboratory tests to determine performance capabilities of sorbents, sieves, and membranes for removing mercury, sulfur, nitrogen, and CO_2 from gas streams.	Complete initial laboratory tests to determine performance capabilities of sorbents, sieves, and membranes for removing mercury, sulfur, nitrogen, and CO_2 from gas streams.	
Conduct gasification support tests on leachability of gasifier residues, improved refractories, and oxygen-blown gasification of alternative fossil fuel feedstocks, and develop a simulator for a Vision 21 plant.	Conduct gasification support tests on leachability of gasifier residues, improved refractories, and oxygen-blown gasification of alternative fossil fuel feedstocks, and develop a simulator for a Vision 21 plant.	
	Develop technical and cost information sufficient for DOE decision-making on the viability of proceeding with plans for construction of a co-production plant.	Complete initial tests of the IGCC transport gasifier to confirm the feasibility of the technology to significantly improve reliability, cost effectiveness, and efficiency for producing electricity and other products. (MET GOAL)

Performance Indicators

- Number of tests of critical component technologies needed to achieve advanced power systems goal of 50 percent thermal efficiency and $1,000 /kW.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Demonstrate hydrogen and CO_2 separation from syngas to meet the long-term goals of providing low-cost hydrogen for high-efficiency fuel cells, and for providing concentrated CO_2 streams for sequestration. (MET GOAL)	Complete demonstration of the third integrated gasification combined cycle project (Piñon Pine) utilizing air-blown gasification and hot gas cleanup for improved thermal efficiency, and continue operations of one other project (Polk) in order to establish the engineering foundation leading to new generation of 60 percent efficient power plants. (NEARLY MET GOAL)	Complete the commercial demonstration of one integrated gasification combined cycle project (Wabash), and continue operations of two other gasification projects in order to establish the engineering foundation leading to new generation of 60 percent efficient, ultraclean coal power plants. (MET GOAL)
Complete design and continue construction of Circulating Atmospheric Fluidized Bed demonstration project at Jacksonville, Florida. (MET GOAL)		

Program Strategic Performance Goals

ER4-3:By 2007, demonstrate at a pilot plant scale technologies to reduce the cost of carbon separation and capture from new coal-based power systems by 75 percent compared to current systems ($200/tonne carbon in year 2000.) By 2012, develop technologies that result in less than a 10 percent increase in the cost of new energy services to separate, capture, transport, and sequester carbon using either direct or indirect systems.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete initial field tests and development of preliminary standard procedures for advanced monitoring and verification of carbon inventories that will achieve cost reductions and improved measurement speeds in conducting soil and forest carbon measurements on disturbed, unproductive, and productive lands. Success will be measured by reducing the cost from more than $10/sample to less than $2/sample.	Complete initial set of field tests of advanced monitoring and verification methods for carbon inventories on natural and engineered terrestrial systems and establish a database for mid-continent planning of geological storage projects. Establish regional carbon sequestration partnerships.	
Complete site design and development for the slant hole application for coal seam sequestration. Complete deep well and geologic characterization in saline aquifer in West Virginia.		
Initiate start-up of at least 5 regional carbon sequestration partnerships. Partnerships to identify best regional technology options and source/sink locations for capture and sequestration.		

Performance Indicators

- Number of tests of strategies, concepts and technologies required to reduce the cost of carbon capture by 70 percent.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
For carbon sequestration, expand the number of possible cost-effective, collaborative, multi-national applied R&D options carried to the "proof of concept" stage. Complete multiple field experiments on promising technologies. (MET GOAL)	Commence three to four small scale carbon sequestration development projects from those selected in the FY 1998 Novel Concepts solicitation, and initiate feasibility studies for one to two sequestration projects selected under FE's August and September 1999 solicitations. (MET GOAL)	Initiate a coordinated, Department-wide, collaborative, research program to develop lower-cost, environmentally acceptable technology approaches to carbon capture and sequestration. (MET GOAL)
		Issue a draft report that identifies key research needs in several aspects of sequestration, and select six concepts to identify promising sequestration options. (MET GOAL)

Program Strategic Performance Goals (ER4-3: Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
	Initiate evaluations of three novel concepts, comprising integrated sequestration with enhanced coal bed methane recovery, mineral carbonation, and CO_2 flooding during enhanced oil recovery and establish initial recommendations for long-term monitoring of CO_2 geological storage to assure acceptability as a safe, long-term storage option.	Complete the injection of 2,500 tons of CO_2 into a depleting oil reservoir to monitor the transport of CO_2 and verify predictive geologic models on reservoir integrity. (NOT MET)
	Complete initial planning, field testing, or analyses of sequestration concepts involving saline aquifer storage, ocean storage, and scientific feasibility of CO_2 storage as hydrate on the ocean floor and complete initial comparative evaluation of energy technology scenarios to identify promising concepts for CO_2 sequestration.	

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets	There were no related targets	There were no related targets

Program Strategic Performance Goals

ER4-4: By 2010, increase the robustness of distributed generation and thereby lower vulnerability of the electricity grid by introducing prototypes of: a) modular fuel cells with 10-fold cost reduction ($400/kW) with a 40 to 50 percent efficiency, b) fuel cell-turbine hybrids with 60 to 70 percent efficiency adaptable for coal.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Perform assessment of the merit and progress of (and plans for) activities in the fuel cell program for achieving the efficiency and cost objectives for advance power generation, using peer reviews, conferences, or workshops, and disseminate the objectives and results of the fuel cell activities, including web-site dissemination, for use and potential deployment application or technology innovation by industry and other researchers.	Communicate fuel cell program objectives and results and conduct peer-reviews through conferences, workshops, and website tools. Manage the PSPG R&D portfolio through assessment of results and selection of new projects to fill portfolio gaps.	Complete demonstration of a commercial-scale, 250 kW Molten Carbonate Fuel Cell (MCFC) power plant system. This test will verify the commercial design for the MCFC technology for the combined heat and power (CHP) or distributed generation (DG) market and, if successful will justify the construction of a MCFC manufacturing facility in the U.S. (MET GOAL)
Complete constuction of two test units and detailed design of a third concept for later conduct of field tests necessary to establish feasibility of high temperature fuel cell hybrids and novel systems. These tests planned for FY 2005 will prove feasibility of 60 – 70% hybrid systems for integration into VIsion 21 power plants.	Conduct field test necessary to establish feasibility of high temperature fuel cell hybrids and novel systems, including design, procurement, construction, and testing.	
Continue SECA industry teams' evaluations and testing (100 hour tests) of fuel cell stack designs, manufacturing methods, candidate materials, and balance of plant subsystems with potential for demonstration as integrated systems. This effort will lead to testing of prototypes capable of achieving SECA cost reductions and efficiency goals.	Conduct cost reduction R&D programs involving near term developers, Siemens Westinghouse and Fuel Cell Energy, for the fuel cells, including manufacturing and Balance Of Plant (BOP) components.	
Continue SECA Core Program to perform the transfer of patents, licenses, technical data, and other knowledge products resulting from fuel cell concept tests and supporting research to one or more SECA industrial teams. This technology transfer will aid SECA industry teams in achieving cost reduction and energy efficiency goals..	The SECA industrial team shall conduct stack design and testing, including manufacturing approaches, and materials and BOP systems optimization leading prototypes.	

Performance Indicators

- Number of achieved targets and milestones that describe the planned cost reduction and performance.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Begin testing of a 300 kW-1MW solid oxide fuel cell/turbine hybrid commercial prototype for distributed power applications. (MET GOAL)	Begin testing of first market prototype solid oxide fuel cell for distributed power applications. (MET GOAL)	Successfully operate 100-kWe solid oxide fuel cell for 4,000 hours. (MET GOAL)
Begin construction of a one MW Solid Oxide Fuel Cell (SOFC) hybrid. (NOT MET)	In support of Vision 21, complete testing of a 250kw fuel cell/ turbine hybrid, and deliver a conceptual design of a one MW fuel cell/turbine hybrid power plant to facilitate market entry. (MIXED RESULTS)	

Program Strategic Performance Goals (ER4-4: Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
	Conduct contracted and in-house SECA core technology of crosscutting and proof-of-concept R&D for transferred to one or more industrial teams, including know-how, patents, licenses, reports, papers in peer reviewed journals, etc.	Restart and test the 220-kW hybrid solid oxide fuel cell (SOFC)-microturbine powerplant at the National Fuel Cell Research Center. If successful, this test will verify the commercial design for this particular SOFC technology for DG or CHP applications. (MET GOAL)

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Initiate construction of a fixed-bed slagging gasification and fuel cell demonstration project (Kentucky Pioneer Energy Project). (MIXED RESULTS)		

Program Strategic Performance Goals

ER5-1: Develop advanced technologies and employ scientifically based policy options to increase the Nation's economically recoverable resources by 15 TCF for natural gas and 140 million barrels for oil by 2008; reduce future costs of exploration and production by $10 billion. According to the USGS, EIA, and MMS, the economically recoverable oil resource base is estimated to by 120 billion barrels at $18/bbl and 149 billion barrels at $30/bbl; the gas base is estimated to be 740 TCF at $2.00/mcf and 920 TCF at $3.50/mcf in 2002.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete conceptual design of microwave process for coiled tubing and drill pipe manufacturing, complete and release software that more accurately predicts well performance in fractured gas reservoirs (integrates seismic and fracture models into production simulator), and complete assessment of gas-in-place for new basins.	Complete basin model for the Wind River Basin and well site selection in Greater Green River Basin to evaluate integrated remote sensing, seismic surveys and basin structural analysis to differentiate gas-bearing from uneconomic fractured reservoirs, complete a conceptual model of regional water distribution to help operators avoid poor production areas, and build and have field ready an initial prototype of a 400-geophone receiver array to improve seismic resolution necessary to locate economically productive gas zones.Conduct 2 field tests of improved drilling technology that will improve the productivity of gas reservoirs and reduce drilling costs and 2 field tests of technologies to improve natural fracture detection to increase the percentage of economically producing wells of all wells drilled.	Demonstrate safe economic slim hole drilling technology in actual use under Arctic conditions. This technology can significantly reduce cost and environmental impacts. (MET GOAL)
	Conduct 4 field tests to demonstrate technical feasibility of advanced remote sensing and pipeline inspection technologies to reduce unintentional damage and increase pipeline integrity. Complete 2 field tests for underground gas storage facilities to improve gas storage well deliverability. Complete field testing of energy meter prototype.	Complete laboratory testing and begin field demonstrations of an improved remedial technology for storage wells. (MET GOAL)
	Analyze results of bench-scale reverse osmosis in produced water treatment equipment. Develop kinetics for model compounds to be used in enzymatic and biomimetic catalysts for upgrading heavy crude oils. Construct greenhouse prototype for phytoremediation for methane (natural gas) from coal beds (CBM) water. Collect data on fine particulate matter emission factors. These studies will provide the scientific basis for lower-cost commercial-scale environmental technologies.	Develop two technologies to detect and quantify areas of high fracture density in currently uneconomic low permeability gas reservoirs. Select drill sites for demonstration of the two technologies. (MET GOAL)

Performance Indicators

- Revenue from royalty payments and dollars from saved production costs.
- Economically recoverable resources oil.
- Economically recoverable resources gas.
- Percent improvement of pipeline reliability.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete the demonstration of five advanced secondary and tertiary technologies. Based on models, it is estimated these technologies will increase near-term incremental production by 1.7 million barrels of oil, and long-term incremental production by over 2.4 billion barrels of oil. (MIXED RESULTS)	Complete demonstration and transfer of seven advanced secondary and tertiary technologies, adding 92 million barrels of reserves, increasing the number of economic wells and reducing abandonment rates. (MET GOAL)	Demonstrate four advanced production enhancement technologies that could ultimately add 190 million barrels of domestic reserves, including 30 million barrels during FY 1999. (MET GOAL)
Demonstrate the field application of a shoulder-mounted, portable video methane leak detection system that can be used to significantly reduce costs of leak monitoring at refineries and other facilities while reducing harmful air emissions. Annual savings of $500,000 per year per refinery, on average, would result from regulatory acceptance and application of this technology. (NOT MET)	Complete field-testing and monitoring of two technologies for downhole separation of oil and water, resulting in reduction in produced water and potential increase in oil production per well. (MIXED RESULTS)	Complete an online environmental compliance expert system, developed in cooperation with States, that will improve oil and gas production economics by giving producers on-line access to Federal and State rules and regulations, and allowing them to conduct environmental permitting and reporting over the Internet, reducing time and costs related to environmental compliance. (MIXED RESULTS)
	Demonstrate a cost-effective horizontal well and advanced exploration and stimulation technologies in low permeability natural gas formations for increasing recovery of the 5,000+ TCF of gas in place in the Greater Green River and Wind River Basins. (MIXED RESULTS)	

Program Strategic Performance Goals (ER5-1: Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Conduct 1 field tests of improved technology for enhanced stripper well production, a field test of enhanced drill pipe telemetry system to improve data transmission from bottom of wellbore to surface, and a field test of advanced fracture stimulation design for tight sands.	Increase access to the domestic oil resources remaining in the reservoir due to lack of advanced technology. Focus on high-risk research (award 3 projects-PRIME and issue 1 solicitation Micro-hole technologies) for future applications on state and federal lands and waters, and on addressing nearer-term barriers Select and award 4 projects with independents, and on a regional basis award 4 projects-PUMP. Award 2 projects in Advanced Technologies.	Demonstrate a small-diameter, lightweight composite drill pipe for ultra-short radius drilling. (MET GOAL)
Advance the state-of-the-art in oil recovery processes by conducting one bench test in surfactant behavior, modeling non-conventional reservoirs, studying gel control of water production, and modeling sweep efficiency for enhanced oil recovery technologies to increase the amount of oil that can be recovered from discovered reservoirs.	Reduce the number of dry holes drilled in frontier areas, and increase near-term energy security through field testing (2 projects) improved oil recovery techniques, seismic (1 project), data acquisition (2 projects); interpretation (1 project) and streamflood simulation (1 project) in existing light and heavy oil reservoirs at sites ranging from Alaska to Utah.	
Enhance access to the domestic oil resources remaining in the reservoir due to lack of advanced technology. Focus on high-risk research (award 1 project–Micro-hole technologies). Award 1 technology outreach project on a national basis, and issue Broad Agency Announcement and make 2 awards.		

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets	There were no related targets	There were no related targets

Program Strategic Performance Goals

ER5-2:By 2015, conduct scientific analyses and develop and field test a suite of methane hydrate characterization and diagnostic technologies that will provide a reliable inventory of Alaskan methane hydrate resources and resolve global environmental implications of natural methane hydrate instability. By 2008, reduce the cost of producing hydrogen from natural gas by 15 percent.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Exchange hydrate information and coordinate effort between government agencies. Issue newsletters, publish available technical reports on the methane hydrate website, and hold 2 workshops to communicate program results to researchers. Conduct annual Federal Advisory Committee meeting. Complete Gulf of Mexico and Alaska field project reports.	Exchange information and coordinate effort between government agencies. Award subprojects under Joint Industry Projects for Gulf of Mexico seafloor stability and monitoring programs. Issue newsletters, publish available technical reports on the methane hydrate website, and hold 2 workshops to coordinate program results to researchers. Conduct annual Federal Advisory Committee meeting.	There were no related targets in FY 2002.
Refine hydrate models based on results of lab and field work.	Complete hydrate modeling for Alaska drilling program. Report strength and thermal property tests at national labs, this is fundamental data needed to model production and seafloor stability of hydrates. Develop prototype Raman Spectroscopy to use lasers to define hydrate molecular structure.	
Complete small methane hydrate coring project in the Gulf of Mexico. Issue final reports: improved hydrate coring device on Ocean Drilling Program, Leg 204; aerial extent of hydrates in Alaska.	Complete initial report of improved hydrate coring device on Ocean Drilling Program, Leg 204. Study of oceanic samples is essential to understanding the distribution and properties of hydrate in nature. Drill 1 test well to determine aerial extent of hydrate occurrence in Alaska. Complete evaluation of hydrate occurrence in Gulf of Mexico to understand the interaction of hydrate and seafloor stability.	
Issue the first competitive solicitations for Hydrogen from Natural Gas to study fundamental science of hydrogen production and separation from natural gas.		
Down-select from existing hydrogen production research projects initially funded under different programs. Award competitively selected cost-shared, cooperative agreements to develop advanced technologies to produce hydrogen at lower cost.		

Performance Indicators

- Safety of offshore drilling.
- Characterization of methane hydrates.
- Environmental implications of methane hydrates.
- Cost of hydrogen from natural gas.
- Cost of offshore operations.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Quantify a hydrate deposit by correlating core samples with geophysical and well log data. (MET GOAL)	Identify a site containing gas hydrates suitable for testing the feasibility of methane recovery. (MET GOAL)	Complete development of one Advanced Drilling, Completion & Stimulation technology system that could contribute to an additional 6 trillion cubic feet (TCF) of domestic gas reserves by 2010. (MET GOAL)

Program Strategic Performance Goals

ER6-1: Maintain operational readiness of the Strategic Petroleum Reserve (SPR) to drawdown at a sustained rate of 4.4 million barrels per day for 90 days, within 15 days notice by the President, and fill the SPR to its current capacity of 700 million barrels by 2005.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Add 70.4 million barrels (cumulative from April 2002) of royalty oil to the SPR inventory). EOY crude oil inventory will equal 675 million barrels	Add 39.8 million barrels (cumulative from April 2002) EOY crude oil inventory will equal 628 million barrels.	Delivery to the SPR of exchanged Federal Royalty Oil was continued, per the FY 1999 Agreement with the Department of Interior. In FY 2002, this effort added approximately 9.4 million to SPR inventory, and contributed toward the total delivery to inventory of 42.5 million barrels, during the fiscal year, from all exchange and Federal Royalty Oil agreements. (MET GOAL)
Commence full Degas Plant operations at a rate of 100,000 – 150, 000 barrels per day by May, 2004 at the Big Hill, TX storage site.	Complete the Degas Plant design.	
		Transfer of Federal Royalty Oil to the SPR under Phase III commenced in April 2002. In FY 2002, approximately 10.2 million barrels of royalty oil from Phase III were added to the SPR inventory, exceeding the projected target for this effort. (MET GOAL)
		Completed the annual target with the award on November 29, 2001, of the firm fixed-price turnkey (design/build) contract to Petrofac LLC of Tyler, TX, to provide a portable degas plant for continuous removal of excess gas from the SPR crude oil inventory. (MET GOAL)

Performance Indicators

- The total number of SPR crude oil barrels in storage.
- Rate of degasification.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Establish a Northeast Heating Oil Reserve of up to two million barrels. (MET GOAL)		
Complete the transfer of Federal Royalty Oil to the SPR by November 2000 per the FY 1999 Agreement with the Department of Interior. (MET GOAL)	Complete contracting for the transfer and/or exchange of 28 million barrels of Federal Royalty Oil from the Department of the Interior for a net increase of approximately 23 million barrels in the SPR inventory, with deliveries of a remaining four million barrels in FY 2001. (MET GOAL)	Initiate additional SPR infrastructure Life Extension Program projects, thereby bringing program implementation to approximately 96 percent of the $328 million program. Program completion in FY 2000 will increase sustained drawdown capability to 4.1 million barrels per day, compared to 3.7 in FY 1997. (MET GOAL)
	Complete the Life Extension Program to ensure the long-term reliability, effectiveness, and operational readiness of SPR facilities and systems. (MET GOAL)	
	Ensure the achievement of a calculated site availability of 95 percent or greater with drawdown capability of 4.1 million barrels per day for a sustained 90-day period within 15 days notice by the President. (MET GOAL)	

Program Strategic Performance Goals

ER7-1:Deploy new nuclear generation to meet energy and climate goals by enabling an industry decision to deploy at least one new advanced nuclear power plant in the U.S. by 2010 to support the President's goal of reducing greenhouse gas intensity by 18 percent by 2012; completing design of an economic, commercial-scale hydrogen production system using nuclear energy by 2015; and developing a next-generation nuclear system after 2010 but before 2030 that provides significant improvements in proliferation and terrorism resistance, safety and reliability, and economics.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
	Under the cooperative agreements with U.S. power generation companies, support the preparation and submittal of at least two Early Site Permit applications for commercial sites to NRC.	Complete and issue the government/industry roadmap to build new nuclear plants in the United States by 2010. (MET GOAL)
Demonstrate the combined Construction and Operating License (COL) process by awarding a cost shared project with a power generating company.	Following a competitive process, award at least one cooperative agreement for cost-shared nuclear power plant technology development activities on an advanced reactor design	
Complete a technology roadmap for the Nuclear Hydrogen Initiative identifying the research and development required to determine the competitiveness of large-scale hydrogen production using nuclear energy.		
Complete pre-conceptual system designs and identify technical requirement envelopes for concept-specific reactor systems, energy conversion systems, and fuel cycle facilities.		
		Complete at least two cooperative agreements with U.S. power generating companies to jointly proceed with at least two NRC Early Site Permit applications for specific DOE and/or commercial sites. (MET GOAL)
	Issue the Generation IV Technology Roadmap to develop the most promising next generation nuclear energy system concepts.	Complete the draft Generation IV Technology Roadmap for development of the next generation nuclear energy systems. (MET GOAL)

Performance Indicators

- Number of milestones met toward achieving a private sector order for a new commercial nuclear power plant in the United States by 2010.
- Number of thermo-chemical water splitting techniques tested by 2005.
- Number of milestones met in determining hydrogen production efficiencies by 2006 toward development and demonstration of a commercially viable, reactor-driven process for the large-scale production of hydrogen.
- Improvements in sustainability, safety, and reliability, proliferation-resistance, and economics as compared to current operating nuclear power plants.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	There were no related targets.	There were no related targets.
Formally establish the Generation IV International Forum to assist in identifying and conducting cooperative R&D. Initiate development of a Generation IV Technology Roadmap for development of next generation nuclear energy systems. (MET GOAL)		

Program Strategic Performance Goals

ER7-2: Maximize energy from nuclear fuel by enabling a decision by 2010 to forgo a second repository while still supporting expanded nuclear power in the U.S. and develop the technology to reduce commercial high-level waste by a factor of four by 2015; and commercializing technology to reduce long-term radiotoxicity and heat load of spent fuel by 2010.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete fabrication of advanced light-water reactor proliferation-resistant transmutation fuel samples and initiate irradiation.	Complete fabrication of test articles containing proliferation-resistant transmutation fuels for fast reactors and initiate irradiation in the ATR.	
Demonstrate a laboratory scale separation of americium and curium as well as cesium and strontium from spent nuclear fuel to support the development of advanced fuel cycles for enhanced repository performance.	Demonstrate a laboratory scale separation of plutonium and neptunium from other actinides and fission products to support the development of advanced fuel cycles for enhanced repository performance.	Demonstrate separation of uranium from spent nuclear fuel at a level of 99.9 percent using the Uranium Extraction (UREX) process to support the development of advanced fuel cycles for enhanced repository performance. (MET GOAL)
		Successfully manufacture advanced transmutation non-fertile fuels and testing containers for irradiation testing in the Advanced Test Reactor. (MET GOAL)
Obtain formal approval for mission need and commence conceptual design of advanced, proliferation-resistant spent fuel treatment facility.		

Performance Indicators

- Complete fabrication, in FY 2005, of proliferation-resistant light-wate reactor test fuel for prototypic irradiation in FY 2006.
- Demonstration of proliferation-resistant separation of actinides by 2006.
- Reductions in radiotoxicity and heat load of spent fuel as compared to existing inventories of commercial spent fuel.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Establish new international agreement on advanced accelerator applications programs with at least one country that significantly leverages financial and technical resources, to the mutual benefit of both countries particularly in areas such as safety, fuels and materials development, and facility operations. (MET GOAL)	The following additional results are included to provide historical context for the FY 2002 and FY 2003 targets, and do not correspondent to prior year APP target.	There were no related targets.
Establish a new Advanced Accelerator Applications university fellowship program and fund 10 new graduate students in engineering and science. (MET GOAL)	Established a science and engineering based research program into Accelerator Transmutation of Waste (ATW) technology development. Commenced systems studies to establish and evaluate technology options and narrow choices. Issue a Program Plan for the conduct and management of the ATW research program	

Program Strategic Performance Goals

ER7-3:Protect existing nuclear generation to support the National Energy Policy objective to maintain and expand the Nation's electricity generation infrastructure by sponsoring innovative, investigator-initiated R&D to enhance the performance of light-water reactor technology to increase generating output from existing plants by at least an additional 500 megawatts by 2020.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete 11 NERI projects initiated in FY 2000 and FY 2001 in the areas of advanced reactor technology, advanced reactor fuel, fundamental nuclear science technology, and/or nuclear waste management.	Complete 29 NERI projects initiated in FY 1999 and FY 2000 in the areas of advanced reactor technology, advanced reactor fuel, fundamental nuclear science technology, and/or nuclear waste management.	Complete the first 3-year phase of NERI research and development. (MET GOAL)
	Award approximately eight new projects in the areas of next-generation reactor and fuel cycle technology, innovative nuclear plant design and advanced nuclear fuels and materials – five with the Republic of Korea and three under another international agreement.	Complete funding for the 10 NERI projects initiated in FY 2000; provide funding for the second year of the 13 NERI projects initiated in FY 2001; and, award at least 16 new NERI projects. (MET GOAL)

Performance Indicators

- Complete fabrication, in FY 2005, light-water reactor test fuel for prototype irradiation beginning in FY 2006.
- Number of advanced methods of monitoring long-term material performance developed by 2008.
- Development of an advanced sensing, monitoring, control and diagnostics technology by 2009.
- Number of new material applications (e.g. ceramics) to address component-aging issues by 2009.
- Number of component technologies developed towards the establishment of advanced power conversion technologies by 2010.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete funding for the first 3-year phase of Nuclear Energy Research Initiative (NERI) research and development; select feasible and important reactor and fuel cycle concepts for continued development; and, issue approximately 15 new awards. (MET GOAL)	Continue Nuclear Energy Research Initiative (NERI) research to improve the understanding of new reactor and fuel cycle concepts and nuclear waste management technologies, and begin to develop a preliminary feasibility assessment of the concepts and technologies. (MET GOAL)	Establish a peer-reviewed Nuclear Energy Research Initiative, initially funded at $19 million, to select and conduct investigator-initiated innovative scientific and engineering research that will address the issues facing the future of nuclear power in the U.S., including proliferation concerns, economics, and the management of nuclear waste. (MET GOAL)
Establish bilateral research programs with other countries to improve the cost, and enhance the safety, non-proliferation, and waste management capabilities of future nuclear energy systems. (MET GOAL)		
	Issue the first update to the Joint DOE/EPRI Strategic Research and Development Plan to Optimize U.S. Nuclear Power Plants. (MET GOAL)	Advance the state of scientific knowledge and technology to enable incorporation of improved proliferation resistance, safety, and economics in the potential future design, and development of advanced reactor and nuclear fuel systems. (MET GOAL)
	Implement a cooperative cost-shared R&D program by working with industry, universities, national laboratories, and the Nuclear Regulatory Commission to address technical issues that could impact continued operation of current nuclear power plants. (MET GOAL)	
Completed four projects, continued 10 projects initiated in FY 2000, and initiated eight new projects to conduct R&D activities associated with managing long-term effects of plant aging and improving electricity generation.		Complete Memoranda of Understanding with the Nuclear Regulatory Commission and the Electric Power Research Institute (IEPRI) to guide future implementation of the Joint DOE-EPRI Strategic Research and Development Plan to Optimize U.S. Nuclear Power Plants. (MET GOAL)

Program Strategic Performance Goals

ER7-4:Maintain and enhance national nuclear capabilities by producing highly-trained nuclear scientists and engineers to meet the Nation's energy, environmental, health care, and national security needs; preserving critical user facilities in a safe, secure, environmentally-compliant, and cost-effective manner to support national priorities; replenishing Federal technical and management staff with emphasis on obtaining high-caliber junior professionals with diverse backgrounds; and delivering isotope products and services for commercial, medical, and research applications where there is no private sector capability or sufficient capacity does not exist to meet United States needs such that by December 2004, deliveries continue to be made to customers as needed.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Keep cost and schedule milestones for upgrades and construction of major research/critical facilities within 10 percent of the approved plan.	Keep cost and schedule milestones for upgrades and construction of major research/critical facilities within 10 percent of approved baselines.	Complete 80 percent of the construction of the Los Alamos Isotope Production Facility, which is needed for the production of short-lived radioisotopes essential for U.S. medical research. (MET GOAL)
Keep number of weeks of operation for each major research/critical facility within 10 percent of the approved plan.	Keep number of weeks of operation for each major research/critical facility within 10 percent of the approved plan.	Meet the milestones for legacy waste cleanup at Test Reactor Area (TRA) in the Voluntary Consent Order between the State of Idaho and DOE, and efficiently manage resources to limit growth in backlog of maintenance to no more than 10 percent. (MET GOAL)
Demonstrate the operational capability of radioisotope power systems infrastructure by fabricating flight quality products at each of major facilities (i.e., at least eight iridium clad vent sets at ORNL and at least eight encapsulated Pu-238 fuel pellets at LANL), and by processing at least 3 kilograms of scrap Pu-238 at LANL.	Demonstrate the operational capability of radioisotope power systems infrastructure by fabricating flight quality products at each of the major facilities (i.e., at least eight iridium clad vent sets at ORNL and at least eight encapsulated Pu-238 fuel pellets at LANL) and by processing at least one kilogram of scrap Pu-238 at LANL.	Demonstrate the operational capability of radioisotope power systems infrastructure by fabricating quality products at each of the major facilities (i.e., at least eight iridium clad vent sets at ORNL and at least eight encapsulated Pu-238 fuel pellets at LANL). (MET GOAL)
		Bring the full-scale scrap recovery line to full operation and begin processing Pu-238 scrap for reuse in ongoing and future missions requiring use of radioisotope power systems. (MIXED RESULTS)
Complete 100 percent of NE Idaho site wide cyber security protection plans and Facility Security Surveys.	Complete the Idaho Integrated Safeguards and Security Plan to assure appropriate protective measures are taken commensurate with the risks and consequences for both the laboratories on the Idaho site.	During FY 2002, no national security incidents occurred within NE Idaho site wide cyber systems and security areas that caused unacceptable risk or damage to the Department. (MET GOAL)
		Develop conceptual design of Stirling Radioisotope Power System suitable for space exploration missions. (MET GOAL)
		Complete assessment of special purpose fission technology options required to power advanced spacecraft to the outer planets and on the surface of Mars. (MET GOAL)

Performance Indicators

- Percent on time/within budget for cost and schedule milestones for upgrades and construction of major research/critical facilities.
- Percent unscheduled downtime for each major research/critical facility.
- Number of annual deliveries for isotope products and services.
- Percent of customer specifications met for isotope products and services.
- A 95 percent success rate for preventing unauthorized intrusions into security areas; including cyber systems, that result in site degradation.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

Program Strategic Performance Goals (ER7-4: Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
There were no related targets.	There were no related targets.	There were no related targets.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Support U.S. universities' nuclear energy research and education capabilities by: • Providing fresh fuel to all university reactors requiring this service; • Funding at least 23 universities with research reactors for reactor upgrades and improvements; • Partnering with private companies to fund 18 or more DOE/Industry Matching Grants Program for universities; and • Continue to support Reactor Sharing enabling each of the 29 schools eligible for the program to improve the use of their reactors for teaching, training, and education within the surrounding community. (MET GOAL)	Support U.S. universities' nuclear energy research and education capabilities by: • Providing fresh fuel to all university reactors requiring this service; • Providing funding for reactor upgrades and improvements at least 23 universities; • Partnering with 17 or more private companies to fund DOE/Industry Matching Grants Programs for universities; and • Increasing the funding for Reactor Sharing by 20 percent over FY 1998, enabling each of the 29 schools eligible for the program to improve the use of their reactors for teaching, training, and education within the surrounding community. (MET GOAL)	Support U.S. universities' nuclear energy research and education capabilities by: • Providing fresh fuel to all university reactors requiring this service; • Funding at least 20 universities with research reactors for reactor upgrades and improvements; • Partnering with 19 or more private companies to fund DOE/Industry Matching Grants Program for universities; and • Increasing the funding for Reactor Sharing by 40 percent over FY 1998, enabling each of the 26 schools involved in the program to improve the use of their reactors for teaching, training, and education within the surrounding community. (MET GOAL)
Attract outstanding U.S. students to pursue nuclear engineering degrees by: • Providing 24 fellowships; • Increasing the number of Nuclear • Engineering Education Research • Grants to approximately 50 existing and new grants; and	Attract outstanding U.S. students to pursue nuclear engineering degrees by: • Providing 18-20 fellowships; • Increasing the number of Nuclear Engineering Education Grants to 45 existing and new grants; and	Attract outstanding U.S students to pursue nuclear engineering degrees by: • Increasing the number of fellowships from 14 to 22; • Increasing the number of Nuclear Engineering Education Grants from 19 to over 40; and
Providing scholarships to approximately 50 sophomore, junior, and senior nuclear engineering and science scholarship recipients, including the partnering of minority institutions with nuclear engineering schools to allow these students to achieve a degree in their chosen course of study and nuclear engineering. (MET GOAL)	Providing scholarships and summer on-the-job training to approximately 50 sophomore, junior and senior nuclear engineering and science scholarship recipients. (MET GOAL)	Providing summer on-the-job training to 29 junior and senior nuclear engineering scholarship recipients. (MET GOAL)

Program Strategic Performance Goals (ER7-4: Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
There were no related targets.	There were no related targets.	There were no related targets.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	Complete bench scale demonstration of the process to recover Pu-238 scrap for reuse in power systems for future missions using radioisotope power systems. (MET GOAL)	
Complete installation of the full scale Pu-238 scrap recovery line to process Pu-238 scrap that will be required to provide radioisotope power systems for planned NASA and national security missions. (MET GOAL)	Execute an industrial contract and initiate associated laboratory efforts to develop small Radioisotope Thermoelectric Generators (RTGs) for anticipated use on NASA's Europa Orbiter and Pluto/Kuiper missions planned for launch in 2003 and 2004.[1] (MET GOAL)	
Competitively select system integration contractor to develop a flight qualified Stirling Radioisotope Power System for future space exploration missions. (NEARLY MET GOAL) Complete initial assessment of special purpose fission technologies that are focused on concepts and technologies for space applications. (MET GOAL)		

[1] *Since the development of this goal, NASA has changed its mission plans and priorities and has deferred the Pluto mission and has asked DOE to develop and baseline a Stirling Radioisotope Power System for the 2006 Europa Orbiter mission and maintain the viability of using spare RTGs and assembling a spare converter from the Cassini mission as backups for the Europa Orbiter mission.*

Program Strategic Performance Goals

SC6-1 Improve the basis for a reliable capability to predict the behavior of magnetically confined plasma and use the advances in the Tokamak concept to enable the start of the burning plasma physics phase of the U.S. fusion sciences program. (Science and Enabling Technologies subprograms)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Conduct feedback control experiments in III-D with the new internal control coils to reach plasma operating conditions greater than the limits that can be achieved without the stabilizing effect of a near-by conducting wall.	Complete installation of internal coils for feedback control of plasma instabilities on DIII-D, and conduct a first set of experiments demonstrating the effectiveness of these coils in controlling plasma instabilities, and compare the results with theoretical predictions.	Use recently upgraded plasma microwave heating system and new sensors on DIII-D to study feedback stabilization of disruptive plasma oscillations. (MET GOAL)
Compare energy confinement, H-mode thresholds, and divertor particle dynamics in single-null, double-null, and inner-wall-limited discharges in Alcator C-Mod, establishing limits of divertor power handling for advanced tokamak plasma regimes and requirements for advanced divertors for planned burning plasma tokamaks.	Produce high temperature plasmas with five megawatts of Ion Cyclotron Radio Frequency (ICRF) power for pulse lengths of 0.5 seconds in the Alcator C-Mod. Assess the stability and confinement properties of these plasmas, which would have collisionalities in the same range as that expected for the burning plasma regime.	
Include electron dynamics in transport simulations and compare the results with experimental results from both U.S. and foreign tokamaks to validate the simulation code.		
Expand the experiments on stabilization of Neoclassical Tearing Mode instabilities with increased electron cyclotron heating power in DIII-D and compare the results with newly developed computational models to validate the theories. Complete detailed design of an advanced, high-power, load tolerant, ion cyclotron radio frequency antenna for C-Mod.		
	Complete testing of the High-Power Prototype advanced ion-cyclotron radio frequency antenna that will be used at the JET.	Complete design and fabrication of the High-Power Prototype advanced ion-cyclotron radio frequency antenna that will be used at the Joint European Torus (JET). (MIXED RESULTS)

Performance Indicators

- Eighty percent of all new research projects will be peer reviewed and deemed excellent and relevant.
- Annually, 30 percent of all ongoing projects will be subject to peer review with merit evaluation.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	Maintain high scientific quality in the Energy Research Program as judged by the Program Advisory Committees. (MET GOAL)	Maintain high scientific quality in the Energy Research Program as judged by the Program Advisory Committees. (MET GOAL)
Complete by June 2001 the 6 MW power upgrade of the DIII-D microwave system, and initiate experiments with it to control and sustain plasma current profiles, with the goal of maintaining improved confinement of plasma energy for longer periods of time. (NOT MET)	Operate the DIII-D Tokamak facility to test the feasibility of using increased radio frequency heating power, and improved power exhaust capabilities to extend the pulse length of advanced operating modes, a requirement for future fusion energy sources. (MET GOAL)	
The following additional results are included to provide historical context for the FY 2002 and FY 2003 targets, and do not correspond to a prior year APP target.	Operate a novel magnetic fusion confinement device, the National Spherical Torus Experiment, with 0.5 mega-ampere plasma currents approaching 0.5-second pulse lengths, and one mega-ampere currents for shorter pulses. (MET GOAL)	
Improved nonlinear magneto-hydrodynamics codes to be capable of computing the effect of realistic resistive walls and plasma rotation on advanced Tokamak pressure limits.	Make operational three innovative concept exploration experiments in fusion science—The LSX field-reversed configuration and the flow-through Z pinch, both at the University of Washington, and the Pegasus quasi-spherical toroidal plasma at the University of Wisconsin — providing basic scientific understanding of relevant concept phenomena. (MET GOAL)	
Evaluated first physics results from the innovative Electric Tokamak at University of California Los Angeles (UCLA), to study fast plasma rotation and associated radial electric fields due to radio frequency-drive, in order to enhance plasma pressure in sustained, stable plasmas. (Exploratory Concept-Electric Tokamak)		

Program Strategic Performance Goals

SC6-2 Resolve outstanding science/technology issues and explore options for more attractive magnetic and inertial fusion energy systems (Science and Enabling R&D subprograms)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Assess confinement and stability in NSTX by exploring the effect of long wavelength turbulence on confinement and obtaining initial results on the avoidance or suppression of plasma pressure limiting modes in high-pressure plasmas.		Demonstrate innovative techniques for initiating and maintaining current in a spherical torus. (MET GOAL)
Integrate elements of initial plasma neutralized beam focus and carry out initial experiments in support of heavy ion beam inertial fusion.		
Carry out full voltage beamlet acceleration and determine beamlet characteristic (multibeamlet source configured in FY 2003) for heavy ion beam inertial fusion.		
Under a cost-shared collaborative program with Japan for irradiation testing of fusion materials in U.S. fission reactors, complete first phase of testing to evaluate the effects of neutron bombardment on the microstructural evolution, and property changes of candidate fusion materials.	Complete preliminary experimental and modeling investigations of nano-scale thermodynamic, mechanical, and creep-rupture properties of nanocomposited ferritic steels.	Complete measurements and analysis of thermal creep of Vanadium alloy (V-4Cr-4Ti) in vacuum and lithium environments determine controlling creep mechanisms and access operating temperature limits. (MET GOAL)
		The following target is related to the goal but was tracked separately. Complete analysis of JET MARK-II inner diverter performance.

Performance Indicators

- Eighty percent of all new research projects will be peer reviewed and deemed excellent and relevant.
- Annually, 30 percent of all ongoing projects will be subject to peer review with merit evaluation

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	There were no related targets.	There were no related targets.
Initiated a new U.S.-Japan collaborative program for research on enabling technologies, materials, and engineering science for an attractive fusion energy source. Completed the DOE-Japan Atomic Energy Research Institute (JAERI) collaboration on fusion plasma chamber exhaust processing in the Tritium Systems Test Assembly (TSTA) facility at Los Alamos National Laboratories (LANL).		
The following additional results are included to provide historical context for the FY 2002 and FY 2003 targets, and do not correspond to a prior year APP target. By June 2001, enter into a new NSF/DOE Partnership in Basic Plasma Science and Engineering to provide continuity after the present agreement ends, and initiate a new element of the U.S.-Japan collaborative program by the end of FY 2001. (NOT MET)		

Program Strategic Performance Goals

SC7-6 Manage facilities operations and construction to the highest standards of overall performance using merit evaluation with independent peer review. (Fusion Facility Operations subprogram)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
	Keep deviations in cost and schedule for upgrades and construction of scientific user facilities within 10 percent of approved baselines.	Keep deviations in cost and schedule for upgrades and construction of scientific user facilities within 10 percent of approved baselines. (MIXED RESULTS)
Keep deviations in weeks of operation for each major facility within 10 percent of scheduled weeks.	Keep deviations in weeks of operation for each major facility within 10 percent of the approved plan.	Keep deviations in weeks of operation for each major facility within 10 percent of the approved plan. (MIXED RESULTS)
Complete the Final Design of the National Compact Stellarator Experiment(NCSX) and begin fabrication.	Complete the National Compact Stellarator Experiment (NCSX) Preliminary Design.	Successfully complete within cost and in a safe manner all TFTR decontamination and decommissioning activities. (MET GOAL)

Performance Indicators

- Average operational downtime of FES facilities will not exceed 10 percent of total time scheduled,
- Construction and upgrades of facilities will be within 10 percent of baseline schedule.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	There were no related targets.	There were no related targets.

The following results are included to provide historical context for the FY 2002 and FY 2003 targets, and do not correspond to a prior year APP target.

Kept deviations in cost and schedule for upgrades and construction of scientific user facilities within 10 percent of approved baselines.

Achieved planned cost and schedule performance for dismantling, packaging, and offsite shipping of the Tokamak Fusion Test Reactor (TFTR) systems.

Kept deviations in weeks of operation for each major facility within 10 percent of the approved plan.

GOAL 2: Energy Conservation and the Environment

Energy use and green-house gas emissions versus the Gross Domestic Product (GDP) are reduced by 40 percent by 2025 compared to 2000 and the growth versus the U.S. population stops by 2025.

Program Description:

Over 90 percent of the green-house gas emissions in the United States are attributable to energy consumption. Reducing energy consumption not only limits production of the substances that have been identified as contributing to global warming but also reduces the amount of criteria pollutants and toxics that have been linked to environmental desegregation and cancer. Conservation also improves our energy security by limiting our dependence on foreign sources and provides a greater legacy of domestic resources for future generations.

Most of the activities to produce, transmit, distribute, and consume energy have potential to impact the environment. As a custodian of the environment, DOE has established programs that involve each of these areas. The discussion of such programs as carbon sequestration and mercury reduction research that pertain to the production of electricity is contained in Goal 1 of this document, as are related programs in oil and gas production and refinement. Goal 2 details DOE's conservation efforts aimed at Federal agencies and each energy consumption sector (industrial, transportation and vehicles, commercial and residential buildings). Weatherization Assistance, a highly visible DOE program, provides a means for energy conservation to low-income households. Upcoming in Goal 3 is a discussion of Federal hydropower production, which is also of great interest to environmentalists. The associated issue of electricity reliability has other implications for energy conservation because an optimized electricity system from the production through the consumption phase means less energy consumed and emissions generated.

ER-1-1, Federal Energy Management Program:

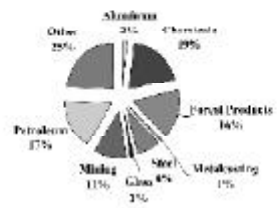
The mission of the Federal Energy Management Program (FEMP) is to increase the energy security and reduce the environmental impact of Federal government operations by advancing energy efficiency and water conservation, promoting the use of renewable and distributed energy, and improving utility decisions at Federal sites including those of the Department of Energy. Through alternative financing vehicles, technical assistance, and outreach campaigns, FEMP helps the Federal government lead by example through conserving energy and using more reliable energy sources at its own facilities. 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 assistance to Federal agencies. The Departmental Energy Management Program (DEMP) implements the FEMP mission for Department of Energy facilities.

ER-1-2, Industrial Technologies Program:

The mission of the Industrial Technologies Program is to decrease the energy intensity of the U.S. industrial sector through a coordinated program of research and development, validation, and dissemination to provide industry with energy-efficient technologies and operating practices. This effort is achieved through partnering with industry, its equipment manufacturers, and its many stakeholders to improve energy security, reduce environmental impacts, increase the use of renewable energy resources, and improve competitiveness.

Industry is the Nation's largest energy-consuming sector, accounting for about 35 percent of all U.S. energy use. As shown in Figure 1, eight industries account for about three-quarters of U.S. industrial energy use. (These are aluminum, chemicals, forest products, glass, metal casting, mining, petroleum, and steel.) These industries produce more than $1 trillion in goods and services annually, employ more than three million people, and generate four additional jobs in the economy for each job created in their industries.

Figure 1
Energy Use by Industry
Total 2001 End-Use: 33.9 Quads*



*Includes 2 quads of renewable energy used principally in the forest products industry.

To accomplish the public objectives of energy security, environmental protection, and energy efficiency, the Industrial Technologies Program has developed an effective strategy to engage specific industries in collaborative partnerships

to address national problems that neither government nor industry is capable of addressing effectively alone. This strategy involves the joint development by industry and government of national "Visions of the future," and the "technology roadmaps" for getting there. This process of collaborating with entire industries to jointly identify and address energy, environmental, and technology issues is known as the "Industries of the Future" approach.

ER-1-3, FreedomCar and Vehicle Technologies:

The mission of the FreedomCAR and Vehicle Technologies (FCVT) Program is to develop more energy efficient and environmentally friendly highway transportation technologies that enable America to use less petroleum. The long-term aim is to develop "leap frog" technologies that will provide Americans with greater freedom of mobility and energy security, with lower costs and lower impacts on the environment.

The FreedomCAR Partnership, an activity that crosscuts this and the hydrogen program (see Goal 1, ER2-1), is being undertaken with the U.S. Council for Automotive Research. FreedomFuel (i.e., hydrogen) is ultimately intended to be powered FreedomCar. The FCVT program researches fundamental, high-risk activities, with applicability to multiple passenger vehicle models and special emphasis on development of fuel cells and hydrogen infrastructure technologies. All of FreedomCar's planned activities dealing with fuel cells for transportation and the hydrogen generation and infrastructure for transportation are funded by the hydrogen program. The remainder of FreedomCar's planned R&D activities, including partnership direction and support, are to be funded under this program.

ER-1-4, Building Technologies Program:

Residential and commercial buildings account for more than one-third of the Nation's total energy consumption. The growth in the economy, as well as the nation's rising population is leading to more, larger, and better-equipped homes and commercial buildings, resulting in increasing energy consumption in this sector. Introduction of new energy efficiency technologies can have significant economic and environmental benefits. The production of energy consumed in buildings, primarily electricity, represents a major source of acid rain, smog, and greenhouse gas emissions, and includes 47 percent of U.S. sulfur dioxide emissions, 22 percent of nitrogen oxide emissions, and 35 percent of carbon dioxide emissions.

The mission of the Building Technologies Program is to develop technologies, tools, and techniques for making residential and commercial buildings more energy efficient, productive, and affordable. This involves research, development, demonstration, and technology transfer activities in partnership with industry, government agencies, universities, and national laboratories. The portfolio of activities includes efforts to improve the energy efficiency of building components and equipment, and their effective integration using whole-building-system-design techniques. It also involves the development of building codes and equipment standards and the integration of renewable energy systems into building design and operation. Under this program is the Zero-Energy Building concept that involves solar and other renewable energy sources so that the buildings produce as much energy as they consume on an annual basis.

The Zero Energy Buildings strategy integrates renewable energy technologies; including solar energy technologies and other distributed energy devices, into the design and operation of highly efficient residential and commercial buildings. The concept involves the development of buildings that produce as much energy as they consume on an annual basis. These buildings would incorporate capabilities to enable owners to buy and sell energy. It is a revolutionary concept that requires a whole-buildings approach to properly size energy generation in concert with other energy efficiency measures to effectively deliver energy services.

ER3-1: Weatherization Assistance Program:

The DOE implements the Weatherization Assistance Program by providing technical assistance and formula grant monies to State and local weatherization agencies throughout the U.S. The network of approximately 970 local agencies provide the trained crews who perform the weatherization services for eligible low-income households, in single-family homes, multifamily dwellings, and mobile homes. The elderly, persons with disabilities, families with children, and households with high-energy burden receive priority. Homes receive a comprehensive energy audit and a cost-effective combination of energy-saving measures. Execution of the Weatherization Assistance Program seeks the participation of States.

The Weatherization Assistance Program will (1) reduce energy costs for low-income households, which are disproportionately burdened by utility bills (utility bills make up 15 to 20 percent of household expenses for low income families, compared to five percent or less for all other Americans); (2) benefit local economies by reducing the local impacts of energy price volatility; (3) reduce the need for other public services such as fuel assistance, housing, and health care; and (4) improve housing and community conditions.

The State Energy Program activities provide financial assistance through formula grants,

enabling state governments to target their own high priority energy needs and expand clean energy choices for their citizens and businesses. Congress created these activities in 1996 by consolidating two other efforts: the State Energy Conservation Program, and the Institutional Conservation Program.

Other State Energy Activities complement the State Energy Program activities described above. Cooperative agreements with States provide assistance for energy-related applied research, development, and field-testing, which are excluded from the State Energy Program enabling legislation. Planning and evaluation that take place in Other State Energy Activities allow for additional technical assistance to States in support of State Energy Assistance and for necessary information management, planning, analysis, and evaluation projects on the formula grant programs.

Means and Strategies:

ER-1-1, Federal Energy Management Program:

The FEMP will achieve the targets outlined in the proceeding pages through three strategies: Project Financing, which focuses on developing and helping agencies use alternative methods of financing projects; Technical Guidance and Assistance, which aims to transfer to Federal agencies the knowledge and expertise required to make investments in efficient, renewable and secure energy technology; and Outreach and Interagency Coordination, which establishes and promotes Federal energy management policies and monitors achievement of government-wide goals.

ER-1-2, Industrial Technologies Program:

The DOE partners with key industries and through Allied Partnerships with individual companies, trade and professional groups to develop and apply advanced technologies and practices that reduce energy consumption. Through an innovative strategy known as "Industries of the Future (IOF)," DOE works with the most energy intensive industries. These industries represent the greatest opportunity to save energy and improve environmental performance in a cost-effective manner. DOE invests in pre-competitive and high-risk research development and demonstration (RD&D) that individual companies are unable to undertake without government support. By working with entire industries rather than just individual companies, DOE maximizes the energy benefits of technology investments and fosters the formation of public-private partnerships. The "Industries of the Future" strategy focuses on key energy-intensive industries including industrial materials, combustion and sensors and controls. A 50 percent cost-share from industry over the life of the RD&D project is required.

ER-1-3, FreedomCar and Vehicle Technologies:

This mission is accomplished by targeted Federal investments in technology development in partnership with auto manufacturers, heavy vehicle manufacturers, equipment suppliers, energy companies, other Federal agencies, State government agencies, universities, national laboratories, and other stakeholders. These partnerships facilitate the technical coordination of activities and attract cost sharing to provide leveraged benefits for the American taxpayer. Program activities include research, development, demonstration, testing, technology validation, technology transfer, and education. These activities are aimed at developing technologies that could achieve: 1) significant improvements in vehicle fuel efficiency; and 2) displacement of oil by other fuels, such as hydrogen, which ultimately can be domestically produced in a clean and cost-competitive manner.

ER-1-4, Building Technologies Program:

The Residential Buildings Integration activities focus on improving the efficiency of the approximately 1.3 million new homes built each year and the 100 million existing homes, including multifamily units — this will be accomplished through research, development, demonstrations, and technology transfer strategies. The strategies include efforts to improve the energy efficiency of residential energy uses such as space heating and cooling, ventilation, water heating, lighting, and home appliances. It includes support for the development of residential building codes and standards to enable application of whole building design techniques. These activities support efforts to develop solar energy applications for buildings and the concept for Zero Energy Buildings.

The Commercial Buildings Integration strategy addresses opportunities in new commercial buildings ($640 billion annual capital construction) by working with competitively selected industry groups on cost-shared projects that accelerate the development and adoption of new building technologies and design practices, and addresses the need for commercial building codes. It includes technology development efforts to validate energy efficiency designs and practices, improve sensors and controls, and develop more energy efficient ventilation systems. It also includes efforts to improve commercial building codes and standards and coordinates with the Zero Energy Buildings activity.

The strategy of the Emerging Technologies is to include R&D and technology transfer of energy-efficient products and technologies for both residential and commercial buildings. These efforts address the multitude of building components such as lighting, building envelope technologies including advanced windows, and new designs for appliances. Efficiency advances

for this equipment will support the Zero Energy Buildings activity.

Improving efficiency of appliances and equipment by conducting analyses and developing standards that are technologically feasible and economically justified is the strategy of the Energy Star program.

ER-3: Weatherization Assistance Program:

The mission of the Weatherization Assistance Program is to increase the energy efficiency of dwellings occupied by low-income Americans, thereby reducing their energy costs, while safeguarding their health and safety. DOE works directly with states and local governments to implement this program. These agencies in turn contract with local governmental or non-profit agencies to deliver weatherization services.

The Weatherization Assistance Program statute permits the use of funds for training and technical assistance. States have indicated that enhancing the technical base of the staff at the Federal, State, and local levels is a top priority and critical to improving the effectiveness of the Program. Many weatherization providers are moving forward the concept of "whole house weatherization." Under this concept, providers tackle the house as a single energy-consuming system, rather than a loose collection of unrelated systems. Using this approach, these providers can find the best combination of measures for reducing total energy consumption to low-income housing.

In recent years, weatherization crews have been allowed to more fully address health and safety issues they come across on the job. The crews find all kinds of hazards over the course of a year, including carbon monoxide from incomplete combustion of fuel in old boilers, furnaces and hot water heaters; indoor air quality problems from mold that accumulates in walls, basements, or attics exposed to moisture; and fire hazards from electrical equipment or wiring that is old and needs replacement. They also find many examples of equipment that could become a hazard in the case of a flood, tornado, or other natural disaster.

Collaboration Activities:

ER-1-1, Federal Energy Management Program:

The FEMP collaborates primarily with Federal agencies, states, utilities, energy service companies, associations, and other private sector organizations. More specifically, FEMP collaborates with agencies on efficiency and renewable energy initiatives (e.g., EPA on the DOE-EPA Energy Star program and Labs for the 21st Century; National Park Service on the Green Energy Parks Program; and Defense Logistics Agency and General Services Administration on the Standby Power Initiative).

ER-1-2, Industrial Technologies Program:

The Department collaborates on its RD&D with the industries previously identified and with universities. The Department also collaborates with other government agencies including the National Aeronautics and Space Administration, the National Science Foundation (NSF), the Environmental Protection Agency and the Departments of Defense (DoD), Commerce (DOC), Agriculture (USDA), and Interior (DOI). Industry and company showcases and the voluntary Allied Partners program enhance industry adoption of best practices.

ER-1-3, FreedomCar and Vehicle Technologies;

DOE's FreedomCAR and Vehicle Technologies' mission is accomplished by targeted Federal investments in technology development in partnership with auto manufacturers, heavy vehicle manufacturers, equipment suppliers, energy companies, other Federal agencies, State government agencies, universities, national laboratories, and other stakeholders. These partnerships facilitate the technical coordination of activities and attract cost sharing to provide leveraged benefits for the American taxpayer.

ER-1-4, Building Technologies Program:

The Building Technologies program collaborates with EPA, NIST, FEMP, the Department of Justice, buildings industries, state and local governments and organizations, manufacturers, trade associations, American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE), National Fenestration Rating Council (NFRC), International Standards Organization (ISO), energy efficiency and consumer groups, and the national laboratories in efforts to promote the use of efficiency technologies and practices. This collaboration includes cooperative R&D, joint programs like Energy Star (DOE-EPA) and PATH (led by Department of Housing and Urban Development), as well as a consensus process for developing labeling programs NFRC and ASHRAE code standards, and standards with industry and other interested stakeholders.

ER-3-1: Weatherization Assistance Program:

Weatherization is a partnership at every administrative level. Cooperation exists among federal, state, and some local agencies to fund work. In fact, every dollar DOE invests in weatherization leverages $3.39 in federal, state, and private sector funding.

There is also a significant private investment in weatherization, both from individual property owners and from electric and gas utilities. DOE works directly with the states, the District of Columbia, and Native American Tribal Governments to carry out these goals. These agencies, in turn, contract with approximately 1,000 local governmental or non-profit agencies to deliver weatherization services to low-income clients.

As a result of collaboration, State Energy Offices have been able to leverage their Federal formula grant funding at the rate of $4 in non-Federal

funding for each Federal dollar spent and, for some activities, as much as $13 to $14 in non-Federal funding for each Federal dollar. The activity includes a component that engages States in helping achieve Energy Efficiency and Renewable Energy technology program goals through competitive grants using program-directed funds.

External Factors Affecting Performance:

ER-1-1, Federal Energy Management Program:

Reliance on private sector financing for Federal efficiency exposes the program to risks inherent in the market — such as energy price volatility, utility industry restructuring, and interest rate changes — which potentially impact the cost and extent of efficiency improvements and advanced technology adoption. Environmental policies and regulatory actions also influence energy management decision-making. The size and composition of the Federal building stock is outside the control of the program and goal achievement is dependent upon the actions of individual agencies. Energy efficiency is not a primary objective for any other Federal agency.

ER-1-2, Industrial Technologies Program:

In seeking to implement new technologies, America's energy intensive industries must contend with several issues that currently interfere with their ability to expand investment in needed research, development, and deployment activities. These include: slow market growth; narrow profit margins; high investment requirements, increasing competition from foreign firms; volatile energy prices; uncertain energy supply markets; uncertain environmental regulations.

ER-1-3, FreedomCar and Vehicle Technologies:

Outcomes from the FreedomCar and Vehicle Technologies Program will be affected by the state of the economy, willingness of automakers to incorporate R&D advances into vehicles, and the continuation of the ethanol tax credit. Other factors affecting the implementation of the R&D derived from this Program include the price of oil, the demand for higher fuel-efficient vehicles, the cost of the technology to consumers, and the availability of non-petroleum based fuels such as ethanol and hydrogen.

ER-1-4, Building Technologies Program:

Numerous eternal factors may impact achievement of the Buildings program performance goals, including changes in the state of the economy, energy prices, consumer choice, regional disparities, and overall structural change in the buildings market.

ER-3-1: Weatherization Assistance Program:

The DOE relies heavily on its partners (state and local governments) and weatherization providers to deliver weatherization services and availability of funds affects the impact of this program directly. Attracting and retaining qualified local providers remains a strong challenge when labor markets are tight.

Planned Program Evaluation:

ER-1-1, Federal Energy Management Program:

The FEMP has built performance feedback into its program execution. FEMP conducts customer surveys for all program elements. Regular meetings are held with agencies, utilities and other energy suppliers to receive feedback and improve performance. FEMP conducts operational planning activities and is identifying process improvement opportunities to reduce costs, improve timeliness of program delivery, and raise customer satisfaction levels.

ER-1-2, Industrial Technologies Program:

Individual programs conduct annual program and portfolio reviews. Using the forest products industry assessment of the current portfolio's potential future impact as an example, other DOE subprograms conduct similar industrially assessments. DOE works closely with the National Materials Advisory Board of the National Research Council to conduct independent reviews of current and possible future directions of DOE technology R&D programs.

ER-1-3, FreedomCar and Vehicle Technologies:

The National Research Council reviews the FreedomCar program each year and makes recommendations. In addition, the Arthur D. Little accounting firm reviews several subprograms each year.

ER-1-4, Building Technologies Program:

Major Building Technologies program reviews take place every 2 to 3 years, on average. For example, in the summer of 2001, in response to the National Energy Policy (NEP), DOE undertook a Strategic Program Review (SPR) and evaluation of its energy efficiency and renewable energy programs. In August 2001, the National Research Council (NRC) of the National Academy of Sciences concluded an assessment of the efficacy of the DOE energy R&D programs. That assessment, while acknowledging substantial returns on investment for building R&D, highlighted the need for increased and continuous evaluation of the impact of the DOE energy R&D portfolio. EERE is modifying its assessment process to include approaches developed by the NRC. The Building Technologies Program also has a program for peer review and program evaluation. The analytical process and results underpinning the standards process are regularly reviewed by industry as part of rulemakings.

Program and project managers also hold regular program reviews to assess progress toward milestones.

ER-3-1: Weatherization Assistance Program:

The Weatherization Program conducts national evaluations. DOE makes the results of this evaluation available to States, which provide the framework for States making changes to their respective programs to improve performance efficiency, and effectiveness. Likewise, this evaluation assists States and local agencies in obtaining leveraged funds from utilities and other sources by demonstrating documented energy savings and illustrating a professionally operated program. DOE also encourages and allows grant funds to be used for individual State evaluations.

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Program Activity Funding: Energy Conservation and the Environment		Comparable Appropriation		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
TOTAL FUNDING: The total funding for this goal.		697	706	671
ER1-1: The FEMP activities will support Federal agency efforts to decrease energy intensity in standard Federal facilities in 2005, by 30% and, by 2010, 35%, relative to the 1985 statutory baseline levels of 138,610 Btus per gross square foot. Departmental Energy Management Program Team activities will decrease the energy consumption intensity in DOE facilities by 40 percent by 2005, relative to the 1985 baseline levels of 473,126 Btus per square foot thus saving $100 million annually in avoided costs. Site energy use per gross square foot in standard and energy intensive Federal buildings.	EE			
ER1-2: Between 1991 and 2010, the Industries Technologies Program will contribute to a 20 – 25 percent decrease in energy intensity for a potential savings of 2.6 – 4.5 quads) and a 30 – 35 percent decrease by 2020 (a potential savings of 6.3 – 7.4 quads.). Between 2000 and 2010, over 10 industrial energy-efficiency technologies will be commercialized through RD&D partnerships.	EE			
ER1-3: The FreedomCar and Vehicle Technologies program has the following goals: (1) by 2006, the Heavy Vehicle Systems activity develops technologies that will enable reduction of parasitic energy losses, including losses from aerodynamic drag, from 39 percent of total engine output in 1998 to 24 percent; (2) by 2010, Hybrid and Electric Propulsion R&D activities will reduce the production cost of a high power 25kW battery for use in light vehicles from $3,000 in 1998 to $500, with an intermediate goal of $750 in 2006 enabling cost competitive market entry of hybrid vehicles; (3) by 2007, Advanced Combustion Engine R&D activities will reduce NOx emissions in light duty diesel vehicles from 1.0 grams per mile (g/m) in 2000 to 0.07 g/m in 2007 and 0.03 g/m in 2010 and in heavy duty diesel engines from 2.0 grams per brake horsepower hour (g/bhp hr) in 2002 to 0.2 g/bhp hr in 2006 to satisfy the greater than 90 percent reduction required by the light duty Tier II and heavy duty 2007 federal standards, while maintaining or improving engine efficiency; (4) by 2006, Transportation Materials Technologies R&D activities will reduce the production cost of carbon fiber from $12 per pound in 1998, to $3 per pound; and (5) by 2007, Fuel Utilization R&D activities will identify an advanced petroleum-based fuel formulation that enables light and heavy duty compression-ignition direct ignition (CIDI) engine/vehicle systems to meet regulated emissions levels with minimum effect on fuel economy, and perform in full compliance with specified durability requirements.	EE			

Program Activity Funding: Energy Conservation and the Environment		Comparable Appropriation		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
ER1-4 The Buildings Program has the following goals: (1) by 2008, research, develop, and demonstrate at least 10 design packages for specific climates and home types that can achieve from 40 to 70 percent increase in the purchased energy efficiency of new prototype homes relative to the 2000 Model Energy Code, and 4 to 6 design packages that can achieve 20 percent increase in efficiency of existing homes; (2) develop 5 to 7 design packages that can achieve an average of 40 percent increase in the purchased energy efficiency in applicable new commercial buildings or 15 percent increase in existing prototype commercial buildings; (3) introduce 5 new cost effective, ready for transition to market, efficient building products through component and equipment R, D& D activities; (4) by 2009, complete 30 formal proposals to enhance national building codes, and 20 final rules enhancing product minimum efficiency standards and test procedures; and (5) by 2010, develop 3 to 5 cost effective, marketable Zero Energy Building (ZEB) design packages capable of satisfying 100 percent of whole house energy requirements, net on an annual basis.develop 3 to 5 cost-effective, marketable Zero Energy Building (ZEB) design packages capable of satisfying 100 percent of whole-house energy requirements, net on an annual basis.	EE			

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Program Strategic Performance Goal

ER1-1: The FEMP activities will support Federal agency efforts to decrease energy intensity in standard Federal facilities in 2005, by 30% and, by 2010, 35%, relative to the 1985 statutory baseline levels of 138,610 Btus per gross square foot. Departmental Energy Management Program Team activities will decrease the energy consumption intensity in DOE facilities by 40 percent by 2005, relative to the 1985 baseline levels of 473,126 Btus per square foot thus saving $100 million annually in avoided costs. Site energy use per gross square foot in standard and energy intensive Federal buildings.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Provide technical and design assistance for 75 energy efficiency, renewable energy, O&M, and DER/CHP, and water conservation projects and report resulting impacts (e.g. energy intensity reduction inputs) achieved through the end of FY 2002.	Provide technical and design assistance for 70 energy efficiency, renewable energy, and water conservation projects; 10 will be large-scale distributed energy resources and combined heat and power projects. Report results achieved through the end of FY 2001.	Provide technical and design assistance for at least 60 energy efficiency, renewable energy, and water conservation projects; four will be large-scale distributed energy resources and/or combined heat and power projects.
Achieve between $70 and $110 million in private sector, investment contributing to national energy security. The typical delivery order project generates approximately 8,000 Btu annually in energy savings for each dollar invested.	Achieve between $80 and $120 million in private sector investment through Super ESPCs.	Achieving between $80 and $120 million in private sector investment through Super ESPCs. (MET GOAL)
	Complete at least 80 energy assessments including ALERTS, SAVEnergy Audits, industrial facility assessments and operation and maintenance assessments to identify energy and cost saving opportunities.	Completing at least 60 energy assessments including ALERTS, SAVEnergy Audits, industrial facility assessments, and operation and maintenance assessments, to identify energy and cost saving opportunities. (MET GOAL)
	Integrate information on standby power into Defense Logistics Agency and General Services Administration's product schedules in accordance with E.O. 13221.	Publishing initial listing of products that use minimal standby power by December 31, 2001, in accordance with E.O. 13221. (MET GOAL)
Train 4,000 Federal energy attendees in energy management best practices that supports National Energy Policy education goals.	Train 4,000 Federal energy personnel in best practices supporting National Energy Policy education goals.	Training 4,000 Federal energy personnel in best practices supporting National Energy Policy education goals. (MET GOAL)

Performance Indicators

- Energy intensity in Federal buildings
- Federal building use of energy produced by renewable resources.
- Greenhouse gas emissions attributable to Federal buildings.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Achieved $120 million in private sector investment through Super ESPCs.		
Completed 25 Assessment of Load and Energy Reduction Techniques (ALERT) assessments to shave anticipated peak demand and general energy consumption by 10 percent.	Complete one nationwide Solar technology Super-Energy Savings Performance Contract (Super ESPC) for use by all agencies, bringing the total number of technology Super-ESPCs to four. (MIXED RESULTS)	Complete three nationwide Solar technology Super-Energy Savings Performance Contracts (Super ESPCs) for use by all agencies. (NOT METS)
Trained 5,400 federal energy personnel in best practices.		

Notes: Starting in FY04, number of projects assisted will be used as an indicator toward achievement of annual Federal energy reduction targets since: 1) the number of projects are wholly under the control of FEMP, whereas reduction in energy intensity is a government-wide achievement, and 2) previous year data are not available until after the report on Annual Performance is due.

Program Strategic Performance Goal

ER1-2: Between 1991 and 2010, the Industries Technologies Program will contribute to a 20 – 25 percent decrease in energy intensity for a potential savings of 2.6 – 4.5 quads) and a 30 – 35 percent decrease by 2020 (a potential savings of 6.3 – 7.4 quads.). Between 2000 and 2010, over 10 industrial energy-efficiency technologies will be commercialized through RD&D partnerships.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Commercialize four new technologies in partnership with the most energy intensive industries.	Commercialize four new energy efficient technologies in partnership with the most energy intensive industries.	Commercialize 10 new energy efficient technologies in partnership with the most energy intensive industries. (MET GOAL)
6,800 energy intensive U.S. plants will apply EERE technologies and services achieving up to a 15 percent improvement in energy productivity per plant.	6,200 energy intensive U.S. plants will apply EERE technologies and services achieving up to a 15 percent improvement in energy productivity per plant.	
		Complete two showcase demonstrations, at industry sites, of advanced energy efficient technologies. (NOT MET)
		Complete 20 new Allied Partnerships with energy intensive companies, trade organizations and other groups. (MET GOAL)
		Continue support for Industrial Assessment Centers (IACs) operating at 26 participating universities that will conduct over 600 combined energy, waste and productivity assessment days of service to manufacturing clients. (MET GOAL)

**Assumes industrial average energy prices of $4.00 a million Btu.*

Performance Indicators

- Number of technologies commercialized.
- Energy savings from Industrial Technologies activities in partnership with industry.
- Number of energy-intensive plants impacted by the program.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
In FY 2001, commercialized 10 new technologies from both the nine vision industries as well as the crosscutting programs.	There were no related targets.	There were no related targets.
Continue support for Industrial Assessment Centers operating at 26 participating universities that will conduct approximately 650 combined energy, waste and productivity assessments.		

Program Strategic Performance Goal

ER1-3:The FreedomCar and Vehicle Technologies program has the following goals: (1) by 2006, the Heavy Vehicle Systems activity develops technologies that will enable reduction of parasitic energy losses, including losses from aerodynamic drag, from 39 percent of total engine output in 1998 to 24 percent; (2) by 2010, Hybrid and Electric Propulsion R&D activities will reduce the production cost of a high power 25kW battery for use in light vehicles from $3,000 in 1998 to $500, with an intermediate goal of $750 in 2006 enabling cost competitive market entry of hybrid vehicles; (3) by 2007, Advanced Combustion Engine R&D activities will reduce NOx emissions in light duty diesel vehicles from 1.0 grams per mile (g/m) in 2000 to 0.07 g/m in 2007 and 0.03 g/m in 2010 and in heavy duty diesel engines from 2.0 grams per brake horsepower hour (g/bhp hr) in 2002 to 0.2 g/bhp hr in 2006 to satisfy the greater than 90 percent reduction required by the light duty Tier 2 and heavy duty 2007 federal standards, while maintaining or improving engine efficiency; (4) by 2006, Transportation Materials Technologies R&D activities will reduce the production cost of carbon fiber from $12 per pound in 1998, to $3 per pound; and (5) by 2007, Fuel Utilization R&D activities will identify an advanced petroleum-based fuel formulation that enables light and heavy duty compression-ignition direct ignition (CIDI) engine/vehicle systems to meet regulated emissions levels with minimum effect on fuel economy, and perform in full compliance with specified durability requirements.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Reduce parasitic loses to 27 percent of total engine output.	Reduce parasitic losses of heavy vehicle systems to 30 percent and benchmark additional reductions through heavy truck electrification.	Reduce parasitic losses of heavy vehicle systems to 36 percent. (MET GOAL)
Reduce high power 25 kW light vehicle estimated lithium ion battery cost to $1,000 per battery system.	Reduce high power 25 kW estimated battery cost to $1,180 per battery system.	Complete development of second generation Lithium ion electrochemistry for hybrid vehicle power. (MET GOAL)
		Reduce gassing in sealed lithium ion batteries so that cells do not vent after 5 years of storage at full charge. (MET GOAL)
	Demonstrate optimized emission control system that achieves 0.07 g/mile NO_x and 0.01 g/mile PM short-term performance in light duty vehicles.	Complete initial testing of light trucks with prototype diesel engines to demonstrate a 35 percent increase in fuel efficiency and Tier two emissions. (MET GOAL)
Complete Light Truck activity with 35 percent fuel efficiency improvement and Tier 2 emissions levels. Demonstrate 50 percent thermal efficiency for heavy duty diesel engines while meeting EPA 2004 emission standards.		

Performance Indicators

- The parasitic loss (e.g., aerodynamic drag) for heavy duty vehicle systems.
- The costs per 25kW battery system, at a production level of 100,000 battery systems per year
- The cost of carbon fiber.
- Durability of CIDI engine/emissions control systems.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete testing of the 276-volt battery aimed at demonstrating an integrated system having thermal and electrical controls. (MET GOAL)	Complete testing of baseline prototype, 50-volt high power lithium-ion modules for use in hybrid vehicles. (MET GOAL)	There were no related targets.
Completed explorations of lithium-polymer and lithium ion battery technologies; lithium ion was selected as the most promising approach for continued development.		
Light truck demonstration resulted in a 35 percent increase in fuel efficiency in a sport utility vehicle.		

Program Strategic Performance Goal (ER1-3: Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete R&D on technology, which, if implemented in high volume, could reduce the price of automotive-grade carbon fiber to less than $5/pound.	Complete R&D on technology, which, if implemented in high volume, could reduce the price of automotive-grade carbon fiber to less than $7/pound.	Fabricate a sport utility vehicle chassis component using carbon fiber in a low cost molding process that is suitable for high volume production. (NOT MET)
	Publish results of 1,000-hour durability test and begin 6000-hour durability test of (3) next-generation fuels/engine/emission control technologies against 2004 and 2007 emission standards.	

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

Program Strategic Performance Goal

ER1-4 The Buildings Program has the following goals: (1) by 2008, research, develop, and demonstrate at least 10 design packages for specific climates and home types that can achieve from 40 to 70 percent increase in the purchased energy efficiency of new prototype homes relative to the 2000 Model Energy Code, and 4 to 6 design packages that can achieve 20 percent increase in efficiency of existing homes; (2) develop 5 to 7 design packages that can achieve an average of 40 percent increase in the purchased energy efficiency in applicable new commercial buildings or 15 percent increase in existing prototype commercial buildings; (3) introduce 5 new cost effective, ready for transition to market, efficient building products through component and equipment R, D& D activities; (4) by 2009, complete 30 formal proposals to enhance national building codes, and 20 final rules enhancing product minimum efficiency standards and test procedures; and (5) by 2010, develop 3 to 5 cost effective, marketable Zero Energy Building (ZEB) design packages capable of satisfying 100 percent of whole house energy requirements, net on an annual basis.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete 5 design packages that provide promising technological solutions considering regional and housing type differences targeting 40 percent reductions in residential space conditioning loads, compared to 2000, through Building America Consortia. Strategies to reduce the major loads, including energy used for hot water, lighting and clothes dryers will also be investigated.	Pursue six promising technical solutions considering regional and housing type differences targeting 40 percent reductions in residential space conditioning, hot water, and lighting loads. Based on Building America systems research results, develop regional Building System Performance Packages for five climate zones describing "best practice" systems that reduce space conditioning energy use by 30 percent.	Increase knowledge base of residential construction industry by pursuing six lines of research investigations focusing on industry identified priorities, e.g. low cost moisture protection, right-sized heating, ventilation and air-conditioning (HVAC) designs, super efficient distribution systems, etc. (MET GOAL)
Evaluate at least 900 *Building America* homes to ensure performance goals are achieved.	Facilitate a 10 percent increase in commercial building designs that have meaningful consideration of energy efficiency by developing improved design tools, including code compliance tools, and completing six research assisted design case studies in cooperation with industry.	Complete at least 850 highly resource-efficient, cost-effective homes through the Building America consortia, bringing the total number of homes built through the program to more than 4,500. (MET GOAL)
Demonstrate system-based energy efficient remodeling approaches in at least 2 U.S. climate regions.	Complete investigation of five methods to increase the optimum selection of equipment components for air conditioning and heat pumps.	Publish one proposal for upgrade to the Federal Residential Building codes, and one proposal for upgrade to the Federal Commercial Building codes. (NOT MET)
	Conduct four rulemakings to amend appliance standards and test procedures.	

Performance Indicators

- Number of regional design packages developed, researched, and evaluated.
- Number of project and demonstration homes developed in the Building America Program.
- Number of building code change proposals developed and submitted to code development bodies.
- Number of upgrades of Federal Building Codes completed

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
With Building America Partners, completed 3,000 energy-efficient, environmentally sound high performance homes. (MET GOAL)	In partnership with Building America, develop more than 2,000 highly energy-efficient, environmentally sound, and cost-effective houses and disseminate results to builders of 15,000 other houses through PATH. (MIXED RESULTS)	Complete 100 homes that are over 50 percent more efficient than typical homes through the Building America program, bringing the total number of homes completed to 700; add five new community scale projects for building 1000 additional homes in FY 2000; and transfer research recommendations to the Partnership for Advancing Technology in Housing (PATH). (MET GOAL)

Program Strategic Performance Goal (ER1-4: Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete 5 design packages that provide promising technological solutions considering regional and housing type differences targeting 40 percent reductions in residential space conditioning loads, compared to 2000, through Building America Consortia. Strategies to reduce the major loads, including energy used for hot water, lighting and clothes dryers will also be investigated.	There were no related targets.	Implement and improve WINDOW 5 for NFRC production runs; train and support NFRC simulators. (MET GOAL)
Issue up to 4 rules to amend appliance standards and test procedures for some of the following products: Residential Furnaces, Boilers, and Mobile Home Furnaces; Electrical Distribution Transformers; Commercial Unitary Air-Conditioners and Heat Pumps; Residential Niche Product Air-Conditioners and Heat Pumps; and Dishwashers with sensors.		Issue two proposals for upgrades and five upgrades to appliance standards and test procedures. (MET GOAL)
Develop a software audit/design program for energy efficient remodeling in existing buildings.		

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

Program Strategic Performance Goal

ER3-1: The Weatherization Program has the following goals; (1) from 2003 to 2011, complete weatherization upgrades for a total of 1.2 million low income households; (2) by 2008, award cumulative total of 280 grants to 56 States and Territories; (3) cumulatively for the years 2003 through 2007, complete 15 or more state collaborative industrial research, development, and field testing cooperative agreements; (4) from 2003 to 2007, provide technical assistance to facilitate Rebuild America partners' retrofiting of an additional 280 million square feet of commercial and public/institutional space, with average efficiency improvement of 18 percent; (5) from 2003 through 2007, provide access to energy efficiency information for 20 million consumer contacts ; (6) by 2008, facilitate adoption of upgraded model residential and commercial building energy codes (10 percent improvement) in 20 additional states, and by 2008, train 10,000 architects, engineers, builders and code officials to use and enforce upgraded energy codes; (7) by 2007, work with Clean Cities coalitions to increase the number of Alternative Fuel Vehicles (AFV's) from 110,000 in 2001, to 233,000 in 2007, and 383,000 in 2010, leveraging an outcome of 983,000 AFV's, consuming one billion gallons of alternative fuel by 2010; (8) from 2001 to 2010, increase the market share for ENERGY STAR windows from 25 to 55 percent, and market share for ENERGY STAR appliances from 15 to 22 percent; (9) closeout NICE3: (10) from 2003 to 2008, competitively fund 75 or more inventors and small businesses to develop energy efficiency technologies; (11) complete closeout of International Market Development initiated in 2003; (12) support to the maximum extent practicable DOE international goals and specific commitments contained in bilateral and multilateral agreements; and support the Clean Energy Technology Exports (CETE) initiative for joint public-private cooperation to increase the export of U.S. products and services; and (13) from 2003 to 2008, fund technical assistance to Native American Tribes in support of 50 or more economic development projects, 15 or more feasibility studies, and 15 or more workshops to promote energy efficiency and renewable energy resource development on Tribal lands.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Award $38.8 million in FY 2004 funds to enable the direct weatherization of 126,000 homes*. This will bring the cumulative number of homes weatherized to over 5.3 million.	Award $38.8 million in FY 2003 through 53 Weatherization Program grants, including all 50 states, to enable the direct weatherization of 123,000 homes. This will bring the cumulative number of homes to over 5.2 million.	Weatherize 105,000 homes, bringing the total number of homes weatherized to 5.1 million**. (MET GOAL)
Assist over 500 new and existing Rebuild America community partnerships upgrade 70 million square feet of floor space in K-12 schools, colleges, public housing, and state/local governments.		Establish 40 new Rebuild America community partnerships and assist these communities to retrofit 80 million square feet of floor space in K-12 schools, colleges, public housing, and State and local governments. (MET GOAL)
Achieve a total of 167,000 alternative fuel vehicles in operation in Clean Cities which will displace 205 million gallons of gasoline and diesel a year***.	Achieve 157,000 alternative fuel vehicles in operation in Clean Cities.	Achieve 135,000 alternative fuel vehicles in operation in Clean Cities. (MET GOAL)
Recruit 500 additional retail stores, five additional utilities and 10 additional manufacturers.	Recruit 500 additional retail stores, five additional utilities and 10 additional manufacturers.	Recruit 500 additional retail stores, five additional utilities and three additional manufacturers bringing the total number of stores marketing ENERGY STAR appliances to 7,000. (MET GOAL)

* The number of homes weatherized per year is based on DOE contributions. The cumulative total includes homes weatherized with DOE and leveraged funds. The reporting process reflects an 18-month lag period in funding and completion of weatherization.

*The weatherization assistance program reassessed the total number of homes weatherized between FY 2001 and FY 2002.

**The Clean Cities program is comprised of 4,500 partners and 80 Clean Cities coalitions, which operate on a calendar year basis, with data collection and processing ending in spring of the following year.

Performance Indicators:

- Number of homes weatherized.
- Number of square feet in publicbuildings upgraded.
- Number of States with approved energy emergency plans.
- Number of Rebuild partnerships.
- Number of alternative fuel vehicles (AFV's) operated by Clean Cities partners.
- Number of Clean Cities coalitions that become operationally sustaining organizations.
- Number of partnerships for increasing market share of Energy Star appliances, windows and lighting products.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Weatherize 75,350 homes, bringing the total number of homes weatherized to 4.8 million. (MET GOAL)	Weatherize 68,000 homes, bringing the total number of homes weatherized to 4.8 million. (MET GOAL)	Weatherize 67,845 homes, bringing the total number of homes weatherized to 4.7 million. (MET GOAL)
Established 40 new Rebuild America community partnerships and assisted these communities to retrofit 80 million square feet of floor space in K-12 schools, colleges, public housing, state and local governments.		
Support the annual acquisition on 12,000 alternative fuel vehicles in the Federal fleet. (MET GOAL)		
Recruit 400 new ENERGY STAR partners, bringing the total number of stores marketing ENERGY STAR appliances up to 6,500. (MET GOAL)	Recruit five utility partners to promote ENERGY STAR products; an additional 500 retail stores to promote Energy Star products; and 40 window partners to promote Energy Star Windows. (MET GOAL)	Work with the Federal Trade Commission to allow manufacturers to add the ENERGY STAR logo to the yellow and black FTC "Energy Guide" label for covered products, and recruit an additional 1,500 stores to market ENERGY STAR appliances nationwide. (MET GOAL)

GOAL 3: Energy Infrastructure

The vulnerabilities and improvements necessary in the Nation's energy infrastructure are well understood and the Government's Power Marketing Administrations are models of implementing recommended improvements.

Program Description:

Since the early 1900s, the Federal government has marketed and delivered excess hydroelectric power produced at Federal water projects that was in excess of project needs in order to repay the Government's investment in the projects. This long history of experience has put the Department and the Power Marketing Administrations (PMAs) in a unique position to contribute to future improvements in the Nation's energy infrastructure. In addition, the Department has created the Distributed Energy and Electric Reliability Program (DEER) to strengthen America's electric energy infrastructure and provide electricity generators and consumers with a greater array of energy efficient technology choices for the generation, transmission, distribution, storage, and demand management of electric power and thermal energy. Additional information on the PMAs and the DEER program follow.

ER1-5 Distributed Energy and Electric Reliability:

The Distributed Energy and Electric Reliability (DEER) Program accomplishes its mission to strengthen the Nation's energy infrastructure through research, development, demonstration, technology transfer, and education and outreach activities in partnership with industries, businesses, utilities, States, other Federal programs and agencies, universities, national laboratories, and other stakeholders.

The Program covers a portfolio of technologies, tools, and techniques including advanced industrial turbines, microturbines, reciprocating engines, chillers, desiccants (for humidity control), combined heat and power systems, energy storage devices, load management programs, transmission operations software, and high temperature superconducting cables and transformers. The Program addresses the development of utility interconnection and other codes and standards, environmental siting and permitting regulations, and utility restructuring policies that affect the use of these distributed energy and electric reliability technologies, tools, and techniques.

ER9-1, Power Marketing Administrations (PMAs):

Hydropower accounts for almost 10 percent of the electricity generated in the United States, most of which occurs at dams owned and operated by the Federal government. The PMAs market and deliver cost-based Federal hydroelectric power, with preference given to publicly-owned electric utilities and cooperatives. This is accomplished by charging rates for Federal power that are as low as possible to consumers, while recovering all costs, operating safely, and repaying the Federal investment in power facilities in a timely manner.

Means and Strategies:

ER1-5 Distributed Energy and Electric Reliability:

Increasing market penetration of distributed energy systems is achieved through advances in technology cost and performance, and the implementation of national standards for interconnecting distributed power with the grid. Technology advances include: increasing ceramic high temperature survival and material strength, and integrating sensors and controls. Modernization of the electricity infrastructure is achieved by: improving the reliability of the system through development of real time control and information systems, along with fast power electronic switching; increasing the production of high temperature superconducting wires; and, reducing the cost and increasing the energy density of energy storage systems.

ER9-1, Power Marketing Administrations:

In order to achieve safety and reliability while staying competitive, PMAs make improvements and perform maintenance on their transmission, communications, and control systems while adhering to strict safety practices. They will also make improvements to their analytic capabilities, work force skills, and employee retention.

To meet planned repayment targets, the PMAs will utilize sound business practices and prudent risk management. To achieve a recordable accident frequency rate at or below our safety performance standard, the PMAs will continue to train their employees in occupational safety and health regulations, policies, and procedures, and hold safety meetings at employee, supervisory and management levels in order to keep their safety culture strong. Accidents will be reviewed to ensure that lessons are learned and proper work controls in place.

Collaboration Activities:

ER1-5 Distributed Energy and Electric Reliability:

DOE collaborates on its R&D with academia, national laboratories, and manufacturers and developers of distributed and reliability technologies. DOE also collaborates with users of these technologies for technology validation, system integration and design.

Program Activity Funding: Energy Infrastructure

		Comparable Appropriation		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
TOTAL FUNDING: The total funding for this goal.		231	148	276
ER1-5: The DEER Program will (1) by 2008, complete development and testing of a portfolio of distributed generation and thermally activated technologies that show an average 25 percent increase in efficiency (compared to 2000 baseline) with NO_x emissions less than 0.15 grams/kWh; (2) by 2008, demonstrate the feasibility of integrated systems in three new customer classes, which could achieve 70 percent efficiency and customer payback in less than 4 years, assuming commercial-scale production; (3) by 2008, demonstrate the capability to double the power carrying capacity of transmission and distribution wires compared to that available in 2000, and (4) by 2012, develop a portfolio of technologies and software tools that allow real-time monitoring, understanding, and control of the transmission of distribution system to identify over 90 percent of incipient system disturbance conditions, initigate disturbance propagation reduce peak loads, and alleviate transmission congestion.	EE			
ER9-1: Bonneville Power Administration. Ensure Federal hydropower is marketed and delivered while passing the North American Electric Reliability Council's Control Compliance Ratings, meeting planned repayment targets, and achieving a recordable accident frequency rate at or below our safety performance standard.	BPA			
ER9-2: Southeastern Power Administration. Ensure Federal hydropower is marketed and delivered while passing the North American Electric Reliability Council's Control Compliance Ratings, meeting planned repayment targets, and achieving a recordable accident frequency rate at or below our safety performance standard.	SEPA			
ER9-3: Southwestern Power Administration. Ensure Federal hydropower is marketed and delivered while passing the North American Electric Reliability Council's Control Compliance Ratings, meeting planned repayment targets, and achieving a recordable accident frequency rate at or below our safety performance standard.	SWPA			
ER9-4: Western Area Power Administration. Ensure Federal hydropower is marketed and delivered while passing the North American Electric Reliability Council's Control Compliance Ratings, meeting planned repayment targets, and achieving a recordableaccident frequency rate at or below our safety performance	WAPA			

ER9-1, Power Marketing Administrations:

The PMAs coordinate their operational activities with the U.S. Army Corps of Engineers, Bureau of Reclamation, International Boundary & Water Commission (IBWC), North American Electric Reliability Council (NERC), regional electric reliability councils, and their customers to provide the most efficient use of Federal assets.

External Factors Affecting Performance:

ER1-5 Distributed Energy and Electric Reliability:

The state of the economy and the cost of competing technologies will affect the installation of distributed energy and electricity reliability systems. State and international efforts in these technologies also affect the market. Growing electricity demand impacts system reliability. The cost to produce electricity is also a factor.

ER9-1, Power Marketing Administrations:

Achieving and maintaining system reliability can be affected by weather, natural disasters, changes in NERC operating standards, new load patterns, deregulation of the electricity market, changing electric industry organizational structures, and additions to other utilities' transmission systems interconnected to the Federal system.

Achieving and maintaining planned repayment can be affected by weather, power markets, natural disasters, and other external costs and revenue factors.

Achieving and maintaining safety goals can be affected by the loss of expertise due to retirements and the inability to replace the expertise, weather conditions, encroachments on rights-of-way, terrain, and location of the equipment being maintained.

Planned Program Evaluation:

ER1-5 Distributed Energy and Electric Reliability:

In Summer 2001, in response to the NEP, DOE undertook a strategic review and evaluation of its energy efficiency and renewable energy programs, known as the Strategic Program Review (SPR). The results of this review were released to the public in the Spring of 2002. In August 2001, the results of the National Academy of Sciences' National Research Council per review of the Energy Efficiency Programs (including part of the Distributed Energy Resources Program) became available. In response, EERE held a conference to expand the NAS benefits methodology to the EERE portfolio. The SPR review relies upon the extensive data available as part of the EERE Strategic Management Systems (SMS). In addition, each technology program holds program reviews and external peer reviews with stakeholders on a periodic basis. An internal program review for each individual technology program within the EERE Office of Power Technologies is conducted annually with the Deputy Assistant Secretary. In 2001, OPT restructured its collaborative analytic activities to include external experts from academia, think tanks and industry. These experts are developing models to use as part of their scenario approach to portfolio analysis. At the end of 2001, the new OPT analytic collaborative was reviewed by an external peer review panel.

ER9-1, Power Marketing Administrations:

Annual performance goals are evaluated against NERC operating standards for the electric utility industry; repayment standards are set forth in DOE Order RA 6120.2; and the Bureau of Labor Statistics publishes industry safety rates.

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Program Strategic Performance Goal

ER1-5: The DEER Program will (1) by 2008, complete development and testing of a portfolio of distributed generation and thermally activated technologies that show an average 25 percent increase in efficiency (compared to 2000 baseline) with NO_x emissions less than 0.15 grams/kWh; (2) by 2008, demonstrate the feasibility of integrated systems in three new customer classes, which could achieve 70 percent efficiency and customer payback in less than 4 years, assuming commercial-scale production; (3) by 2008, demonstrate the capability to double the power carrying capacity of transmission and distribution wires compared to that available in 2000, and (4) by 2012, develop a portfolio of technologies and software tools that allow real-time monitoring, understanding, and control of the transmission of distribution system to identify over 90 percent of incipient system disturbance conditions, initigate disturbance propagation reduce peak loads, and alleviate transmission congestion.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete and demonstrate heating coefficient of performance of 1.4 for commercial introduction of a thermally activated system (approximately 40 percent more efficient than a conventional heating system)	Complete the 12 Beta Field Test Units of high efficiency natural gas fired heat pump (60 percent better than pulse combustion furnace) and install at field test sites hosted by major U.S. gas utilities.	
Complete final design and initiate field testing of low emission technology with less than 7 ppm NO_x.	Complete 4,000-hour field test of ceramic composite shroud components to demonstrate performance and emission benefits to a gas turbine.	
Demonstrate the performance and life potential of a ceramic turbine rotor for microturbine applications.	Contract with three companies to support research on demonstrating a 5 percent increase in efficiency for an advanced microturbine system.	
Complete final design and initiate field testing and evaluation of a complete, fully functional integrated CHP system consisting of a turbine, absorption chiller and control system.		Demonstrate a microturbine package (highly efficient for reducing peak loads) at a university site. (MET GOAL)
Complete testing of 10 MVA superconducting transformer in operation on the Wisconsin Electric Power Company grid.		Complete initial testing of Detroit superconducting transmission cable and document operational costs and reliability. (NOT MET)
Second generation wire that carries 100 amps in 10-meter lengths.	Increase the capability to reproducibly fabricate a 10-meter length of Second Generation HTS wire to carry 50 amps of electricity and 1-meter lengths that carry 100 amps from a 40-amp base.	
Field test 12 MW energy storage systems in collaboration with TVA.	Support the field test of a 100kW lithium battery system for 700 hrs at a utility site.	
Complete assessment of data communication requirements between real time operator workstations for major transmission providers.		Convene and support the principles to enable IEEE to publish draft P1547 Standard for Distributed Resources Interconnected with Electric Power Systems. (MET GOAL)

Performance Indicators

- Average efficiency of a portfolio of distributed generation and thermally activated technologies.
- Number of integrated systems demonstrated.
- Cost on HTS wire (dollars per kiloamp meter)
- Member of power quality events
- Number of local outages

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete 5,000 durability, performance, and emissions testing of the Mercury 50 Advanced Turbine System engine. (MET GOAL)	Demonstrate two advanced industrial turbine system engines at end-user sites. (MET GOAL)	Initiate the 8000-hour test of the gas turbine engine for the Advanced Turbine System for use in industrial cogeneration. (MET GOAL)
Test facility completed for pilot-scale testing of the innovative turbine design developed by the Alden Research Laboratory team.		
Document 6,000 hours (100 percent load) operation of the first successful HTS power delivery system to power an industrial use. (MET GOAL)	Installed first industrial HTS electrical transmission cables at Southwire Plant in Carrollton, Georgia and began testing system reliability.	
Install first-of-a-kind superconducting electrical transmission cables to replace existing delivery to an urban substation serving 14,000 customers in Detroit, Michigan and begin testing operation and reliability. (MET GOAL)		

Program Strategic Performance Goal (ER1-5: Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
	There were no related targets	Complete 300 hours of testing of the advanced bromine battery system in partnership with Detroit Edison. (MET GOAL)
Complete first national-interest transmission line assessment		

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets	There were no related targets	There were no related targets

Program Strategic Performance Goal

ER9-1: Bonneville Power Administration. Ensure Federal hydropower is marketed and delivered while passing the North American Electric Reliability Council's Control Compliance Ratings, meeting planned repayment targets, and achieving a recordable accident frequency rate at or below our safety performance standard.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Receive monthly control compliance ratings that meet or exceed the Control Performance Standard (CPS) 1 and 2 established by the North American Electricity Reliability Council.	Ensure that the power system control area operated by the Bonneville Power Administration receives Control Compliance Ratings of "Pass" on both of the North American Electric Reliability Council's reliability performance standards in every month.	Receive monthly Control Performance Ratings of "Pass" using the North American Electric Reliability Council performance standards. (MET GOAL)
Meet planned annual repayment of (over and above required) principal on Federal power investments.	Bonneville Power Administration will meet planned repayment of principal on power investment.	Meet planned repayment of principal on power investment. (MET GOAL)
Achieve a recordable accident frequency rate for recordable injuries per 200,000 hours worked of not greater than 3.3, or the Bureau of Labor Statistics' industry rate, whichever is lower.	Bonneville Power Administration will achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower.	Achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower. (MET GOAL)

Performance Indicators

- Reliability Performance.
- Principle Repayment.
- Recordable Injury Frequency Rate.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Reliability Performance. (MET GOAL)	Ensure that each power system control area operated by a Power Marketing Administration receives, for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North American Electric Reliability Council performance standard. (MET GOAL)	Ensure that each power system control area operated by a Power Marketing Administration receives, for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North American Electric Reliability Council performance standard. (MET GOAL)
Principal Repayment. (MET GOAL)	Meet planned repayment of principal on power investment. (MET GOAL)	
Recordable accident frequency rate. (MET GOAL)	Achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower. (MET GOAL)	

Program Strategic Performance Goal

ER9-2: Southeastern Power Administration. Ensure Federal hydropower is marketed and delivered while passing the North American Electric Reliability Council's Control Compliance Ratings, meeting planned repayment targets, and achieving a recordable accident frequency rate at or below our safety performance standard.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Receive monthly control compliance ratings that meet or exceed the Control Performance Standard (CPS) 1 and 2 established by the North American Electricity Reliability Council.	Ensure that the power system control area operated by the Southeastern Power Administration receives Control Compliance Ratings of "Pass" on both of the North American Electric Reliability Council's reliability performance standards in every month.	Receive monthly Control Performance Ratings of "Pass" using the North American Electric Reliability Council performance standards. (MET GOAL)
Meet planned annual repayment of (over and above required) principal on Federal power investments.	Southeastern Power Administration will meet planned repayment of principal on power investment.	Meet planned repayment of principal on power investment. (MET GOAL)
Achieve a recordable accident frequency rate for recordable injuries per 200,000 hours worked of not greater than 3.3, or the Bureau of Labor Statistics' industry rate, whichever is lower.	Southeastern Power Administration will achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower.	Achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower. (MET GOAL)

Performance Indicators

- Reliability Performance.
- Principle Repayment.
- Recordable Injury Frequency Rate.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Reliability Performance. (MET GOAL)	Ensure that each power system control area operated by a Power Marketing Administration receives, for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North American Electric Reliability Council performance standard. (MET GOAL)	Ensure that each power system control area operated by a Power Marketing Administration receives, for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North American Electric Reliability Council performance standard. (MET GOAL)
Principal Repayment. (NOT MET)	Meet planned repayment of principal on power investment. (MIXED RESULTS)	
Recordable accident frequency rate. (MET GOAL)	Achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower. (MET GOAL)	

Program Strategic Performance Goal

ER9-3: Southwestern Power Administration. Ensure Federal hydropower is marketed and delivered while passing the North American Electric Reliability Council's Control Compliance Ratings, meeting planned repayment targets, and achieving a recordable accident frequency rate at or below our safety performance standard.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Receive monthly control compliance ratings that meet or exceed the Control Performance Standard (CPS) 1 and 2 established by the North American Electricity Reliability Council.	Ensure that the power system control area operated by the Southwestern Power Administration receives Control Compliance Ratings of "Pass" on both of the North American Electric Reliability Council's reliability performance standards in every month.	Receive monthly Control Performance Ratings of "Pass" using the North American Electric Reliability Council performance standards. (MET GOAL)
Meet planned annual repayment of (over and above required) principal on Federal power investments.	Southwestern Power Administration will meet planned repayment of principal on power investment.	Meet planned repayment of principal on power investment. (MET GOAL)
Achieve a recordable accident frequency rate for recordable injuries per 200,000 hours worked of not greater than 3.3, or the Bureau of Labor Statistics' industry rate, whichever is lower.	Southwestern Power Administration will achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower.	Achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower. (MET GOAL)

Performance Indicators

- Reliability Performance.
- Principle Repayment.
- Recordable Injury Frequency Rate.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Reliability Performan. (MET GOAL)	Ensure that each power system control area operated by a Power Marketing Administration receives, for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North American Electric Reliability Council performance standard. (MET GOAL)	Ensure that each power system control area operated by a Power Marketing Administration receives, for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North American Electric Reliability Council performance standard. (MET GOAL)
Principal Repayment. (MIXED RESULTS)	Meet planned repayment of principal on power investment. (MET GOAL)	
Recordable accident frequency rate. (MET GOAL)	Achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower. (MET GOAL)	

Program Strategic Performance Goal

ER9-4: Western Area Power Administration. Ensure Federal hydropower is marketed and delivered while passing the North American Electric Reliability Council's Control Compliance Ratings, meeting planned repayment targets, and achieving a recordable accident frequency rate at or below our safety performance standard.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Receive monthly control compliance ratings that meet or exceed the Control Performance Standard (CPS) 1 and 2 established by the North American Electricity Reliability Council.	Ensure that the power system control area operated by the Southwestern Power Administration receives Control Compliance Ratings of "Pass" on both of the North American Electric Reliability Council's reliability performance standards in every month.	Receive monthly Control Performance Ratings of "Pass" using the North American Electric Reliability Council performance standards. (MET GOAL)
Meet planned annual repayment of (over and above required) principal on Federal power investments.	Southwestern Power Administration will meet planned repayment of principal on power investment.	Meet planned repayment of principal on power investment. (MET GOAL)
Achieve a recordable accident frequency rate for recordable injuries per 200,000 hours worked of not greater than 3.3, or the Bureau of Labor Statistics' industry rate, whichever is lower.	Southwestern Power Administration will achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower.	Achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower. (MET GOAL)

Performance Indicators

- Reliability Performance.
- Principle Repayment.
- Recordable Injury Frequency Rate.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Reliability Performance. (MET GOAL)	Ensure that each power system control area operated by a Power Marketing Administration receives, for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North American Electric Reliability Council performance standard. (MET GOAL)	Ensure that each power system control area operated by a Power Marketing Administration receives, for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North American Electric Reliability Council performance standard. (MET GOAL)
Principal Repayment. (MIXED RESULTS)	Meet planned repayment of principal on power investment. (MET GOAL)	
Recordable accident frequency rate. (MET GOAL)	Achieve a safety performance of a 3.3 recordable accident frequency rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower. (MET GOAL)	

GOAL 4: Long-term Stewardship of Radioactive Materials

The long-term disposition and monitoring of all U.S. spent nuclear fuel and high-level radioactive waste is planned, provided for, approved, and in progress.

Program Description:

The Office of Civilian Radioactive Waste Management (RW) implements the Federal policy for permanent disposal of high-level radioactive waste and spent nuclear fuel, in order to protect the public health and the environment. Secretary Abraham, on February 14, 2002, recommended that the President approve the Yucca Mountain site in Nevada and recommend it to Congress as the repository site. This recommendation was based on the results of the site investigations and related field and laboratory testing conducted over the past 20 years to determine the suitability of the site. The Secretary forwarded to the President a comprehensive statement of the basis for his recommendation, as required by the Nuclear Waste Policy Act, which included a final environmental impact statement, preliminary comments from the Nuclear Regulatory Commission, and the views and comments of the Governor and legislature of the State of Nevada. On February 15, 2002, the President approved the Secretary's recommendation and forwarded it to Congress.

In July 2002, Congress approved Yucca Mountain as the repository site. A license application for construction authorization by the Nuclear Regulatory Commission will be developed and submitted by December 2004. Under current plans, waste acceptance at the repository could commence in 2010. However, the Department's schedule remains critically dependent on adequate program funding.

Means and Strategies:

The focus of current activities is on implementing the licensing and construction phases of the program and on taking the necessary steps to develop a national capability for transporting waste to the repository. The Civilian Radioactive Waste Management Program will continue the activities necessary for license application design and development; continue confirmatory scientific testing; study design options such as modular and phased design, construction, and operation; and conduct other activities associated with the Federal government's waste acceptance obligation.

Collaboration Activities:

The Department is engaged in continued interactions with the Nuclear Regulatory Commission, the Environmental Protection Agency, and the Nuclear Waste Technical Review Board. In addition, the Civilian Radioactive Waste Management Program collaborates on technical, policy, and operational issues with the State of Nevada and affected units of local government within the State. The program also works collaboratively with several other nations to address common technical issues associated with radioactive waste management and disposal.

External Factors Affecting Performance:

The program's performance goals and associated schedules are contingent on sufficient funding to address past funding shortfalls and conduct activities in accordance with the project baseline.

Planned Program Evaluations:

The program's activities are subject to continuing review by the Congress, the General Accounting Office, the Department's Inspector General, the

Program Activity Funding: Long-Term Stewardship of Radioactive Materials

Program Strategic Performance Goal (PSPG)	DOE Office	Comparable Appropriation		FY 2004 Request ($M)
		FY 2002 ($M)	FY 2003 Request ($M)	
FUNDING TOTAL: The total funding for this goal.		375	591	591
EQ2-1: Obtain a repository construction authorization from the Nuclear Regulatory Commission in 2008.	RW			
EQ2-2: Develop the national and Nevada transportation infrastructure to support the anticipated shipment of spent nuclear fuel and high-level radioactive waste to the repository, beginning in 2010.	RW			

Nuclear Regulatory Commission, the Environmental Protection Agency, the Nuclear Waste Technical Review Board, and the Department's Office of Engineering and Construction Management (OECM). An external independent review of the repository project by OECM is currently underway. Complementing external reviews, the Office of Civilian Radioactive Waste Management conducts quarterly, in-depth reviews of program activities, schedules, and expenditures. The Director and all key managers and supervisors participate to ensure that activities are on-track and within budget.

Program Strategic Performance Goal

EQ2-1 Obtain a repository construction authorization from the Nuclear Regulatory Commission in 2008.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete the safety analyses for commercial spent nuclear fuel and Department-owned spent nuclear fuel and high-level radioactive waste, Naval spent fuel, and plutonium waste forms for the license application.	Complete additional testing and analyses required to support license application design.	Submit a Final Environmental Impact Statement to the President as required by the Nuclear Waste Policy Act. (FMFIA) (MET GOAL)
Respond to major Nuclear Regulatory Commission "key technical issues" necessary to support the license application.	Complete development of repository conceptual design and request Acquisition Executive approval to start preliminary design, which will be used in the license application.	
Complete required elements of the preliminary design for the waste package, surface facilities, and subsurface facilities, in support of the license application to the Nuclear Regulatory Commission.		
Complete the Licensing Support Network (LSN) and certification consistent with the requirements of 10 CFR Part 2, Subpart J, at least six months prior to submitting the license application.		Submit a Site Recommendation Report to the President. (FMFIA) (MET GOAL)
Complete draft of license application for submittal to NRC.		
	Complete and issue Total System Life Cycle Cost and Fee Adequacy reports in preparation for license application.	Begin development of updated Total System Life Cycle Cost and Fee Adequacy reports. (MET GOAL)

Performance Indicators

- Meeting RW Program milestones.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete the scientific and technical documents that will provide the technical basis for a possible site recommendation. (MET GOAL)	Complete public hearings on the Draft Environmental Impact Statement, which was published in August 1999. (MET GOAL)	Publish a draft Environmental Impact Statement (EIS). The Nuclear Waste Policy Act requires a Final EIS to accompany the site recommendation. (MET GOAL)
	Select the reference design for site recommendation and license application. (MIXED RESULTS)[1]	Complete repository and waste package design inputs for use in total system performance assessment for the repository license application. (MET GOAL)
Conduct statutory hearings in the vicinity of Yucca Mountain to inform the residents that the site is under consideration, and to receive comments regarding a possible site recommendation. (MET GOAL)		
Update all process models and conduct a total system performance assessment for use in the site recommendation. (MET GOAL)		
Complete and issue Total System Life Cycle Cost and Fee Adequacy reports. (MET GOAL)	Select the reference natural systems models for site recommendation and license application. (MET GOAL)	Complete peer review of the total system performance assessment to provide formal, independent evaluation and critique. (MET GOAL)

[1] The reference design for site recommendation was selected for the preliminary site suitability evaluation, which was used for the statutory hearings on site recommendation. The license application design will be selected after consideration of comments from stakeholders, including oversight bodies, such as the Nuclear Waste Technical Review Board.

Program Strategic Performance Goal

EQ2-2 Develop the national and Nevada transportation infrastructure to support the anticipated shipment of spent nuclear fuel and high-level radioactive waste to the repository, beginning in 2010.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Obtain Acquisition Executive approval for and award contract(s) to acquire long lead-time transportation casks.	Acquire transportation planning services.	Issue draft request for proposals for waste acceptance and transportation services. (MET GOAL)[1]
	Develop and issue the OCRWM Strategic Transportation Plan.[2]	Issue Nuclear Waste Policy Act Section 180(c) Notice of Revised Proposed Policy and Procedures for public comment. (NOT MET)
Issue Transportation Project Plan.		

[1] Replaced by alternative measure – issuance of a draft statement of work – which meets the same overall objective and was completed in FY 2002.

2 The OCRWM Strategic Transportation Plan will address how RW plans to proceed with implentation of section 180(c) of the Nuclear Waste Policy Act.

Performance Indicators

- Performance Indicator: Meeting RW Program milestones. (RW)

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

GOAL 5: Energy Information

The Department is the definitive source of energy-related information and forecasts.

Program Description:

As an independent statistical/analytical agency, EIA has two principal roles. First, its primary responsibility is to conduct the functions required by statute. This responsibility consists of the development and maintenance of a comprehensive energy database and the publication of reports and analyses for a wide variety of customers in the public and private sectors. There are also specific reports that are required by law. Second, EIA responds to inquiries for energy information. The primary customers of EIA services are public policymakers in the Department of Energy and the Congress. Other customers include other agencies within the executive branch and the independent agencies of the Federal government, state and local governments, the energy industry, educational institutions, the news media, and the public. EIA activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

In 1997, in cooperation with Office of the Assistant Secretary for Energy Efficiency and Renewable Energy (EE), EIA committed to increasing the average number of unique monthly users of its web site by 20 percent annually, from a baseline of 70,000. In FY 1997, average monthly users sessions for EIA and EE was 71,500 or slightly more than the agreed upon baseline average for the combined web sites. EIA's actual contribution to this baseline was an average of 64,700 unique monthly users. In the following year, EIA averaged 104,700 unique monthly users and for FY 1999, EIA averaged 152,600 unique monthly user sessions. That growth in the number of customers continues. During FY 2000, EIA averaged over 322,100 unique monthly users of it's website, an increase of over 110 percent from the previous year. The average monthly usage of EIA's web site for FY 2001 is eight times that experienced in the baseline year of FY 1997 and in FY 2002, revisions to its site allowed EIA to well exceed its annual goal.

Means and Strategies:

In FY 2004, EIA's program will consist of data collection necessary to fulfill its statutory requirement for the maintenance of a comprehensive energy database, the publication of reports and analyses for a wide variety of customers in the public and private sectors, the maintenance of the National Energy Modeling System for mid-term energy markets analysis and forecasting, the maintenance of the Short-Term Integrated Forecasting System for near-term energy market analysis and forecasting, and customer forums and surveys to maintain an up-to-date product and service mix. EIA's strategy is to make its broad mix of products and services available to its customers through the continued use of publications and an expansion of electronic information dissemination via the EIA web site and CD-ROM.

Collaboration Activities:

EIA has a number of different collaborative activities underway with statistical representatives from other cabinet agencies. The most important collaboration is via the Interagency Council on Statistical Policy (ICSP), composed of the heads of the major statistical agencies and chaired by the Office of Management and Budget's Chief Statistician. The ICSP has supported a number of collaborative activities, including: Fedstats – a website providing data from the major statistical agencies in a user-friendly environment; the NSF Digital Government initiative, providing funds to researchers to interact with consortia of statistical agencies on issues related to data dissemination, and the presentation and collection of large-scale databases on the web; and, the Joint Program in Survey Methodology (JPSM) – training college

Program Activity Funding: Energy Information

		Comparable Appropriation		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
TOTAL FUNDING: The total funding for this goal.		78	80	80
ER8-1: Provide national and international energy data analyses, information, and forecasts to meet the needs of energy decisionmakers and the public in order to promote sound policymaking, efficient energy markets, and public understanding.	EIA			

graduates in applied survey methodology, initiating a summer intern program and developing other certification alternatives. ICSP is backing the data sharing legislation that would allow the agencies to share data and sampling lists and still protect the confidentiality of respondents.

The longest standing collaboration is through EIA's membership on the Federal Committee on Statistical Methodology (FCSM), a consortium of government experts, appointed from within the statistical agencies for their technical abilities. The FCSM undertakes studies of methodological issues, and sponsors conferences for sharing ideas, problems, and research.

Still another example of collaboration is through the Interagency Confidentiality and Data Access Group, a special interest group of FCSM, that deals with confidentiality, privacy, and disclosure protection issues. The group collaborated and pooled funds to create a user interface to a census disclosure program. The program is now readily available on the web. Individual agencies have provided funds to support the development of an auditing program for tabular data that will also be made widely available on the web.

External Factors Affecting Performance:

EIA's data and analyses are anticipated to become more visible and critical over the next several years, due to (1) the restructuring and deregulation of the electric and natural gas industries, energy use and price data, especially at the consumers level, are much more difficult to obtain from new and emerging types of suppliers in the evolving energy market; (2) with the increase in dependence on foreign oil supplies, Congressional and other customer requests for current petroleum products' production, supply, stocks, price, markets, trend analyses, and forecasts will continue to increase. This type of information is especially useful to State governments, who are increasingly relying on EIA data to understand and effectively manage the current and emerging effects of energy industry's restructuring impact on consumers in their State; (3) the debate on greenhouse gas emissions, carbon trading permits, and global warming are influencing the United States, as well as other countries, of the need to assess and understand the impact from major sources of human generated emissions.

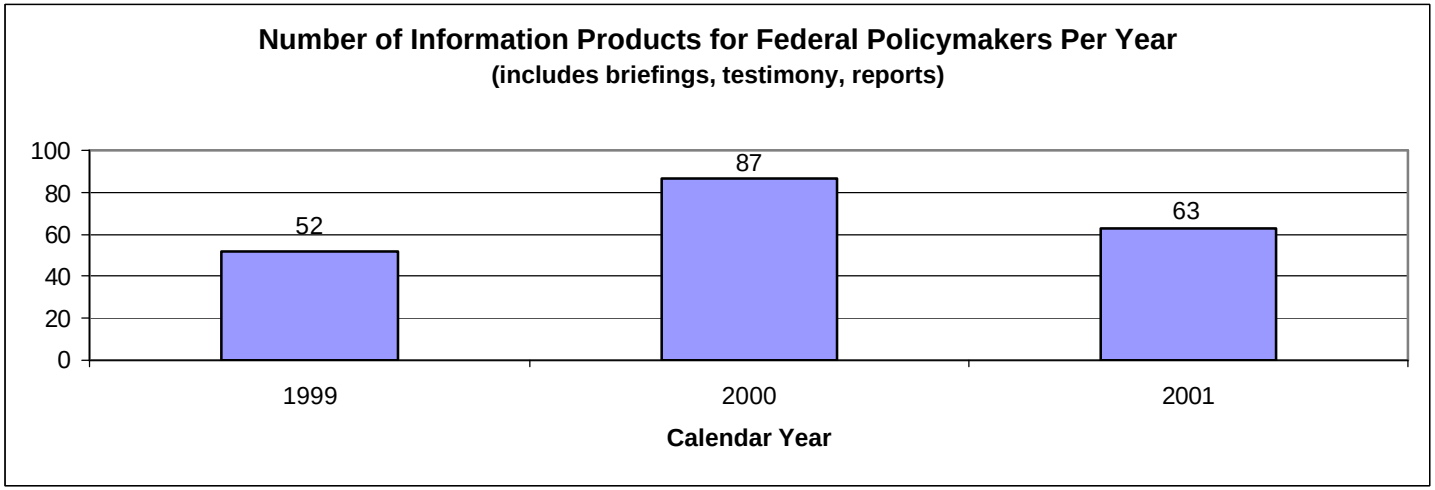
Partly as a result of this increasing visibility and importance, it is critical to maintain the quality of the data from EIA's surveys. EIA will face an unprecedented challenge in maintaining the quality of its data due to: (1) the increasing amount of work needed to keep survey response rates high in the current cultural climate, with respondents increasingly more difficult to reach and more resistant to completing surveys; (2) the need for expanded and more complex energy consumption and expenditures data collection procedures, due to the more complex energy supply structure caused by natural gas and electric industry restructuring and markets.

EIA's ability to provide data and information on the natural gas industry may be severely challenged by changes in the regulatory environment and corresponding industry restructuring. In addition, there are major segments of activity relating to prices and volumes for which no information is collected by EIA, such as the cost of underground storage, the cost of transportation, and the price and physical transactions at market centers and market hubs. Since natural gas is usually the swing fuel in electric generation, information on these prices is essential in understanding the fuel decisions made by electric generator operators and the subsequent impact on electricity prices.

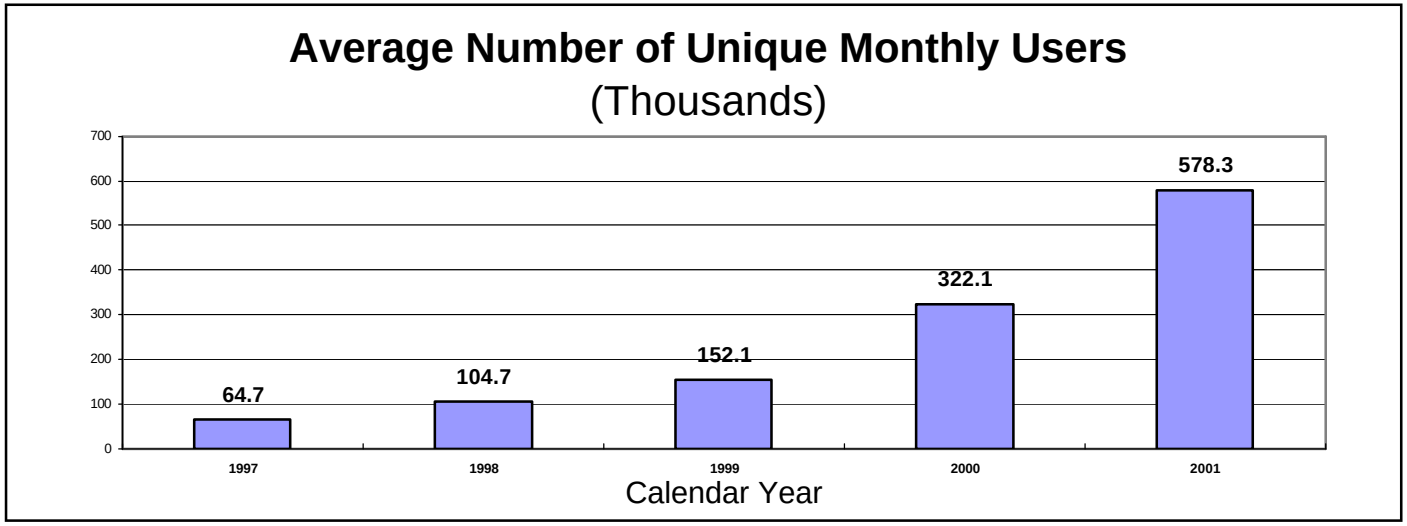
Planned Program Evaluation:

EIA annually conducts a customer satisfaction survey. EIA's senior management reviews the results of the customer survey. Often specific survey questions about EIA's website and electronic products are included in the customer survey. As a result of the customer survey process, the regular monitoring of customer comments and concerns, and the rapidly increasing use of EIA's website, EIA maintains an ongoing cognitive testing initiative of its website. EIA strives to make the site accessible and usable to the most diverse range of customers, not just those with technical expertise and knowledge in energy and web surfing. To do this, users need to be able to find the data for which they are looking quickly and easily without being frustrated by jargon or a design that reflects EIA's organizational structure and/or publication format or content. The results of this testing often lead to the re-design of specific areas of the site to make it's usability easier for the diverse range of users. Monitoring of customer feedback and usage of the re-designed site will continue and form the basis for future updates. EIA is also exploring methods for increasing it's ability to provide faster and more reliable energy data and analysis delivery through its website.

EIA's results on performance measures are presented to senior management on a quarterly basis. Included is the number of unique monthly users of EIA's website, and EIA's progress in meeting the established goal of continuously increasing the numbers of customers accessing and using EIA's energy data, information and service. Management is also briefed on the number of media citations and briefings to high-level policy makers in the Administration and Congress.



EIA's Website Unique Monthly Users



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Program Strategic Performance Goals

ER8-1: Provide national and international energy data, analyses, information, and forecasts to meet the needs of energy decision-makers and the public in order to promote sound policymaking, efficient energy markets, and public understanding.

EIA's major output is energy information. The purpose (outcome) of EIA's energy data collection, analysis, and dissemination endeavors is to promote sound policymaking, efficient energy markets, and public understanding. Because assessing the level of achievement of these ultimate outcomes is extremely difficult and costly, EIA approximates overall achievement of our mission by measuring product usage and the number of information products prepared at the request of Congress, the Administration, and State policymakers per year (includes briefings, testimony, and reports). EIA tracks product usage levels in many ways (number of website file downloads, number of publications mailed out, number of customers and the products they use, number of telephone inquiries, number of news media citations, etc.).

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Increase the number of unique monthly users of EIA's Web site by at least 20 percent per year through 2005 from a FY 1997 baseline of 37,000 monthly users sessions.	Increase the number of unique monthly users of EIA's Website by at least 20 percent per year through 2005 (from a baseline of about 71,000 per month in 1997).	
Conduct informational briefings for high-level energy policymakers in the Administration and Congress to provide timely information and analyses on topical energy issues and situations.	Conduct informational briefings for high-level energy policymakers in the Administration and Congress to provide timely information and analyses on topical energy issues and situations.	Maintain and improve web-based networks for the Energy Resources organizations to ensure wide distribution of information about Energy Resources programs, such that the average number of unique monthly users of Energy Resources Websites will continue to grow at least 20 percent per year through 2005 (from a baseline of about 71,000 per month in 1997.) (MET GOAL)
Increase the number of citations of EIA in major media outlets by at least an average of 10 percent per year through 2003 from a FY 1999 baseline of 79, then maintain a constant level of media citations +/- 10 percent.	Increase the number of citations of EIA in major media outlets by at least 10 percent per year through 2005 (from a baseline of 73 citations in major media outlets in 1999).	

Note: The baseline of 71,000 is inclusive of EIA and EE's websites, jointly referred to as the Energy Resources Websites

Performance Indicators

- Number of informational briefings for high-level energy policymakers in the Administration and Congress, to provide timely information and analyses on topical energy issues and situations.
- Number of unique monthly users of EIA's website by at least 20 percent per year through 2005.
- Number of citations of EIA in major media outlets by at least 10 percent per year through 2005.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Achieve a growth rate of at least 20 percent per year in the average number of unique monthly users of the Energy Resources Board Website (from about 71,000 per month in 1997). (MET GOAL)	Achieve a growth rate of at least 20 percent per year, through 2002, in the average number of unique monthly users of the Energy Resources Board Website (from about 71,000 per month in 1997). (MET GOAL)	Achieve a growth rate of at least 20 percent per year in the average number of unique monthly users of the Energy Resources Board Website (from about 71,000 per month in 1997). (MET GOAL)

GOAL 6: Nuclear Weapons Stewardship

DOE maintains a safe, secure, and reliable nuclear weapons stockpile.

Program Description:

The nuclear weapons stockpile Stewardship program develops and maintains the world-class scientific, engineering, and manufacturing capabilities needed to design, develop, fabricate, and certify nuclear weapons. The Stewardship program is managed by the NNSA and funded in the Weapons Activities appropriation. The Weapons Activities appropriation consists of six major components: Directed Stockpile Work, Campaigns, Readiness in Technical Base and Facilities, Facilities and Infrastructure Recapitalization Program, Secure Transportation Asset, and Safeguards and Security. About 2,000 Federal employees provide direction, management and oversight of about 25,000 contractor employees who carry out program activities in a safe, secure, and environmentally responsible manner at a nationwide complex of government-owned, contractor-operated (GOCO) nuclear weapons production facilities, national security laboratories, and a test site.

These program elements conduct surveillance, maintenance, experiments, and simulations for individual -warheads and weapon systems to ensure operational readiness of the nuclear weapon stockpile. At the same time, we are investing in advanced scientific and manufacturing capabilities for now and the future to ensure the capability to accurately assess weapon status, extend weapon lifetimes, produce new weapons, if required, and certify that the stockpile remains safe, secure, and reliable.

Directed Stockpile Work maintains confidence in the safety, security, and reliability of the nuclear weapons in the nation's stockpile through maintenance, evaluation of the weapons, and planned refurbishments. These activities, conducted in concert with Department of Defense (DoD), are our top priority. Beginning in FY 2001, Directed Stockpile Work accelerated sharply as we prepared to undertake life extension activities for three warheads (in addition to the ongoing W87 refurbishment). The NNSA has worked with the Nuclear Weapons Council (NWC) to reach agreement on the scope, schedule, and cost of this work.

Activities in *Campaigns* contribute technology needed to carry out the directed stockpile work, as well as foster new ideas and concepts that will provide opportunities for cutting-edge improvements to sustain confidence in the stockpile and the program for many years into the future. The campaign activities are essential for certification and life extension of the stockpile. They allow us to use "experience-based" judgments for stewardship, utilizing experiments, simulations, and surveillance information, in place of nuclear

Program Activity Funding: Nuclear Weapons Stewardship				
		Comparable Appropriation		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
TOTAL FUNDING: The total funding for this goal.		5,556	5,896	6,378
NS1-1: Conduct a program of warhead evaluation, maintenance, refurbishment, and production, planned in partnership with the Department of Defense.	NA			
NS1-2: Develop science, design, engineering, testing and manufacturing capabilities needed for long-term stewardship of the stockpile.	NA			
NS4-1: Provide a capability for the safe transport of nuclear weapons, components, and materials that will meet projected DOE, DoD and other customer requirements.	NA			
NS4-2: Provide state-of-the-art facilities and infrastructure supported by advanced scientific and technical tools to meet operational and mission requirements.	NA			
NS4-3: Protect NNSA personnel, information and assets against attacks/espionage and respond to worldwide incidents involving nuclear or radiological weapons/materials.	NA			

testing. The readiness campaigns are technology-based efforts designed also to maintain and enhance manufacturing and other capabilities needed for the future production of weapon components. The pace of the campaigns was assessed as part of the Strategic Review of the national security-related programs and confirmed as planned.

The NNSA also provides Federal support for the *Secure Transportation Asset*, the Department's network of vehicles, special agents and other personnel and specialized infrastructure employed for the safe and secure movement of weapons, weapon components, and other nuclear materials within the continental United States.

Activities in the *Readiness in Technical Base and Facilities* (RTBF) ensure the vitality of the NNSA national security enterprise, including the physical and intellectual infrastructure for the Lawrence Livermore National Laboratory, Los Alamos National Laboratory, and Sandia National Laboratories, the Nevada Test Site, the Kansas City, Pantex, and Y-12 production plants, and Savannah River Site tritium facilities. RTBF funding provides for operation and maintenance of these facilities, with a goal of a consistent readiness level. Infrastructure construction projects are also included in this category.

Also embedded in the RTBF activity is the Nuclear Weapons Incident Response (NWIR) program which manages strategically placed people and equipment to provide a technically trained response to any nuclear or radiological emergency worldwide. NWIR taskings and day-to-day activities have increased dramatically since the terrorist attacks of September 11, 2001.

The *Facilities and Infrastructure Recapitalization Program (FIRP)* is a capital renewal and sustainability program designed to restore, rebuild and revitalize the physical infrastructure of the nuclear weapons complex. FIRP addresses an integrated, prioritized list of repair and infrastructure projects, separate and distinct from the base maintenance and infrastructure efforts under RTBF. FIRP is designed to significantly increase the operational efficiency and effectiveness of the NNSA sites. FIRP preferentially targets deferred maintenance and footprint reduction.

Consistent with the FY 2001 appropriations act, funding for *Safeguards and Security* (S&S) activities are requested as a separate budget category. All funding for S&S for NNSA landlord sites, including a planned offset for funding receipts from Work for Others, is included in the Weapons Activities appropriation, as well as support for cyber security activities. Safeguards & Security will provide the necessary physical, personnel, and cyber security to prevent the theft, loss, or unauthorized use of nuclear weapons, nuclear weapons components, or special nuclear materials, as well as classified and unclassified information and assets throughout the NNSA complex.

Means and Strategies:

The NNSA will conduct a wide range of tests and experimental activities to assess the continuing safety and reliability of the Nation's nuclear weapons stockpile. Overall technical reviews by the weapons laboratories of the stockpile will encompass laboratory and flight tests of materials and components, surveillance tests, and hydrodynamic and other testing of components. Calculations and computer simulations of weapons will be used in these assessments. Weapon analyses will utilize data archived from past underground nuclear tests. Working through the weapon production plants and the laboratories, NNSA will make deliveries of limited life and other weapon components for nuclear weapons stockpile management and refurbishment, according to schedules developed jointly by the NNSA and the Department of Defense (DoD). Dismantlement activities are also carried out in support of this objective. Activities will be conducted with DoD, ranging from training in nuclear weapon field maintenance to partnerships in research supporting non-nuclear munitions.

The NNSA will continue with the campaigns approach for activities that address critical capabilities needed to achieve weapons stockpile certification. The campaigns are focused efforts with specific end points, planned and executed by integrated teams from the laboratories, Nevada Test Site (NTS) and production plants. The six campaign sub-elements are Science, Engineering, Inertial Confinement Fusion Ignition and High Yield, Advanced Simulation and Computing, Pit Manufacturing and Certification, and Readiness.

The NNSA will continue to oversee and maintain the physical plant infrastructure at government-owned, contractor-operated laboratories, production plants, and test site, according to applicable statutes, laws, agreements and standards. NNSA is developing detailed facility operation plans to ensure that specific requirements for readiness are maintained. NNSA will also maintain appropriate infrastructure, personnel knowledge and the exercised skills necessary to carry out, over the next three years, a transition to an eighteen month underground nuclear test readiness posture, as recommended by the December 2001 Nuclear Posture Review.

The NNSA will provide for enhancements to the DOE Secure Transportation Asset to meet increased operating and security standards, and will maintain nuclear emergency response assets. NNSA will identify the workforce skills necessary to meet long-term stockpile stewardship requirements and will develop staffing plans to attract and retain staff.

The NNSA will continue to institutionalize responsible and accountable corporate facilities management processes and incorporate best

practices from industry and other organizations. This includes implementation of a planning process that results in the submission of Ten Year Comprehensive Site Plans (TYCSPs) that establish the foundation for the strategic planning of the facilities and infrastructure of the complex.

Collaboration Activities:

Some activities will be conducted with DoD, ranging from training in nuclear weapon field maintenance to partnerships in research supporting non-nuclear munitions. Stockpile Stewardship activities are synergistic with Work for Others activities, sponsored principally by the DoD.

There are a number of collaborations with universities and colleges, mainly associated with the strategic computing activities, the inertial confinement fusion research program, and the materials research area. Also, a limited number of technology partnership efforts with industry may be continued for FY 2003.

External Factors Affecting Performance:

The Administration's reviews to create a new vision for the role of the Nation's military in the 21st century have the potential to affect performance goals in FY 2003 and beyond.

The NNSA's complex is a government-owned, contractor-operated enterprise. The NNSA works proactively with its contractors, external regulators, and host communities to assure that facilities and operations are in compliance with all applicable statutes and agreements to minimize unscheduled disruption to program activities that could affect performance.

Planned Program Evaluation:

The Stockpile Management Integration Council meets quarterly to assess progress against major performance objectives. A newly formed Office of Program Integration is now in place to evaluate program performance, as directed by the Deputy Administrator for Defense Programs.

Federal campaign managers will develop and use program and implementation plans to oversee and evaluate progress toward milestones. Quarterly status reports will be provided to all campaign managers, and quarterly reviews are planned.

Each site will have a detailed Readiness in Technical Base and Facilities (RTBF) Implementation Plan, which will include detailed data sheets on various activities. Federal RTBF managers will provide status reports and will host quarterly reviews of the program.

The Facilities and Infrastructure Recapitalization Program (FIRP) monitors program progress and results through bi-monthly project status reports, Federal and contractor senior management meetings, periodic on-site program and project reviews, and quarterly line item reviews and Independent Project Reviews.

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Program Strategic Performance Goal:

NS1-1 Conduct a program of warhead evaluation, maintenance, refurbishment, and production, planned in partnership with the Department of Defense.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete by March 2004 the Annual (FY 2003) Stockpile Certification and Report to the President.	Report annually to the President on the need or lack of need to resume underground testing to certify the safety and reliability of the nuclear weapon stockpile.	Report annually to the President on the need or lack of need to resume underground testing to certify the safety and reliability of the nuclear weapon stockpile. (MET GOAL)
Complete by June 2004 the Annual (FY 2003)Stockpile Surety Assessment and Report to the President.		
Complete 100 percent of major milestones scheduled for this year to support B61 refurbishment First Production Unit (FPU) in FY 2006.		
Complete 100 percent of major milestones scheduled for this year to support W76 refurbishment FPU in FY 2007.		
Complete 100 percent of major milestones schedules for this year to support W80 refurbishment FPU in FY 2006.		
Complete 100 percent of major milestones scheduled for this year to support Advanced Concepts Initiative.		
Meet all annual weapons maintenance, refurbishment, and dismantlement schedules developed jointly by the DOE and DoD.	Meet all annual weapons maintenance, refurbishment, and dismantlement schedules developed jointly by the DOE and DoD.	Meet all annual weapons maintenance, refurbishment, and dismantlement schedules developed jointly by the DOE and DoD. (MET GOAL)

Performance Indicators

- Approved Annual Nuclear Weapons Stockpile Certification and Report to the President and to Congress.
- Approved Annual Nuclear Weapons Stockpile Surety Assessment and Report to the President.
- Percentage of directive scheduled activities supporting First Production Unit (FPU) of the Life Extension Programs (LEPs), other approved refurbishments, and Advanced Concepts Initiative completed.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Report annually to the President on the need or lack of need to resume underground testing to certify the safety and reliability of the nuclear weapon stockpile. (MET GOAL)	Report annually to the President on the need or lack of need to resume underground testing to certify the safety and reliability of the nuclear weapon stockpile. (MET GOAL)	Report annually to the President that there is no need or lack of need to resume underground testing to certify the safety and reliability of the nuclear weapon stockpile. (MET GOAL)
Meet all annual weapons maintenance and refurbishment schedules developed jointly by the DOE and DoD. (MET GOAL)	Meet all annual weapons alteration and modification schedules developed jointly by DOE and DoD. (NOT MET: Six of the 11 modifications were behind schedule. Revised schedules have been negotiated with DoD that will meet their operational needs.)	Meet all annual weapons maintenance and refurbishment schedules developed jointly by the DOE and DoD. (MIXED RESULTS)
Meet annual schedules for the safe and secure dismantlement of nuclear warheads that have been removed from the U.S. nuclear weapon stockpile. (MET GOAL)	Adhere to approved schedules for the safe and secure dismantlement of nuclear warheads that have been removed from the U.S. nuclear weapon stockpile. (MET GOAL)	Adhere to the schedule for the safe and secure dismantlement of weapons that have been removed from the U.S. nuclear weapon stockpile. (NOT MET: about 75 percent of scheduled weapons were dismantled and thedifference was due to technical difficlties.)

Program Strategic Performance Goal:

NS1-2 Develop science, design, engineering, testing and manufacturing capabilities needed for long-term stewardship of the stockpile.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Completed 3 additional NIF major construction milestones increasing for a total of 13 of the 28 NIF major construction milestones completed.		Perform a prototype calculation of a full weapon system with three-dimensional engineering features. (MET GOAL)
	Meet the critical FY 2003 Campaign performance targets contained in the NNSA Future-Year Nuclear Security Plan (FYNSP).	Meet the FY 2002 milestones in the science campaigns to achieve scientific understanding of the nuclear package of weapon systems to sustain our ability to annually certify the nuclear weapon stockpile without underground nuclear testing. (MET GOAL)
Deliver a platform that can perform 40 trillion operations per second.		
Complete 20 percent of the major milestones towards restoring capability to manufacture the pit types in the enduring stockpile in FY 2009.		
With DoD and the Nuclear Weapons Council, decide on future tritium requirements and schedule TVA irradiation services, accordingly.		
Meet all scheduled milestones for National Ignition Facility, Microsystem and Engineering Science Applications, and Tritium Extraction Facility.	Implement the recommendations requested by the Nuclear Posture Review to refine test scenarios and evaluate the cost/ benefit tradeoffs to sustain optimum test readiness that best supports the New Triad.	Meet the FY 2002 milestones in the production readiness campaigns to address issues associated with high explosives, materials, and non-nuclear technologies (MIXED RESULTS)

Performance Indicators

- Number of National Ignition Facility (NIF) project major construction milestones completed.
- Amount of individual platform computing capability measured in trillions of operations per second (TeraOPS).
- Percentage of major milestones completed towards restoration of capability to manufacture the pit types in the enduring stockpile.
- Number of tritium rods irradiated in commercial reactors.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Meet the FY 2001 ASCI Program Plan milestones for development of modeling and simulation tools and capabilities required for design and certification of the nuclear weapons stockpile. (MET GOAL)	Demonstrate a computer code capable of performing a three-dimensional analysis of the dynamic behavior of a nuclear weapon primary, including a prediction of the total explosive yield, on an Accelerated Strategic Computing Initiative (ASCI) computer system. (MET GOAL)	Demonstrate 3 trillion operations per second computer system. (MET GOAL)
Meet FY 2001 milestones in the science campaigns to achieve scientific understanding of the nuclear package of weapon systems to sustain our ability to annually certify the nuclear weapon stock pile without underground nuclear testing. (MET GOAL)	Conduct further subsets of the sub critical experiment begun in FY 1999 (Oboe) and one additional sub critical experiment at the Nevada Test Site to provide data on the behavior of nuclear materials during the implosion phase of a nuclear weapon. (MET GOAL)	Conduct two to three sub critical experiments at the Nevada Test Site to provide valuable scientific information about the behavior of nuclear materials during the implosion phase of a nuclear weapon. (MET GOAL)

Program Strategic Performance Goal:

NS4-1 Provide a capability for the safe transport of nuclear weapons, components, and materials that will meet projected DOE, DoD and other customer requirements.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Achieve agent end-strength of 297 and contractor support staging driver strength of 30-40.	Establish requirements for all elements of support to DOE offices and NNSA, and plan workforce and equipment, accodingly.	There were no related targets.
Achieve a mission capacity of at least 292,240 staff hours to complete 90 convoys, which will address 70 percent of the requested and carryover workload.		

Performance Indicators:

- Levels of agent end-strength and number of contractor support staging drivers.
- Mission capacity, number of convoys, and the percentage of workload completion.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

Program Strategic Performance Goal:

NS4-2 Provide state-of-the-art facilities and infrastructure supported by advanced scientific and technical tools to meet operational and mission requirements.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Mission essential facilities available 90 percent or more of scheduled days.	Meet established facility operating plans and construction schedules to ensure the physical infrastructure and facilities are operational, safe, secure, and compliant, and that a defined state of readiness is sustained at all needed facilities.	Meet established facility operating plans and construction schedules to ensure the physical infrastructure and facilities are operational, safe, secure, and compliant, and that a defined state of readiness is sustained at all needed facilities. This includes addressing safety issues to allow restart of the Y-12 enriched uranium reduction process. (MET GOAL)
Initiate designs (CD-1) on seven construction projects.		
Initiate construction (CD-3) on eight projects.		
Complete construction (CD-4) on nine projects.		
Allocate 45% of the Recapitalization budget to facilities and infrastructure specific deferred maintenance activities thereby achieving significant reductions in gross deferred maintenance. *(This is an interim measure. The FY 2005 Budget submission will include FY 2004 targets for the FIRP dollar value and percentage of deferred maintenance reduction from the baseline that contribute to the stabilization of the NNSA's deferred maintenance by the end of FY 2005).*	Allocate 45% of the Recapitalization budget to facilities and infrastructure specific deferred maintenance activities, thereby achieving significant reductions in gross deferred maintenance. *(This is an interim measure that will be used to assess FIRP progress in FY 2003).*	Execute oversight of more than 50 FY 2002 Recapitalization Projects consistent with scope, cost, and schedule baselines. (MET GOAL)
Reduce the NNSA footprint by approximately 325,000 gross square feet through FIRP Facility Disposition projects, increasing the total to approximately 44 percent of the estimated 3 million gross square feet FIRP will disposition by 2009.	Reduce the NNSA footprint by approximately 200,000 gross square feet through FIRP Facility Disposition projects, increasing the total to approximately 33% of the estimated three million Gross Square Feet (GSF) FIRP will disposition by FY 2009 (three million GSF has been established as a stretch goal).	Implement an excess prioritized project list to ensure high priority facilities are demolished, based on NNSA's 10 Year Comprehensive Site Plans (TYCSPs) that result in disposal of over 500,000 square feet of floor space. (MET GOAL)

Performance Indicators:

- Percentage of scheduled days that mission essential facilities are actually available to support program work.
- Number of construction projects initiating engineering designs (Critical Decision (CD)-1).
- Number of construction projects starting construction (CD-3).
- Number of construction projects completed (CD-4).
- Dollar value and percentage of NNSA deferred maintenance that is eliminated due to FIRP funded projects. (Specific fiscal year targets for deferred maintenance, expressed as a dollar and percentage reduction from the baseline, will be reported beginning with the FY 2005 budget submission).
- Total gross square feet of NNSA excess facilities space eliminated due to FIRP funded projects.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete the milestones listed in the corrective action plan for the Departmental challenge of managing physical assets. (MET GOAL)	Ensure that all facilities required for successful achievement of the Stockpile Stewardship Program remain operational. (NOT MET: Operations at Los Alamos National Laboratory (LANL) were severely impacted by the plutonium intake accident and the Cerro Grande fire at LANL.)	Ensure that all facilities required for successful achievement of the Stockpile Stewardship Program remain operational. (NOT MET: Enriched Uranium Operations at the Y-12 Plant were behind schedule.)
	Ensure that the capability to resume underground nuclear testing is maintained in accordance with the Presidential Decision Directive through a combined experimental and test readiness program. (MET GOAL)	Ensure that the capability to resume underground nuclear testing is maintained in accordance with the Presidential Decision Directive and Safeguard C of the Comprehensive Test Ban Treaty (CTBT). (MET GOAL)
Implement the Secretary's Six Point Plan to improve project management of the National Ignition Facility (NIF) project and approve a new baseline. (FMFIA) (MET GOAL)	Continue construction of the National Ignition Facility (NIF), and rebaseline future construction plans, total costs, and schedules by June 2000. (MET GOAL)	Continue construction of the National Ignition Facility (NIF) according to the Project Execution Plan schedules. (NOT MET: A new project baseline is being developed.)
	Meet the established schedules for downsizing and modernizing our production facilities. (MIXED RESULTS)	Meet the established schedules for downsizing and modernizing DOE's production facilities. (MIXED RESULTS)

Program Strategic Performance Goal (Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	Begin execution of the Defense-related project management campaign implementation plan. (MET GOAL)	
Ensure the physical infrastructure and facilities are operational, safe, secure, and compliant, and that a defined state of readiness is sustained at all needed facilities. (MET GOAL)		

Program Strategic Performance Goal

NS4-3 Protect NNSA personnel, information and assets against attacks/espionage and respond to worldwide incidents involving nuclear or radiological weapons/materials.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Conduct federal evaluations at all eight NNSA sites to assess contractor safeguards and security performance.	Assess line management's progress in implementing Integrated Safeguards and Security Management.	
Complete at least 90 percent of independent oversight evaluations' corrective action plan items on time.	Complete implementation of "Higher Fences" to enhance the protection of certain Restricted Weapons Data within the DOE and DoD. (FMFIA)	
Maintain security post 100 percent and reduce unscheduled overtime to an average program annual rate of 25 percent or less.		
Maintain an average 90 percent readiness level in nuclear incident response equipment that is prepared or available for service or action.		
Maintain an average 90 percent level in nuclear incident responders prepared or available for service or action.		
		Provide technical support to the Counter-Terrorism Task Force strategic review of S&S DOE-wide, including cyber security. (MET GOAL)
		Develop a strategic framework for responsive and effective security methodology following the September 11, 2001 events. (MET GOAL)
		Complete the milestones listed in the corrective action plans for the Departmental Challenge of Security and Counterintelligence. (FMFIA) (MET GOAL)

Performance Indicators:

- Number of NNSA sites where federal evaluations of contractor safeguards and security performance is conducted.
- Percentage of independent oversight's inspections' corrective action plan items completed on time
- Total guard force staffing levels and qualifications meet all security post requirements at stable or reduced costs.
- Readiness level of deployable nuclear incident response equipment that is prepared or available for service or action.
- Readiness level of deployable nuclear incident responders prepared or available for service or action.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

GOAL 7: Control of Weapons of Mass Destruction

All weapons of mass destruction are under controls acceptable to the United States Government.

Program Description:

The *Nonproliferation and Verification R&D* program enhances U.S. national security through needs-driven research and engineering resulting in prototype demonstrations and resultant detection systems. Activities focus on development, design, and construction of prototypes; sensor systems needed for proliferation detection; development and production of sensor systems and analytical techniques; and nuclear explosion monitoring. The program continues to support commercialization of detection technologies.

The *International Nuclear Safety and Cooperation* program works to reduce the chances of a nuclear accident and to improve emergency response capability by assisting foreign governments and international organizations in the development of emergency policy and preparedness infrastructure, and promotes sound policies for emergency communication, planning, and response and assistance worldwide. This Nuclear Safety and Emergency Cooperation program identifies, evaluates, prioritizes, and addresses critical nuclear safety and emergency preparedness concerns through a process of safety analyses, corrective measures, and emergency management.

NNSA has recently undertaken management of the program for *Elimination of Weapon-Grade Plutonium Production Reactors* in Russia, formerly under the direction of the Department of Defense. This program aims to eliminate Russian weapon-grade plutonium production capability at three reactors at Seversk and Zheleznogorsk.

The *Highly Enriched Uranium (HEU) Transparency Implementation* program is also included in this program and is responsible for monitoring the implementation of the 1993 HEU Purchase Agreement between the U.S. and the Russian Federation. Four Russian uranium-processing facilities, located in closed cities with restricted access, perform conversion of the HEU components into Low Enriched Uranium (LEU). NNSA has developed and negotiated with the Russian Federation a transparency program which uses on-site monitoring teams, portable non-destructive assay instruments, and permanently installed monitoring equipment to acquire the requisite data and information to assure the nuclear nonproliferation objectives of the Agreement are achieved. The Agreement also requires that the U.S. support comparable Russian monitoring of certain U.S. facilities.

As a result of the May 2002 Summit meeting in Moscow between Presidents Bush and Putin, a new opportunity exists to accelerate the permanent reduction/disposition of additional HEU material, as well as opportunities to dispose of additional plutonium over and above existing agreements. This is a unique opportunity to directly purchase additional HEU and HEU converted to LEU material for storage and use by the U.S. Government under this new *Accelerated Material Disposition* program. The mission of the Program is to negotiate and implement proposals on near- and long-term, bilateral and multilateral means to further reduce inventories of highly enriched uranium (HEU) and plutonium. The program is closely coordinated with the U.S. Department of State (DOS) and other U.S. government agencies to ensure that it supports and

Program Activity Funding: Control of Weapons of Mass Destruction				
		Comparable Appropriation		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
TOTAL FUNDING: The total funding for this goal.		1,048	1,028	1,340
NS2-1: Enhance the capability to detect Weapons of Mass Destruction (WMD), including nuclear and terrorist threats.	NA			
NS2-2: Prevent and reverse proliferation of weapons of mass destruction.	NA			
NS2-3: Protect or eliminate weapons and weapons-usable nuclear material or infrastructure and redirect excess foreign weapons expertise to civilian enterprises.	NA			
NS2-4: Reduce the risk of accidents in nuclear fuel cycle facilities worldwide.	NA			

achieves National policy objectives on nuclear nonproliferation and does not adversely affect existing agreements or the commercial nuclear fuel market.

The *Nonproliferation and International Security* program is the focal point within the NNSA and the Department of Energy for activities that support the President's nonproliferation and international security policies, goals and objectives, as well as those activities mandated by statute. The program provides technical expertise and leadership for interagency, bilateral and multilateral fora involved in nonproliferation and international security matters. *Nonproliferation Policy* programs address fuel cycle activities, efforts to support global legal monitoring/inspection regimes, regional nonproliferation initiatives, and projects that promote warhead dismantlement and fissile material transparency. The *International Safeguards* program supports International Atomic Energy Agency (IAEA) safeguards, many bilateral efforts to improve safeguards, international organizations with specific inspection regimes, and sustainability of safeguards and security systems in the Former Soviet Union (FSU)/Baltics. The *Export Controls* program regulates American nuclear-related exports, and supports the development of effective nuclear export control systems in other countries, including Russia and the FSU.

The *Russian Transition Initiative* follows two strategic thrusts that support and strengthen each other. First, it removes functions and equipment from the former Soviet nuclear complex, reducing its physical footprint and creating the business infrastructure needed to sustain developing opportunities. Second, it provides meaningful, self-sustaining, civilian work opportunities for former Soviet weapons of mass destruction scientists, engineers and technicians by helping to fund technology-laden projects with commercially-attractive market opportunities. FY 2004 activities will focus primarily on work in the Russian nuclear complex, but will expand its efforts slightly both geographically and functionally, by pursuing one or two new projects in the non-nuclear arena, in response to growing concern about chemical, biological and missile technologies.

The *International Nuclear Materials Protection and Cooperation* program reduces the threat to U.S. national security from unsecured Russian nuclear weapons and weapons-usable material. NNSA has identified 105 sites in Russia and the former Soviet Union which may require nuclear Material Protection, Control and Accounting (MPC&A) security upgrades. Fifty-two of these sites are Ministry of Defense nuclear warhead sites (42 for the Russian Navy and 10 for Strategic Rocket Forces), 11 MINATOM weapons complex sites and 31 Civilian nuclear sites (18 in Russia and 13 in the former Soviet Union). Security upgrades occur in a phased approach. Rapid upgrades include items such as baseline item inventories, installation of locks, delay blocks, and steel cages, limiting access, and hardening windows. Comprehensive upgrades include rapid upgrades plus items such as detection systems, closed-circuit television monitoring and assessment systems, material measurement equipment and computerized accounting systems.

The *Fissile Materials Disposition* program is responsible for disposing of inventories of surplus, U.S. weapons-usable plutonium and highly enriched uranium, as well as providing technical support for, and implementation of, efforts to obtain reciprocal disposition of Russian surplus weapon-grade plutonium. Disposing of 173 metric tons of U.S. highly enriched uranium will be accomplished by down-blending the material to low enriched uranium, suitable for use in making commercial reactor fuel. In September 2000, the U.S. and Russia signed the U.S.-Russia Plutonium Management and Disposition Agreement, which commits each country to dispose of 34 metric tons of weapon-grade plutonium (68 metric tons total) in rough parallel. In January 2002, the Department announced a revised approach for U.S. plutonium disposition where the U.S. will rely primarily on the irradiation of MOX fuel to dispose of surplus weapon-grade plutonium.

Means and Strategies:

The Defense Nuclear Nonproliferation program goal is to detect, prevent, and reverse the proliferation of Weapons of Mass Destruction (WMD) while promoting nuclear safety worldwide. Our programs address the danger that hostile nations or terrorist groups may acquire weapons of mass destruction or weapons-usable material, dual-use production or technology, or WMD expertise. There are now "rogue" states as well as terrorist organizations seeking to procure WMD capabilities. This emphasizes the importance of our programs to properly secure or eliminate vulnerable stockpiles of weapons-usable materials in Russia and countries of concern.

The events of September 11 make it clear that our threat detection programs are required on an accelerated basis. We will fully exploit the world-class expertise of our National Laboratories to increase our design, testing, and fielding capabilities for detection technologies.

Collaboration Activities:

We work with many different U.S. agencies, international organizations, and non-governmental organizations to further our nonproliferation goals. All major policy issues are coordinated with the National Security Council, and we also work closely with the Departments of State and Defense on many of our programs. We continually leverage our considerable nuclear nonprolif-

eration Research and Development base within the national laboratory complex. In addition, NNSA coordinates with the Department of Commerce on export control policy and international agreements, and the Nuclear Regulatory Commission on nuclear safety programs, as well as working with the International Atomic Energy Agency to further international safeguards. The United States Enrichment Corporation and the Tennessee Valley Authority are involved in the HEU purchase agreement and fissile materials disposition programs, and the U.S. Industrial Coalition is NNSA's partner in the Initiatives for Proliferation Prevention and Nuclear Cities Initiatives. The U.S. Agency for International Development, the Nuclear Energy Agency, the intelligence community, and other agencies are also involved in some programs. Finally we anticipate frequent collaboration with the new Department of Homeland Security as that new department assumed its role in the national security arena.

External Factors Affecting Performance:

The pace and nature of treaties and agreements, extremely poor economic conditions in host countries, political and economic uncertainties in the former Soviet Union, and the unwillingness of threshold states to engage in negotiations can all have dramatic effects on our performance and effectiveness. Customs issues, Nuclear Regulatory Commission actions, and other Department of Energy elements can also cause significant impacts to our ability to achieve program objectives.

Planned Program Evaluation:

NNSA will implement quarterly program reviews through the Management Council to assess program performance.

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Program Strategic Performance Goal

NS2-1 Enhance the capability to detect Weapons of Mass Destruction (WMD), including nuclear and terrorist threats.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Demonstrate or lab test nine prototype detection systems (including one airborne sensor for testing by DoD).	Demonstrate or lab test four prototype detection systems.	Field a demonstrated, deployable prototype biological threat system at the Winter Olympics. (MET GOAL)
Test 13 new technologies*	Test 14 new technologies (11 detection concepts for stand off detection of Highly Enriched Uranium (HEU) and three prototype radiation systems for beta testing).	Demonstrate a chemical agent detection system in a subway system. (MET GOAL)
Complete the remaining 25 percent for a total of 100 percent progress towards delivering the next operational satellite payload.	Reach 75 percent progress towards delivering the next operational satellite payload.	Start satellite sensor-payload assembly of operational nuclear explosion detection payloads for the next generation of Global Positioning System satellites scheduled for first launch in 2004. (MET GOAL)
Provide calibration data for five international seismic stations.	Provide calibration data for four international seismic stations.	Perform experiments of prototype, unmanned-aerial-vehicle-based Light Detection and Ranging (LIDAR) systems to detect proliferation. (MIXED RESULTS)
Complete an additional four technology /licensing agreements.	Complete an additional six technology /licensing agreements.	

*Note: *Eleven new detection concept for fissile material and 2 chemical detection systems.*

Performance Indicators

- Number of new technologies to remotely detect the early stages of a proliferant nation's nuclear weapon program demonstrated or tested.
- Number of new technologies to identify the origins of nuclear materials, to monitor global fissile material production, to monitor Russian nuclear warhead dismantlement and to support cooperative threat reduction programs demonstrated or tested.
- Percentage of progress on delivering the next operational satellite payloads to detect, locate, and identify nuclear explosions.
- Number of ground-based nuclear explosion monitoring systems calibrated.
- Number of technology transfer/licensing agreements with DOD, intelligence agencies or industry.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Demonstrate systems to protect key infrastructure and special events from chemical and biological attacks. (MET GOAL)	Develop improved technologies and systems for early detection, identification, and response to weapons of mass destruction proliferation and illicit materials trafficking. (MET GOAL)	Complete development and delivery to customers of two new counter-nuclear-smuggling detection technologies, one portable/hand-held and the other for wide area tracking and interdiction. (MET GOAL)
	Test first generation prototype hand-held detector for enhanced detection of chemical agents. (MET GOAL)	
	Complete architecture development to protect a "special event" from biological attacks. (MET GOAL)	Demonstrate, through airborne field tests, two new technologies that use chemical detection methods to remotely characterize weapons of mass destruction proliferation activities. (MET GOAL)
	Launch the Multispectral Thermal Imager (MTI) small satellite to demonstrate temperature measurement from space for the passive detection and characterization of proliferant activities. (MET GOAL)	
Conduct Critical Design Reviews for three new-generation nuclear explosion-monitoring sensors that are proposed for future satellite deployment. (MET GOAL)		

Program Strategic Performance Goal

NS2-2 Prevent and reverse proliferation of weapons of mass destruction.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete conversion of 68 percent of candidate reactors under RFERTR and repatriate approximately an additional 100 kgs of spent/fresh fuel to Russia.	Initiate repatriation to Russia of 500 fresh and spent nuclear fuel assemblies and participate in two fact-finding missions to evaluate fuel inventory and conditions at six potential sites.	Develop and implement lab-to-lab counter-terrorism technology demonstrations at Russian technical institutes. (MET GOAL)
Complete the final 50 percent of the BN-350 container design (100 percent total) and complete the first 50 percent of the site equipment design.	Secure a contract with cask manufacturer and begin cask fabrication.	
Review 100 percent of nuclear related and 60 percent of missile technology and chem/bio related U.S. exports.	Review approximately 4,500 nuclear and missile technology dual-use license applications.	Conduct field missions to North Korea to maintain status of spent fuel in the Nyongbyon spent fuel facility. (MET GOAL)
Complete four nuclear export control training courses for U.S. Customs officers.	There were no related targets	Expand cooperation with other states and U.S. Customs to improve export control capabilities. (MET GOAL)
Conduct nine physical protection training courses.	Conduct bilateral physical protection assessments in Japan, South Korea, Belgium, and Australia; participate in IAEA IPPAS missions in Lithuania, Ukraine, and Armenia.	Develop verification capabilities to support implementation of the U.S.-Democratic Peoples Republic of Korea Agreed Framework. (MET GOAL)
Perform physical protection reviews at eight foreign nuclear sites and provide upgrades at three sites.	Conduct on-site operational reviews at nine direct use (Highly Enriched Uranium and Plutonium) sites in the FSU/Baltics; expand the MPC&A program to five nuclear power plants in the FSU/Baltics.	

Performance Indicators

- Percentage of research reactors converted under the RERTR program and the kilograms of Soviet/Russia-supplied spent/fresh fuel that has been repatriated to Russia.
- Percentage of progress on each phase of canning weapons grade plutonium bearing spent fuel for long-term storage (short-term pool storage; long-term container design; container fabrication; site equipment design; sites equipment fabrication and packaging).
- Percentage of U.S. exports reviewed for proliferation risk.
- Number of export control training courses provided to U.S. Customs officers.
- Number of safeguards or physical protection courses conducted.
- Number of safeguards or physical protection reviews, evaluations or upgrades completed.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete canning of BN-350 fast reactor spent fuel. (MET GOAL)		

Program Strategic Performance Goal

NS2-3 Protect or eliminate weapons and weapons-usable nuclear material and/or infrastructure and redirect excess foreign weapons expertise to civilian enterprises.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Employ 6,000 former Soviet Union weapon scientists, engineers and technicians.		Sign an agreement with the Russian Ministry of Atomic Energy for access to closed nuclear cities. (MET GOAL) Engage 2,500 former WMD scientists on coopertve commercial projects. (MET GOAL)
Meet 53 percent of all former Soviet Union nuclear complex reduction targets at six weapons facilities and complete all targets at two of the six sites.		
Complete MPC&A comprehensive upgrades on an additional 4 percent of the 600 tons of weapons-usable nuclear material (increasing the total to 26 percent).	Complete MPC&A comprehensive upgrades on an additional 5 percent of the 600 tons of weapons-usable nuclear material (increasing the total to 22 percent).	Accelerate the rapid and comprehensive upgrades on at-risk plutonium, highly enriched uranium, and Naval nuclear weapons
Complete MPC&A comprehensive upgrades on an additional 30 percent of the 4,000 Russian Navy nuclear warheads (increasing the total to 90 percent).	Complete MPC&A comprehensive upgrades on an additional 20 percent of the 4,000 Russian Navy nuclear warheads (increasing the total to 60 percent).	
Locate, consolidate and secure an additional 225 orphan or surplus radioactive sources (for a total of 414).	Locate, consolidate and secure an additional 180 orphan or surplus radioactive sources (for a total of 189).	
Conduct 22 or 92 percent of 24 allowed Special Monitoring Visits (SMV) to the four Russian HEU-to-LEU processing facilities to monitor the conversion of an additional 30 tons of HEU to LEU.	Conduct 18 or 75 percent of 24 allowed Special Monitoring Visits (SMV) to the four Russian HEU-to-LEU processing facilities to monitor the conversion of an additional 30 tons of HEU to LEU	
Complete an additional 24 percent towards the construction of a fossil plant in Seversk (increasing the total to 25 percent completion towards shutting down two plutonium production reactors by 2008).	Complete the initial 1 percent towards the construction of a fossil plant in Seversk (increasing the total to 1 percent completion towards shutting down two plutonium production reactors by 2008).	

Performance Indicators

- Number of former Soviet Union weapon scientists, engineers and technicians employed.
- Percentage of progress in meeting all former Soviet Union nuclear complex reduction targets (personnel, facilities and equipment removed from military activities).
- Percentage of Russian weapons-usable nuclear material placed under Material Protection, Control and Accounting (MPC&A) comprehensive upgrades.
- Percentage of Russian Navy nuclear warheads placed under MPC&A comprehensive upgrades.
- Number of orphan or surplus radioactive sources located, consolidated and secured.
- Percentage of the 24 annually allowed Special Monitoring Visits (SMV) to the four Russian HEU-to-LEU processing facilities to monitor the 30 tons per year of HEU converted to LEU conducted.
- Percentage of progress towards constructing a fossil plant in Seversk facilitating the shut down of two Russian weapons-grade plutonium production reactors.
- Percentage of progress towards constructing a fossil plant in Zheleznogorsk facilitating the shut down of one Russian weapons-grade plutonium production reactors.
- Percentage of the design and construction of the U.S. MOX Fuel Fabrication Facility completed.
- Percentage of the design and construction of the Russian MOX Fuel Fabrication Facility completed.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Engage approximately 2,000 scientists, engineers, and technicians at nuclear NIS institutes, and approximately 800 scientists, engineers and technicians at NIS chemical/biological institutes in 40 projects to provide long-term commercial employment. (MET GOAL)	Engage approximately 2,000 scientists, engineers, and technicians at nuclear NIS institutes, and approximately 800 scientists, engineers and technicians at NIS chemical/biological institutes in 50 projects to provide long-term commercial employment. (MET GOAL)	Further the Nuclear Cities Initiative promoting cooperation with the closed cities in the Russian nuclear weapons complex to improve the prospects for defense conversion and employment of former weapons scientists. (MET GOAL)
Complete comprehensive upgrades at an additional eight of 95 sites, raising the total to 37 sites. (MET GOAL)	Continue to install Material Protection, Control and Accounting (MPC&A) upgrades in Russia, for defense-related sites, civilian sites, Russian Navy projects, and the transportation sector. (MET GOAL)	Continue to improve and integrate technology practices, facilities and training for material protection, control, and accounting for 650 metric tons of weapons-usable material at 53 locations. (MET GOAL)
Complete comprehensive upgrades on an additional 8 percent of 850 metric tons (MTs) of weapons-usable nuclear material raising the total to almost 21 percent secured at 95 sites in Russia. (MIXED RESULTS)		
		Modify the agreement between the Russian Federation and the U.S. to cease the production of weapons-grade plutonium at Seversk and Zheleznogorsk. (MIXED RESULTS)

Program Strategic Performance Goal (NS2-3: Continued)

NS2-3 Protect or eliminate weapons and weapons-usable nuclear material and/or infrastructure and redirect excess foreign weapons expertise to civilian enterprises.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete an additional 2.5 percent towards the construction of a fossil plant in Zheleznogosk (increasing the total to 3 percent completion towards shutting down one plutonium production reactor by 2011).	Complete the initial 0.5 percent towards the construction of a fossil plant in Zheleznogosk (increasing the total to 0.5 percent completion towards shutting down one plutonium production reactor by 2011).	
Complete the last 25 percent of the detailed design for the U.S. MOX Fuel Fabrication Facility (total of 100 percent complete) and begin construction.	Complete the initial 75 percent of the detailed design for the U.S. MOX Fuel Fabrication Facility (total of 75 percent complete) and begin construction.	Develop a plan for U.S. and Russian plutonium disposition that is politically, fiscally, and technically feasible, and obtain White House approval. (MET GOAL)
Complete the detailed design for the Russian MOX Fuel Fabrication Facility (total of 100 percent complete) and begin construction.	Begin Russianization of U.S. MOX Fuel Fabrication Facility design so it can be used for the Russian MOX Fuel Fabrication Facility.	

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	Issue the Record of Decision on a site(s) for three (U.S.) plutonium disposition facilities. (FMFIA). (MET GOAL)	
The siting decision for plutonium disposition facilities was implemented based on the Record of Decision in FY 2000.	Begin to implement a bilateral agreement with Russia for plutonium disposition. (FMFIA). (MET GOAL)	

Program Strategic Performance Goal

NS2-4 Reduce the risk of accidents in nuclear fuel cycle facilities worldwide.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete an additional 20 percent, increasing the total to 60 percent of the work towards shutting down BN-350 in FY 2006. (Complete sodium draining).	Complete an additional 20 percent, increasing the total to 40 percent of the work towards shutting down BN-350 in FY 2006. (Install and operate sodium drain; deliver fire protection equipment; and design sodium processing facility).	
Connect an additional three Russian nuclear sites to the Situation and Crisis Center (increasing the total to ten sites) and conduct an additional emergency exercise	Connect an additional three Russian nuclear sites to the Situation and Crisis Center (Increasing the total to seven sites) and conduct an additional emergency exercise.	Develop a small nuclear safety pilot program between the U.S. Department of Energy and the Vietnamese Atomic Energy Commission. (MET GOAL)

Performance Indicators

- Percentage of progress towards permanent shutdown of the Kazakhstan BN-350 breeder reactor.
- Number of Russian nuclear sites connected to their emergency management center (the Situation and Crisis Center) and number of emergency exercises conducted.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete safety parameter display systems for Ukraine's South Ukraine nuclear plant unit 3, and Zaporizhzhya nuclear plant units 2 and 4. (MET GOAL)	Complete a full-scope simulator for Kola Unit 4 and Balakovo Unit 4 in Russia, and for South Ukraine Unit 3 in Ukraine. (MET GOAL)	Complete the development and implementation of an effective reactor plant operator-training program at key plants based on the Systematic Approach to Training methodology used in the United States, and provide and incorporate plant simulators into the operator training programs. (MET GOAL)
		Complete plans for critical asset identification within the Department and test vulnerability assessment techniques in two components of the Energy Sector in countries of the former Soviet Union. (NOT MET: This was an un-funded mandate but significant progress was made.)
Complete implementation of symptom-based emergency operating instructions at the Ignalina plant in Lithuania. (MET GOAL)		Promote U.S. positions and practices in international forums that advocate safe reactor operations. (MET GOAL)

GOAL 8: Defense Nuclear Power

The Department of Defense's needs for reliable and militarily effective nuclear power are continuously met.

Program Description:

Naval Reactors is responsible for all Naval nuclear propulsion work, beginning with technology development, continuing through reactor operation and, ultimately, reactor plant disposal. The Program ensures the safe operation of the many reactor plants in operating nuclear powered submarines and aircraft carriers (constituting 40 percent of the Navy's combat fleet), and fulfills the Navy's requirements for new nuclear reactor propulsion plants that meet current and future national defense requirements.

Naval Reactors is principally a technology program in the business of power generation for military application. The Program's development work ensures that nuclear propulsion technology provides options for maintaining and upgrading current capabilities, as well as for meeting future threats to U.S. security. Work is integrated as advances in various functional disciplines coalesce into the technology applicable to a naval nuclear plant. The presence of radiation dictates a careful, measured approach to developing and verifying nuclear technology, designing needed components, systems, and processes, and implementing them into existing and future plant designs. Intricate engineering challenges and long lead times to fabricate the massive, complex components require many years of effort before technological advances can be introduced into the Fleet.

Means and Strategies:

The Department uses two government-owned, contractor-operated laboratories, the Bettis and Knolls Atomic Power Laboratories (employing approximately 5,500 people), which are solely dedicated to Naval nuclear propulsion work. Through these laboratories and the testing conducted at the Advanced Test Reactor (ATR) located at the Idaho National Engineering and Environmental Laboratory (INEEL), the Department will complete scheduled design, analysis and testing of reactor plant components and systems, conduct planned development, testing, examination, and evaluation of nuclear fuel systems, materials, and manufacturing and inspection methods necessary to ensure the continued safety and reliability of reactor plants in Navy warships. The Department will also accomplish planned testing, maintenance and servicing at land-based prototype nuclear propulsion plants, and execute all planned inactivation of surplus, land-based reactor plants in support of environmental cleanup goals. Finally, the Department will carry out the radiological, environmental and safety monitoring and ongoing cleanup of facilities necessary to protect people, minimize release of hazardous effluents to the environment, and comply with all applicable regulations.

Collaboration Activities:

Naval nuclear propulsion work is an integrated effort involving the DOE and the Navy, who are full partners in the Naval Nuclear Propulsion Program. This relationship is set forth in the Executive Order 12344 and Title 42 U.S.C. 7158.

External Factors Affecting Performance:

Industry-specific business conditions, outside technological developments and Department of Navy decisions all impact the performance of Naval nuclear propulsion work.

Planned Program Evaluation:

DOE uses extensive internal and external reviews to evaluate progress against established plans. NR plans semi-annual reviews of performance measure execution in addition to monthly financial and technical work reviews with the M&O contractors.

Program Activity Funding: Defense Nuclear Power

		Comparable Appropriation		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
TOTAL FUNDING: The total funding for this goal.		688	707	768
NS-3-1: Provide the Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operation.	NA			

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Program Strategic Performance Goal

NS3-1: Provide the Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operation.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete safe steaming of approximately two million miles in nuclear-powered ships.	Complete safe steaming of approximately two million miles in nuclear-powered ships.	Naval Reactors safely steamed over two million miles in nuclear-powered ships. (MET GOAL)
Achieve a utilization factor of at least 90 percent for operation of test reactor plants.	Achieve a utilization factor of at least 90 percent for operation of test reactor plants.	Naval Reactors exceeded a 90 percent utilization factor for operation of test reactor plants. (MET GOAL)
Complete 100 percent of the next generation submarine reactor design.	Next-generation submarine reactor design 99 percent complete.	Next-generation submarine reactor design 96 percent complete. (MET GOAL)
Next-generation aircraft carrier reactor design 60 percent complete.	Next-generation aircraft carrier reactor design 55 percent complete.	Next-generation aircraft carrier reactor design 40 percent complete. (MET GOAL)
Establish TTC design basis from preliminary studies and development to enable the start of conceptual design.		
No personnel exceed 5 rem/year.	No personnel exceed 5 rem/year.	No personnel exceeded 5 rem/year. (MET GOAL)
Operations have no adverse impact on human health or the quality of the environment.	Operations have no adverse impact on human health or the quality of the environment.	Operations had no adverse impact on human health or the quality of the environment. (MET GOAL)

Note: FY 2002 results have been recast to reflect comparable FYs 2003 and 2004 targets.

Performance Indicators

- Miles of safe reactor plant operation supporting National security requirements.
- Utilization factor for operation of test reactor plants.
- Percent of completion on reactor plant designs.
- Ensure no one exceeds Federal limits for personnel radiation exposure from Program Operations.
- Ensure Program operations have no adverse impact on human health or the quality of the environment.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Ensure the safety, performance, reliability, and service-life of operating reactors for uninterrupted support of fleet demands, including maintaining utilization factors of at least 90 percent for test reactor plants, and 121 million miles steamed for nuclear-powered ships. (MET GOAL)	Ensure the safety, performance reliability, and service-life of operating reactors. (MET GOAL)	
Develop new technologies, methods and materials to support reactor plant design, including the next generation submarine reactor, which will be 93 percent complete by the end of FY 2001 and initiate detailed design efforts on a reactor plant for the next generation aircraft carrier. (MET GOAL)	Develop new reactor plants, including the next generation reactor, the design of which will be 90 percent complete by the end of FY 2000, and complete initial development efforts on a reactor plant for the next generation aircraft carrier. (MET GOAL)	Develop new reactor plants, including the next generation reactor, which will be 85 percent complete by the end of FY 1999, and ensure the safety, performance reliability, and service-life of operating reactors. (MET GOAL)
Maintain outstanding environmental performance by ensuring that no personnel exceed Federal limits for radiation exposure, and no significant findings result from environmental inspections by State and Federal regulators. (MET GOAL)	Ensure radiation exposures to workers or the public from Naval Reactors activities is within Federal limits and no significant findings result from environmental inspections by Sate and Federal regulators. (MET GOAL)	Ensure radiation exposures to workers or the public from Naval Reactors' activities is within Federal limits and no significant findings result from environmental inspections by State and Federal regulators. (MET GOAL)

GOAL 9: Cold-War Era Legacy Cleanup

By 2025, all but six sites of the Nation's environmental legacy from the Cold War era are cleaned up, risks reduced to levels approved by DOE, EPA, States, and NRC. (By 2035, DOE's cleanup of the Cold War era legacy will be completed.)

Program Description:

The Office of Environmental Management (EM) has developed and implemented the following new budget structure to support the budget planning and execution of EM's accelerated risk reduction and closure initiative. Implementation of this new structure will complement other EM management reform initiatives by focusing on completion or endpoint, clearly delineating how resources will be utilized (i.e., for direct cleanup activities or for other activities in the program that only indirectly relate (or not at all) to on-the-ground cleanup activities), affording flexibility to accountable managers, and communicating the goals and objectives that the program values. The new budget structure clearly identifies scope and resources that directly support the core accelerated cleanup and risk reduction mission from those that do not.

Defense Site Acceleration Completion Appropriation

This appropriation funds Defense-related accelerated cleanup and risk reduction activities as a result of nuclear weapons production. This appropriation includes three separate program accounts that are specific to the year of completion of the work. This appropriation also includes a program account for technology development and deployment activities and a program account for safeguards and security activities.

- 2006 Accelerated Completions: This account provides funding for completing cleanup and closing down facilities contaminated as a result of nuclear weapons production. This account includes all geographic sites with an Accelerated Cleanup Plan closure date of 2006 or earlier (e.g., Rocky Flats, Fernald). In addition, this account provides funding for EM sites where overall site cleanup will not be complete by 2006 but cleanup projects within a site (e.g., spent fuel removal, all transuranic (TRU) waste shipped off-site) will be complete by 2006.
- 2012 Accelerated Completions: This account provides funding for completing cleanup and closing down facilities contaminated as a result of nuclear weapons production. This account includes all geographic sites with an Accelerated Cleanup Plan closure date of 2007 through 2012 (e.g., Pantex, Lawrence Livermore National Laboratory-Site 300). In addition, this account provides funding for EM sites where overall site cleanup will not be complete by 2012 but cleanup projects within a site (e.g., spent fuel removal, all TRU shipped off-site) will be complete by 2012.

Program Activity Funding: Cold-War Era Legacy Cleanup

		Comparable Appropriation		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
TOTAL FUNDING: The total funding for this goal.		6,535	6,878	7,239
EQ1-1: Complete geographic site cleanup at 89 of 114 cleanup sites by the end of FY 2006. Continue cleanup at the remaining sites, including the five largest sites, schedueld for completion in the post 2006 timeframe.	EM			
EQ1-2: Safely and expeditiously dispose of waste generated during past and current DOE activities. Continue shipment of transuranic (TRU) waste for disposal at the Waste Isolation Pilot Plant (WIPP).	EM			
EQ1-3: Stabilize nuclear material and spent nuclear fuel by producing safer chemical and/or physical forms of the material, and reduce the level of potential risk to personnel from radiation exposure and to the environment from contamination.	EM			

- 2035 Accelerated Completions: This account provides funding for completing cleanup and closing down facilities contaminated as a result of nuclear weapons production. This account provides funding for site closures and site specific cleanup and closure projects that are expected to be completed after 2012. EM has established a goal of completing cleanup at all its sites by 2035.
- Technology Development and Deployment: This account funds the EM Technology Program. This program focuses on high priority technical needs at near term closure sites and projects. In addition, the Technology program will focus on identifying technical vulnerabilities and alternative solutions in support of EM's accelerated cleanup strategies.
- Safeguards and Security: This account funds safeguards and security requirements for all sites at which EM has responsibility. This includes activities related to site- specific Safeguards and Security Plans/facility Master Security Plans, Cyber Security Plans, and Personnel Security Programs at all EM sites.

Defense Environmental Services Appropriation

This appropriation funds Defense-related activities that indirectly support EM's accelerated cleanup and closure mission as a result of nuclear weapons production. Activities are broken into the following four program accounts:

- Non-Closure Environmental Activities: This account funds ongoing activities that indirectly support EM's accelerated cleanup and closure mission (e.g., post-disclosure liabilities, etc.). This account includes national crosscutting initiatives, policy development, and coordination and integration of mission activities across the complex. These activities, while not in direct support of cleanup, provide valuable support to other Departmental priorities and missions.
- Community and Regulatory Support: This account funds activities that are indirectly related to on-the-ground cleanup results and are integral to EM's ability to conduct cleanup at our sites (e.g., Agreements in Principle with state regulators and tribal nations, Site Specific Advisory Boards, etc.). These activities must be maintained at a level to ensure that maximum funding is directed to real cleanup while also supporting stakeholder participation.
- Federal Contribution to the Uranium Enrichment Decontamination and Decommissioning (D&D) Fund: This account provides funding for the Federal Government contribution to the Uranium Enrichment D&D Fund, as required by the Energy Policy Act of 1992 (The Act). The Act authorizes annual fund contributions to come from both a special assessment on domestic utilities and annual congressional appropriations.
- Program Direction: This account provides the funding necessary for the critical oversight and management functions for the EM program, including federal salaries, travel, and other costs.

Non-Defense Site Acceleration Completion Appropriation

This appropriation funds non-defense accelerated cleanup and risk reduction activities as a result of nuclear energy research and development activities. This appropriation includes three separate program accounts that are specific to the year of completion of the work.

- 2006 Accelerated Completions: This account provides funding for completing cleanup and closing down facilities contaminated as a result of nuclear energy research and development. This account includes all geographic sites with an Accelerated Cleanup Plan closure date of 2006 or earlier (e.g., Stanford Linear Accelerator Center). In addition, this account provides funding for EM sites where overall site cleanup will not be complete by 2006 but cleanup projects within a site (e.g., spent fuel removal, all TRU waste shipped off-site) will be complete by 2006.
- 2012 Accelerated Completions: This account provides funding for completing cleanup and closing down facilities contaminated as a result of nuclear energy research and development. This account includes all geographic sites with an Accelerated Cleanup Plan closure date of 2007 through 2012 (e.g., Argonne National Laboratory-East, Brookhaven National Laboratory). In addition, this account provides funding for EM sites where overall site cleanup will not be complete by 2012 but cleanup projects within a site (e.g., spent fuel removal, all TRU shipped off-site) will be complete by 2012.
- 2035 Accelerated Completions: This account provides funding for completing cleanup and closing down facilities contaminated as a result of nuclear energy research and development. This account provides funding for site closures and site specific cleanup and closure projects that are expected to be completed after 2012. EM has established a goal of completing cleanup at all its sites by 2035.

Non-Defense Environmental Services Appropriation

This appropriation funds non-defense activities that indirectly support EM's accelerated cleanup and closure mission as a result of nuclear energy research and development activities. In addition, this appropriation funds activities that constitute new work scope transferred to the EM program.

These activities are split between the following program accounts:

- Non-Closure Environmental Activities: This account funds ongoing activities that indirectly support EM's accelerated cleanup and closure mission (e.g., gaseous diffusion plant uranium programs). These activities, while not in direct support of cleanup, provide valuable support to other Departmental priorities and missions.
- Community and Regulatory Support: This account funds activities that are indirectly related to on-the-ground cleanup results but are integral to EM's ability to conduct cleanup at our sites (e.g., Agreements in Principle with state regulators and tribal nations, Site Specific Advisory Boards, etc.). These activities must be maintained at a level to ensure that maximum funding is directed to real cleanup while also supporting stakeholder participation.
- Environmental Cleanup Projects: This account provides funds to support the transfer of additional contaminated excess facilities to the EM program from other Departmental programs for surveillance and maintenance and eventual decontamination and decommissioning (e.g., Fast Flux Test Facility beginning in fiscal year 2004). These transfers constitute new work scope for the EM program. Existing excess facilities have been placed within the appropriate accounts under the Site Acceleration Completion appropriation.

Uranium Enrichment Decontamination and Decommissioning (D&D) Fund

- Uranium Enrichment D&D Fund: This account funds projects to maintain, decontaminate, decommission and otherwise remediate the gaseous diffusion plants at Portsmouth, Paducah, and Oak Ridge.

Means and Strategies:

The EM program is responsible for the cleanup of the legacy created by over 50 years of nuclear weapons production and energy research. The scope of the program includes stabilization and disposition of some of the most hazardous materials known to mankind. In August 2001, Secretary of Energy Abraham directed a "Top-to-Bottom Review" of the EM cleanup program. One of the major findings of the February 2002 Top-to-Bottom review was that EM's cleanup strategies were not based on comprehensive, coherent, technically-risk supported prioritization. Strategies pursued were not well conceived and integrated such that when executed, they were costly and not proportional to the risks posed to human health and the environment. As a result of the review and its recommendations, EM is aggressively transitioning from a cleanup program based on risk management and containment to one focused on accelerated risk reduction and cleanup.

Performance measurement is integral to the success of the EM program in achieving its accelerated risk reduction and cleanup goals. In October 2002, the Assistant Secretary for Environmental Management established a new set of corporate performance measures for the program. The new measures will enable EM to more comprehensively track progress against its accelerated risk reduction and closure objectives. EM will continue to track corporate measures such as the number of geographic sites completed, the amount of transuranic waste shipped to WIPP for disposal, and the number of release sites remediated. New corporate measures such as the volume of liquid waste in inventory eliminated, number of liquid waste tanks closed, number of enriched uranium containers packaged, and amount of depleted and other uranium packaged have been added.

EM's new corporate performance measures appear for the first time in this annual performance plan. The reporting of FY 2003 and FY 2004 targets and life-cycle totals in the table below are based on each site's Performance Management Plans or accelerated cleanup strategies. Through the establishment of fiscal year targets for each new corporate measure, expectations and accountability for those expectations are clearly established. The full range of corporate performance measures is under strict configuration control. Regular senior management reviews between Headquarters and the Field will be held throughout the year to monitor progress. Through the establishment of EM's new corporate measures and having developed clear lines of accountability for what is expected to be accomplished, EM will be able to more meaningfully track progress towards achieving its mission - cleaning up the legacy created by over 50 years of nuclear weapons production and energy research by accelerating risk reduction and site closure.

Collaboration Activities:

- Regulatory Compliance: DOE negotiates and signs environmental compliance and cleanup agreements with the U.S. Environmental Protection Agency (EPA) and or the state regulatory agencies, as appropriate. Key parameters such as required cleanup levels and milestones must be negotiated with the appropriate regulators and stakeholders for each site.
- Developing Disposal Options for Mixed Low-Level and Low-Level Waste: The Department has conducted numerous meetings with State, tribal, and stakeholder groups to discuss disposal options for mixed low-level waste and low-level waste prior to making final decisions.

- Defense Nuclear Facilities Safety Board (DNFSB): EM works with the DNFSB to implement recommendations relating to activities at the Department's nuclear facilities affecting nuclear health and safety.
- Environmental Management Advisory Board (EMAB): EM solicits advice and guidance from the EMAB on a wide variety of topics relating to the management of the EM program.

External Factors Affecting Performance:

- Cleanup Standards: Decisions made regarding the extent of cleanup and cleanup levels at EM's contaminated sites impact the program's cost, schedule, and scope (i.e., it costs more and takes longer to cleanup a site for residential use than to clean it up for industrial development).
- Commercially Available Options for Waste Disposal: Accomplishment of the environmental cleanup objectives assumes the continued availability of commercial options for mixed low-level waste and low-level waste disposal.
- Technologically Available Solutions: The deployment of innovative technologies will help reduce risk to the worker, the public and the environment, and lower life-cycle costs.

Planned Program Evaluation:

The program's activities are subject to continuing review by the Congress, the General Accounting Office, the Department's Inspector General, the Nuclear Regulatory Commission, the U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department's Office of Engineering and Construction Management (OECM). Each year OECM conducts external independent reviews of selected projects. In addition, various Operations/Field Offices commission external independent reviews of site baselines or portions of the baselines. Additionally, EM HQ senior management and Field managers conduct quarterly, in-depth reviews of cost, schedule and scope to ensure projects are on-track and within budget.

Program Strategic Performance Goal

EQ1-1: Complete geographic site cleanup at 89 of 114 cleanup sites by the end of FY 2006. Continue cleanup at the remaining sites, including the five largest sites, scheduled for completion in the post 2006 timeframe.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
No geographic sites are presently scheduled for completion. Total completed remains at 77 of the 114 geographic sites.	Complete remediation at two additional geographic site, the Maxey Flats Disposal Site in Kentucky and the Salmon Site in Mississippi, increasing the total completed to 77 of the 114 geographic sites.	Complete remediation at one additional geographic site, the Weldon Spring Site in Missouri. (MET GOAL)
Complete 180 release sites, bringing the total number completed to 5,582 out of a life-cycle total of 10,140.	Complete 197 release sites.	Complete 113 release sites. (MET GOAL)
Complete five nuclear facilities, bringing the total number completed to 24 out of a life-cycle total of 523.	Complete two nuclear facilities.	
Complete 37 radioactive facilities, bringing the total number completed to 171 out of a life-cycle total of 804.	Complete 10 radioactive facilities	
Complete 98 industrial facilities, bringing the total number completed to 650 out of a life-cycle total of 2,421.	Complete 43 industrial facilities.	
One Material Access Area is scheduled for elimination, bringing the total number eliminated to 7 out of a life-cycle total of 14.		*The following related targets are included for historical purposes only.* Conduct a top-to-bottom review of the Environmental Management program to ensure a proper and clear focus of the mission programmatic goals and objectives. (FMFIA). (MET GOAL) Update EM Infrastructure Restoration Plan to support 10-year facilities and infrastructure planning. (FMFIA) (MET GOAL) Complete action addressing safety and health issues at Paducah from 1990 forward (Phase 1). (FMFIA) (MET GOAL) Complete 42 facility decommissioning projects. (MET GOAL) Deactivate 30 facilities. (MET GOAL)

Performance Indicators

- Number of geographic sites completed.
- Number of release sites remediated
- Number of nuclear facilities completed.
- Number of radioactive facilities completed.
- Number of industrial facility completed.
- Number of material access areas eliminated

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete remediation at 3 geographic sites. (MET GOAL)	Complete remediation at 2 geographic sites. (FMFIA) (MET GOAL)	Geographic Site Cleanup. (MET GOAL)
Complete 196* release sites. (MIXED RESULTS)	Complete 252 release site cleanups. (MIXED RESULTS)	Release Site Cleanup Progress. (MIXED RESULTS)
The following related targets are included for historical purposes only.	*The following related targets are included for historical purposes only.*	*The following related targets are included for historical purposes only.*
Complete 45* facility decommissionings. (NOT MET) Completed 31 facility decommissionings.	Complete 82 facility decommissionings. (MIXED RESULTS)	Facility Decommissioning Progress. (MET GOAL)
Deactivate 20* facilities (MET GOAL) Deactivated 32 facilities.		
Complete actions addressing safety and health issues at Paducah from 1990 forward. (Phase I) (FMFIA) (MET GOAL)	Monitor field activities and participate in reviews at Savannah River Operations Office to ensure adherence to project costs and schedules. (FMFIA) (MET GOAL)	

Program Strategic Performance Goal

EQ1-2: Safely and expeditiously dispose of waste generated during past and current DOE activities. Continue shipment of transuranic (TRU) waste for disposal at the Waste Isolation Pilot Plant (WIPP).

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Eliminate 1,300,000 gallons of liquid waste, bringing the total amount eliminated to 2,000,000 gallons out of a life cycle of 88,000,000 gallons.	Eliminate 700,000 gallons of liquid waste.	
Close 10 liquid waste tanks, bringing the total amount closed to 14 out of a life cycle of 177.	Close two liquid waste tanks.	
Package 250 containers of high-level waste for final disposition, bringing the total amount packaged to 1,992 out of a life cycle of 21,305.	Package 130 containers of high-level waste for final disposition.	
Ship 12,170 cubic meters of transuranic waste to WIPP, bringing the total amount shipped to 24,025 out of a life cycle of 134,435.	Ship 4,135 cubic meters of transuranic waste to WIPP.	
Dispose of 95,577 cubic meters of low-level waste/mixed low-level waste, bringing the total amount disposed to 512,565 out of a life cycle of 1,384,580.	Dispose of 80,781 cubic meters of low-level waste/mixed low-level waste.	
		The following related targets are included for historical purposes only. Produce 205 canisters of HLW. (MIXED RESULTS) Ship 4,709 cubic meters of TRU waste to WIPP for disposal. (MET GOAL) Dispose of approximately 8,446 cubic meters of MLLW. (MIXED RESULTS) Treat approximately 2,765 cubic meters of MLLW. (MIXED RESULTS) Dispose of approximately 76,655 cubic meters of LLW. (MET GOAL)

Performance Indicators

- Liquid waste eliminated (millions of gallons).
- Number of liquid tanks closed.
- Canisters of high-level waste packaged for final disposition.
- Transuranic waste shipped for disposal at WIPP (cubic meters).
- Low-level waste/mixed low-level waste disposed (cubic meters).

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
The following related targets are included for historical purposes only. Produce 225 canisters of HLW. (MET GOAL) Ship 2,425 cubic meters of TRU waste to WIPP for disposal.) (NOT MET) Dispose of approximately 8,271 cubic meters of MLLW. (NOT MET) Treat approximately 4,814 cubic meters of MLLW. (MIXED RESULTS) Dispose of approximately 47,908 cubic meters of LLW. (MET GOAL)	*The following related targets are included for historical purposes only.* Produce 200 canisters of HLW at the Defense Waste Processing Facility (DWPF) at Savannah River Site and five canisters of HLW at the West Valley Demonstration Project. (MET GOAL) Ship 1,200 cubic meters of TRU waste to WIPP for disposal. (NOT MET) Implement the permit requirements in parallel with the court challenge and begin Mixed TRU waste disposal operations at WIPP in FY 2000. (FMFIA) (MET GOAL) Dispose of 10,000 cubic meters of MLLW. (MET GOAL) Treated 6,973 cubic meters of MLLW. (MIXED RESULTS) Dispose of 40,000 cubic meters of LLW. (MET GOAL)	*The following related targets are included for historical purposes only.* High Level Waste (HLW) Progress – Canisters Produced (MET GOAL) Transuranic (TRU) Waste Progress – Shipments to WIPP. (MIXED RESULTS) Mixed Low-Level Waste (MLLW) Disposal Progress (MET GOAL) Mixed Low-Level Waste (MLLW) Treatment Progress (MET GOAL) Low-Level Waste (LLW) Disposal Progress (NOT MET)

Program Strategic Performance Goal

EQ1-3: Stabilize nuclear material and spent nuclear fuel by producing safer chemical and/or physical forms of the material, and reduce the level of potential risk to personnel from radiation exposure and to the environment from contamination.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Package 955 containers of plutonium metal or oxide for long-term storage, bringing the total number of containers packaged to 5,275 out of a life cycle of 5,482.	Package 2,836 containers plutonium metal or oxide for long-term storage.	
Package 1,310 containers of enriched uranium for long-term storage, bringing the total number of containers packaged to 3,251 out of a life cycle of 9,178.	Package 293 containers of enriched uranium for long-term storage.	
Package 254 kilograms of plutonium or uranium residues for disposition, bringing the total number of kilograms packaged to 107,706 out of a life cycle of 107,782.	Package 934 kilograms of plutonium or uranium residues for disposition.	
Package 633 metric tons of heavy metal of spent nuclear fuel for disposition, bringing the total number of packaged containers to 2,129 out of a life cycle of 2,420.	Package 857 metric tons of heavy metal of spent nuclear fuel for disposition.	
No packaging of depleted and other uranium is scheduled, bringing the total number of containers packaged to 4,915 out of a life cycle of 742,149.	Package 1,815 metric tons of depleted and other uranium for disposition.	
		The following related targets are included for historical purposes only.
		Stabilize 110 containers of plutonium metals/oxides and 17,225 kilograms of bulk plutonium residues. (MET GOAL)
		Move to dry storage 601 Metric Tons Heavy Metal (MTHM) of Spent Nuclear Fuel (SNF). (NOT MET)

Performance Indicators:

- Certified DOE storage/treatment/disposal (STD) 3,013 containers (or equivalent) of plutonium metal or oxide packaged ready for long-term storage.
- Certified containers of enriched uranium packaged ready for long-term storage.
- Plutonium or uranium residues packaged for disposition (kg of bulk material).
- Spent Nuclear Fuel packaged for final disposition (metric tons of heavy metal).
- Depleted and other Uranium packaged for disposition (metric tons).

Related FY 2001 Results	FY 2000 Related Results	FY 1999 Related Results
The following related targets are included for historical purposes only. Stabilize 510 containers of plutonium metals/oxides and 29,456 kilograms of bulk plutonium residues. (NOT MET) Move to dry storage 195 metric tons of heavy metal (MTHM) of spent nuclear fuel (SNF). (MET GOAL)	*The following related targets are included for historical purposes only.* Stabilize 400 containers of plutonium metals/oxides, 41,000 kilograms (kg) of bulk plutonium residues, and 130 handling units of other nuclear material in other forms. (MIXED RESULTS) Move to dry storage 35.1 metric tons of heavy metal (MTHM) of spent nuclear fuel (SNF) to dry storage. (NOT MET)	*The following related targets are included for historical purposes only.* Nuclear Material Stabilization (Plutonium) Progress. (MIXED RESULTS) Spent Nuclear Fuel (SNF) Stabilization Progress (NOT MET)

GOAL 10: Scientific Advancement

DOE-sponsored research leads the world in scientific advances in energy-related basic sciences.

The Department of Energy (DOE) supports a broad array of research disciplines in order to improve our Nation's energy security, and to address issues ancillary to energy, such as climate change, genomics, and life sciences. By the very nature of this research, and the global scale at which these energy issues must be addressed, a robust and diverse scientific research capability has been developed and is maintained so that the United States remains at the forefront of scientific discovery and innovation.

The scale of research is reflected in the Department's Office of Science (SC) programs, which provide more than 40 percent of the total federal funding for basic research in the physical sciences (important to many energy issues), such as high energy physics, nuclear physics, and fusion energy sciences. (See Goal 1 for fusion program) The following programs fulfill the DOE's science mission, while providing an essential foundation for DOE's applied missions in energy resources, environmental quality, and national security. SC provides answers to some of the most daunting scientific challenges of our age – including understanding the role of genomes in living systems and molecular machines, the origins and ultimate fate of our universe, and the design of materials at the nanoscale. Resolving these scientific mysteries through support for a broad array of research subjects will improve our Nation's energy security and lead to greater prosperity for our Nation. A corollary result of this work is the support given to the training of graduate students and postdoctoral associates, the next generation of scientists.

Program Descriptions:

SC-1: High Energy Physics:

The mission of the High Energy Physics (HEP) program is to understand the universe at a more basic level by investigating the elementary particles that are the fundamental constituents of matter and the forces between them, thereby underpinning and advancing DOE missions and objectives through the development of key cutting-edge technologies and trained manpower that provide unique support to these missions. This program provides world-class, peer-reviewed research results in high energy physics and related fields, including particle astrophysics and cosmology, by executing a long-range strategy for high energy physics research and technology.

SC-2: Nuclear Physics:

The mission of the Nuclear Physics (NP) Program is to foster fundamental research in nuclear physics that will provide new insights and advance our knowledge on the nature of matter and energy and develop the scientific knowledge, technologies, and trained manpower that are necessary to underpin the DOE's missions for nuclear-related national security, energy, and environmental quality. The Program provides world-class, peer-reviewed research results and operates user facilities in the scientific disciplines encompassed by the NP mission areas, under the mandate provided in Public Law 95-91 that established the DOE.

SC-3: Biological and Environmental Research:

For over 50 years the Biological and Environmental Research (BER) program has been advancing environmental and biomedical knowledge that promotes national security through improved energy production, development, and use; international scientific leadership that underpins our nation's technological advances; and research that improves the quality of life for all Americans. BER supports these vital national missions through competitive and peer-reviewed research at National Laboratories, universities, and private institutions.

SC-4: Basic Energy Sciences:

The mission of the Basic Energy Sciences (BES) program – a multipurpose, scientific research effort – is to foster and support fundamental research to expand the scientific foundations for new and improved energy technologies and for understanding and mitigating the environmental impacts of energy use. BES supports work in the natural sciences, emphasizing fundamental research in materials sciences, chemistry, geosciences, and aspects of biosciences.

SC-5: Advanced Scientific Computing Research:

Computational modeling and simulation are among the most significant developments in the practice of scientific inquiry in the 20th Century. During the past two decades, scientific computing has become a cornerstone of nearly all scientific research programs. It is particularly important for the solution of research problems that are insoluble by traditional theoretical and experimental approaches, hazardous to study in the laboratory, or time-consuming or expensive to solve by traditional means. All of the research programs in the U.S. Department of Energy's Office of Science—in Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, and High-Energy and Nuclear Physics—have identified major scientific challenges that can only be addressed through advances in scientific computing.

The mission of the Advanced Scientific Computing Research (ASCR) program is to foster and support world class fundamental research in advanced scientific computing — applied mathematics, computer science, and networking, and provide the high-performance computational and networking resources that are required to underpin the Department's science programs.

Means and Strategies:

SC-1: High Energy Physics:

The HEP program will support innovative, peer-reviewed scientific research to advance knowledge and provide insights into the nature of the fundamental forces of the universe and studies of the structure of matter, energy, space and time. The program also builds and supports the forefront scientific facilities and instruments necessary to carry out that research.

All research projects undergo regular peer review and merit evaluation based on procedures set down in 10 CFR 605 for the extramural grant program, and under a similar process for laboratory programs and scientific user facilities. All new projects are selected through peer review and merit evaluation.

SC-2: Nuclear Physics:

The NP program will support innovative, peer-reviewed scientific research to advance knowledge and provide insights into the nature of energy and matter, in particular to investigate the fundamental forces that hold the nucleus of the atom together, and determine the detailed structure and behavior of atomic nuclei. The program also builds and supports the forefront scientific facilities and instruments necessary to carry out that research.

All research projects undergo regular peer review and merit evaluation based on procedures set down in 10 CFR 605 for the extramural grant program, and under a similar process for laboratory programs, and scientific user facilities. All new projects are selected through peer review and merit evaluation.

SC-3: Biological and Environmental Research:

The BER will continue its investments in core technologies and fundamental science needed to address the interfaces between scientific disciplines such as biology, physics, chemistry, engineering, and information science. Of highest priority will be the development of a new research infrastructure needed to understand fundamental biological principles underlying the function and control of biological systems. A combination of novel, state-of-the-art user facilities coupled with large, well-integrated, interdisciplinary research teams will form the basis of a new approach for studying complex biological systems and for using those systems to solve problems in energy and the environment.

Our ability to predict climate on global and regional scales and to develop strategies for the removal of excess carbon dioxide, believed to adversely impact global climate, from the atmosphere will depend on the continued development of novel research tools and a close integration of experimental and computational research.

All research projects undergo regular peer review and merit evaluation based on procedures set down in 10 CFR 605 for the extramural grant program, and under a similar process for the laboratory programs and scientific user facilities. All new projects are selected through peer review and merit evaluation.

SC-4: Basic Energy Sciences:

The BES program will support fundamental, innovative, peer-reviewed research to create new knowledge in areas important to the BES mission, i.e., in materials sciences, chemical sciences, geosciences, plant and microbial biosciences, and engineering sciences. BES also plays a critical role in constructing and operating a wide array of scientific user facilities for the Nation's researchers.

All research projects undergo regular peer review and merit evaluation based on procedures set down in 10 CFR 605 for the extramural grant program, and under a similar process for the laboratory programs and scientific user facilities. All new projects are selected through peer review and merit evaluation.

SC-5: Advanced Scientific Computing Research:

The ASCR program will support fundamental, innovative, peer-reviewed research to create new knowledge in areas of advanced computing research that are important to DOE. In addition, the ASCR program will plan, fabricate, assemble, and operate premier supercomputer and networking facilities that serve researchers at national laboratories, universities, and industry, thus enabling both new understanding through analysis, modeling, and simulation for complex problems, and effective integration of geographically distributed teams through national co-laboratories. Finally, the program will continue its leadership of the SC-wide Scientific Discovery through Advanced Computing (SciDAC) initiative with BES and BER in the areas of nanotechnology and Genomes to Life.

All research projects undergo regular peer review and merit evaluation based on procedures set down in 10 CFR 605 for the extramural grant program, and under a similar process for the laboratory programs and scientific user facilities. All new projects are selected through peer review and merit evaluation.

Collaboration Activities:

SC-1: High Energy Physics:

The HEP program is closely coordinated with the research activities of the National Science Foundation (NSF). The major scientific facilities required by NSF scientists are usually the DOE facilities, and DOE-supported researchers also use NSF facilities. NSF often supports the fabrication of major research equipment at DOE user facilities.

DOE and NSF jointly charter the Federal Advisory Committee on High Energy Physics (HEPAP). The HEP program has also begun collaborations with NASA on space-based experiments to address fundamental questions at the intersection between particle physics and astrophysics.

The HEP program collaborates with researchers from many countries. Large numbers of foreign scientists, who provide monetary and equipment support, heavily utilize HEP user facilities (see also Goal 12), including the Collider Detector at Fermilab (CDF), the D-Zero detector at Fermilab, and the B-factory at SLAC. The HEP program is also a major participant in the international project to build the Large Hadron Collider (LHC) and two of its large detectors, A Toroidal LHC ApparatuS (ATLAS) and Compact Muon Solenoid (CMS). The LHC is an energy-frontier accelerator facility now under construction at the European Organization for Nuclear Research (CERN) in Geneva, Switzerland. A joint DOE-NSF management team oversees U.S. participation in the LHC project.

These programs also promote the transfer of the results of its basic research to a broad set of technologies involving advanced materials, national defense, medicine, space science and exploration, and industrial processes. HEP user facilities are often utilized by other Federal agencies (e.g., NASA) and industry to carry out important studies of the effects of particle beams (radiation) in a variety of materials, and for diagnostic purposes.

SC-2: Nuclear Physics:

The NP program is closely coordinated with the research activities of the National Science Foundation (NSF). The major scientific facilities required by NSF supported scientists are usually the DOE facilities. NSF often jointly supports the fabrication of major research equipment at DOE user facilities. DOE and NSF jointly charter the Federal advisory committee on nuclear physics (NSAC).

Scientists supported by the NP program collaborate with researchers from many countries. Large numbers of foreign scientists, who provide monetary and equipment support, heavily utilize all of the NP user facilities (see also Goal 12), especially RHIC at BNL and TJNAF. The program also supports some collaborative work at foreign accelerator facilities.

The program also promotes the transfer of the results of its basic research to a broad set of technologies involving advanced materials, national defense, medicine, space science and exploration, and industrial processes. In particular, nuclear reaction data are an important resource for these programs. Also, NP user facilities are utilized by other Federal agencies (e.g., NASA) and industry to carry out important studies of the effects of particle beams (radiation) in a variety of materials and biological systems.

SC-3: Biological and Environmental Research:

The DOE Human Genome program is part of the international Human Genome Project. In the U.S. the program is coordinated with the National Institutes of Health (NIH) as described in the 1998 DOE/NIH 5-year plan for the U.S. Human Genome Project, published in the October 26, 1998 issue of *Science* magazine. Microbial genomics activities are coordinated within the Department and other Federal agencies through the interagency Microbe Project Working Group. The climate modeling activities are part of DOE's contribution to the U.S. Global Change Research Program, an interagency program codified by Public Law 101-606, and involving nine federal agencies.

SC-4: Basic Energy Sciences:

The BES program in fundamental science is closely coordinated with, and synergistic to, the activities of other federal agencies (e.g., NSF, NASA, U.S. Department of Agriculture (USDA), Department of Interior (DOI), and National Institute of Health (NIH)). BES also promotes the transfer of the results of its basic research to contribute to DOE missions in areas of energy efficiency, renewable energy resources, improved use of fossil fuels, reduced environmental impacts of energy production and use, national security, and future energy sources.

SC-5: Advanced Scientific Computing Research:

The ASCR research program and facilities are closely coordinated with the information technology research activities of other Federal Agencies (DARPA, EPA, NASA, NIH, NSA, and NSF) through the Computing Information and Communications R&D subcommittee of the National Science and Technology Council (NSTC), under the auspices of the Office of Science and Technology Policy. This coordination will continue through the newly organized IT Group of Principals and IT2 Working Group, established in response to the recommendations of the President's Information Technology Advisory Committee (ITAC). In addition to this interagency coordination, ASCR has a number of partnerships with other programs in SC and other parts of the Department, focused on advanced application test beds to apply the results of ASCR research to

mission-critical problems in those areas. Finally, ASCR has a significant ongoing coordination effort with the National Nuclear Security Administration's (NNSA) Advanced Science Computing (ASC) Campaign to ensure maximum effectiveness of both computational science research efforts.

External Factors Affecting Performance:

External factors in addition to budgetary constraints that affect the level of performance include (1) changing mission needs as described by the DOE and SC mission statements and strategic plans; (2) scientific opportunities as determined, in part, by proposal pressure and scientific workshops; (3) the results of external program reviews and international benchmarking activities of entire fields or sub fields, such as those performed by the National Academy of Sciences (NAS). (4) unanticipated failures in critical components of scientific user facilities that cannot be mitigated in a timely manner; and (5) strategic and programmatic decisions made by non-DOE funded domestic research activities and by major international research centers.

Planned Program Evaluations:

Progress against established plans is evaluated by periodic internal and external performance reviews. These reviews provide an opportunity to verify and validate performance. Monthly, quarterly, semiannual, and annual reviews consistent with specific program management plans are held to ensure technical progress, cost and schedule adherence, and responsiveness to program requirements.

Program Activity Funding: Scientific Advancement		**Comparable Appropriation**		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
TOTAL FUNDINGS: The total funding for this goal.		**1,971**	**1,922**	**2,227**
SC1-1: Manage a program that provides world-class, peer-reviewed research results in the scientific disciplines encompassed by the High Energy Physics mission areas, cognizant of the needs of DOE and of the wider scientific community. (Proton Accelerator-Based Physics, Electron Accelerator-Based Physics, Non-Accelerator Physics, Theoretical Physics and Advanced Technology subprograms)	SC			
SC2-1: Manage a productive and sustainable program that provides world-class research results in the scientific disciplines encompassed by the Nuclear Physics mission areas cognizant of DOE needs as well as the needs of the broad scientific community. (Medium Energy Nuclear Physics, Heavy Ion Nuclear Physics, Low Energy Nuclear Physics and Nuclear Theory subprograms)	SC			
SC3-1: Identify and characterize the multiprotein molecular machines that carry out the biological functions of cells and determine the biochemical capabilities of complex microbial communities, information needed to develop biotechnology solutions for clean energy, carbon sequestration, and environmental cleanup.	SC			
SC3-2: Determine the response of the Earth system to different levels of greenhouse gases in the atmosphere.	SC			
SC3-3: Develop and demonstrate novel solutions to DOE's most challenging problems, including (1) *in situ* treatment of contaminant plumes such as bioremediation and environmental reactive barriers, (2) new treatment options for complex wastes, (3) novel disposal options for complex wastes (e.g. alternative to borosilicate glass); cost-effective contaminant plume characterization and monitoring techniques for long-term stewardship of sites, (4) improved predictive capabilities for contaminant fate and transport, and (5) basis for accurate assessment of risk factors.	SC			
SC4-1: Build leading research programs in the scientific disciplines encompassed by the BES mission areas and provide world-class, peer-reviewed research results cognizant of DOE needs as well as the needs of the broad scientific community. (Materials Sciences and Engineering Subprogram; Chemical Sciences, Geosciences, and Energy Biosciences subprogram)	SC			

Program Activity Funding: Scientific Advancement		**Comparable Appropriation**		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
SC4-2: Enable U.S. leadership in nanoscale science, allowing the atom-by-atom design of materials and integrated systems of nanostructured components having new and improved properties for applications as diverse as high-efficiency solar cells and better catalysts for the production of fuels. (Materials Sciences and Engineering subprogram; Chemical Sciences, Geosciences, and Energy Biosciences subprogram)	SC			
SC5-1: Build leading research programs in focused disciplines of applied mathematics, compute science, and network and collaboratory research important to national and energy security to spur revolutionary advances in the use of high-performance computers and networks. (Mathematical, Information and Computational Sciences subprogram)	SC			
SC5-2: Create the Mathematical and Computing Systems Software and the High Performance Computing Facilities that enable Scientific Simulation and Modeling Codes to take full advantage of the extraordinary capabilities of terascale computers, and the Collaboratory Software Infrastructure to enable geographically separated scientists to effectively work together as a team as well as provide electronic access to both facilities and data.	SC			

Program Strategic Performance Goals

SC1-1 Manage a program that provides world-class, peer-reviewed research results in the scientific disciplines encompassed by the High Energy Physics mission areas, cognizant of the needs of DOE and of the wider scientific community. (Proton Accelerator-Based Physics, Electron Accelerator-Based Physics, Non-Accelerator Physics, Theoretical Physics and Advanced Technology subprograms)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
At least 80 percent of all new research projects will be peer reviewed and deemed excellent (of highest quality) and relevant, and annually 30 percent of all ongoing projects will be subject to peer review with merit evaluation.	There were no related targets.	There were no related targets.

Performance Indicators

- Validation of results by merit review with external peer evaluation;
- Validation of program directions by the High Energy Physics Advisory Panel.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

Program Strategic Performance Goals

SC2-1 Manage a productive and sustainable program that provides world-class research results in the scientific disciplines encompassed by the Nuclear Physics mission areas cognizant of DOE needs as well as the needs of the broad scientific community. (Medium Energy Nuclear Physics, Heavy Ion Nuclear Physics, Low Energy Nuclear Physics and Nuclear Theory subprograms)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
At least 80 percent of all new research projects will be peer reviewed and deemed excellent (of highest quality) and relevant, and annually 30 percent of all ongoing projects will be subject to peer review with merit evaluation.	There were no related targets.	There were no related targets.

Performance Indicators

- Validation of results by merit review with external peer evaluation;
- Validation of program directions by Nuclear Science Advisory Committee.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

Program Strategic Performance Goals

SC3-1 Identify and characterize the multiprotein molecular machines that carry out the biological functions of cells and determine the biochemical capabilities of complex microbial communities, information needed to develop biotechnology solutions for clean energy, carbon sequestration, and environmental cleanup.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Determine biochemical capabilities of a complex microbial community needed to develop biological solutions for environmental cleanup.	Develop methods for sequencing DNA from complex microbial communities.	Determine DNA sequence from 41 microbes important for energy and environmental cleanup. (MET GOAL)

Performance Indicators

- Number of complex microbial communities and multiprotein molecular machines that can be characterized per year.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete the genetic sequencing of at least three additional microbes that produce methane or hydrogen from carbonaceous sources, or that could be used to sequester carbon, as part of the Microbial Genomics and Carbon Sequestration programs. (MET GOAL)		
By the end of FY 2001, the DOE Joint Genome Institute (JGI) will complete the sequencing and submission to public databases of 100 million finished and 250 million high quality draft base pairs of DNA, including both human and model organisms (e.g. the mouse) as part of the Human Genome Program. (MET GOAL)	Complete the sequencing of 50 million subunits of human DNA to submit to publicly accessible databases in FY 2000. (MET GOAL)	Complete sequencing of 30 million subunits and, draft sequence of 30 million additional subunits of human DNA for submission to publicly accessible databases. (MIXED RESULTS)

Program Strategic Performance Goals

SC3-2 Determine the response of the Earth system to different levels of greenhouse gases in the atmosphere.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Implement a climate model with new cloud model components developed using Atmospheric Radiation Measurement (ARM) data, which will be used to predict regional and global climate change.	Improve precision of climate models –deliver a cloud submodel to reduce uncertainty in the atmospheric energy budget by 10 % and increase resolution of atmospheric/ocean submodels to 150 km & sea ice submodel to 75 km for a fully coupled climate model.	Develop and test a fully coupled atmosphere-ocean-land-sea ice climate model that has twice the spatial resolution of coupled models available in FY 2000 as part of the Climate Modeling and Prediction research. Support multi-disciplinary teams of scientists at multiple institutions using DOE supercomputers to perform model simulations, diagnostics, and testing. (MIXED RESULTS)
Deliver quantitative estimates of net annual carbon exchange between the atmosphere at five AmeriFlux sites in North America. (AmeriFlux is a network of research sites that measure exchange of CO_2, energy, and water between the atmosphere and terrestrial ecosystems.)	Document a range of net annual carbon gain in deciduous forest sites in eastern North America of 2 to 4 metric tons of carbon per hectare.	Completed analysis of physical factors that govern CO_2 and water vapor flux dynamics at AmeriFlux sites. Study identified improvements for low flux measurement, which continues to be under-estimated and may introduce bias of as much as $\pm$ 20 percent in estimates of net ecosystem exchange (NEE) of CO_2 for example. (MET GOAL)
Establish a model terrestrial ecosystem containing simplified but hierarchical communities (higher plants, consumers of plant production, and soil microorganisms) and begin characterization of the proteome of the major species.		

Performance Indicators

- Climate model resolution.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	Proceed with the development of the next generation coupled ocean-atmosphere climate model, leading to better information for assessing climate change and variability at regional rather than global scales. This next generation model will change grid size from the current 300-500 kilometers on a side to less than 200 kilometers on a side. (MET GOAL)	There were no related targets.
	In cooperation with NASA, NSF, USDA/Forest Service, and the Smithsonian Institution, provide quantitative data on the annual exchange of carbon dioxide between the atmosphere and terrestrial ecosystem from 25 AmeriFlux sites representing major types of ecosystem and land uses in North and Central America. Provide data on environmental factors, such as climate variation, on the net sequestration or release of carbon dioxide and the role of biophysical processes controlling the net exchange. (MET GOAL)	
Conduct five Intensive Operations Periods (IOPs) on schedule at the Atmospheric Radiation Measurement (ARM) Southern Plains site in Oklahoma. Obtain data from second station on the North Slope of Alaska, and made operational the third station in the Tropical Western Pacific on Christmas Island on schedule and within budget, in accordance with the program plan. (MET GOAL)	Continue Atmospheric Radiation Measurement (ARM) accomplishments by conducting five intensive operations periods at the ARM Southern Great Plains site. Data will be obtained from the second station on the North Slope of Alaska. The third station in the Tropical Western Pacific, on Christmas Island, will become operational. (MET GOAL)	

Program Strategic Performance Goals

SC3-3 Develop and demonstrate novel solutions to DOE's most challenging problems, including 1) *in situ* treatment of contaminant plumes such as bioremediation and environmental reactive barriers, 2) new treatment options for complex wastes, 3) novel disposal options for complex wastes (e.g. alternative to borosilicate glass); cost-effective contaminant plume characterization and monitoring techniques for long-term stewardship of sites, 4) improved predictive capabilities for contaminant fate and transport, and 5) basis for accurate assessment of risk factors.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Quantify rates of immobilization of metals and radionuclides by natural populations of microorganisms at DOE contaminated sites and identify environmental factors regulating their community structure and function.	Identify naturally occurring microbial populations responsible for transformation of metals and radionuclides at DOE contaminated sites.	Radiation resistant superbug, *D. radiodurans* changes mobile uranium and technetium in ground water into an immobile state. (MET GOAL)
Use experimental results from Hanford subsurface contaminant flow and transport studies to verify model improvement.	Field test novel, long-term monitoring systems for DOE contaminated sites that are less invasive and require minimal human resources.	Developed a portable immunoassay that determines the quantity and species of uranium. (MET GOAL)

Performance Indicators

- Advanced environmental cleanup approaches delivered.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

Program Strategic Performance Goals

SC4-1 Build leading research programs in the scientific disciplines encompassed by the BES mission areas and provide world-class, peer-reviewed research results cognizant of DOE needs as well as the needs of the broad scientific community (Materials Sciences and Engineering Subprogram; Chemical Sciences, Geosciences, and Energy Biosciences Subprogram).

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Competitively select and peer review at least 80 percent of all new research projects, and evaluate approximately 30 percent of ongoing projects using guidelines defined in 10 CFR 605 for the university projects and similar guidelines established by BES for the laboratory projects.	Competitively select and peer review at least 80 percent of all new research projects, using guidelines defined in 10 CFR 605 for the university projects, and similar guidelines established by BES for the laboratory projects. Competitively evaluate approximately 30 percent of ongoing projects using guidelines defined in 10 CFR 605 for the university projects, and similar guidelines established by BES for the laboratory projects.	BES used expert advisory committees and rigorous peer review to ascertain that the research performed by investigators in universities and DOE laboratories was focused and outstanding. (MET GOAL)
Implement recommendations from FY 2003 BESAC-chartered Committees of Visitors.	As part of the continuing, high-level review of the management processes and the quality, relevance, and national and international leadership of BES programs, review the materials sciences and engineering activities using a BESAC-chartered Committee of Visitors. Implement recommendations from FY 2002 BESAC-chartered Committees of Visitors.	As part of the continuing, high-level review of the management processes and the quality, relevance, and the national and international leadership of BES programs, review the chemical sciences activities using a Basic Energy Science Advisory Committee (BESAC) chartered Committee of Visitors. (MET GOAL)
Implement recommendations and new directions resulting from the BESAC-chartered workshop on "Basic Research Needs to Assure a Secure Energy Future."	Through a BESAC-chartered workshop on "Basic Research Needs to Assure a Secure Energy Future," evaluate future basic research directions appropriate for all activities of the BES program.	
Evaluate aspects of the BES activities using workshops with the goal of directing the research activities toward international leadership and relevance to emerging technologies. Publish results and continue to structure BES programs per results.	Evaluate the following ongoing efforts using BESAC and BES sponsored workshops, with the goal of directing the activities toward international leadership and relevance to emerging technologies: photovoltaics, radiation effects, materials synthesis and processing, and catalysis. Publish results and continue to structure BES programs in accordance with these results.	As part of the continuing, high-level review of the management processes and the quality, relevance, and national and international leadership of BES programs, the chemical sciences activities were reviewed using a BESAC-chartered Committee of Visitors. (MET GOAL)

Performance Indicators

- Validation of results by merit review with external peer evaluation;
- Validation of program directions by Basic Energy Sciences Advisory Committee.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Use expert advisory committees and rigorous peer review committees to ascertain that the research performed by investigators in universities and DOE laboratories is focused and outstanding. Additional indicator of the success of our scientific research will be the recognition through the awards received by our researchers and by the broader scientific community. (MET GOAL)	Maintain the high quality and relevance of DOE's science research effort as evaluated by annual peer reviews and advisory committees. (MET GOAL) Continue Partnerships for Academic-Industrial Research where peer reviewed grants are awarded to university researchers for fundamental, high-risk work jointly defined by the academic and industrial research partners. (MET GOAL)	There were no related targets.

Program Strategic Performance Goals

SC4-2 Enable U.S. leadership in nanoscale science, allowing the atom-by-atom design of materials and integrated systems of nanostructured components having new and improved properties for applications as diverse as high-efficiency solar cells and better catalysts for the production of fuels (Materials Sciences and Engineering subprogram; Chemical Sciences, Geosciences, and Energy Biosciences subprogram).

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Continue construction of one Nanoscale Science Research Center scheduled for completion in FY 2006 and begin construction on two others scheduled for completion in FY 2007, meeting the cost and timetables within 10 percent of the baselines given in the construction project data sheet. Initiate PED activities to establish construction baselines on one additional Nanoscale Science Research Center. Begin MIE on the fifth and final Nanoscale Science Research Center.	Begin construction of one Nanoscale Science Research Center (NSRC), meeting the cost and timetables within 10 percent of the baselines given in the construction project data sheets for Project Number 03-R-312. Conduct project engineering design (PED) activities to establish construction baselines on the two other NSRCs.	Begin engineering and design of three Nanoscale Science Research Centers (NSRC). Complete six percent of total Project Engineering Design (PED) at LBNL, 60 percent at ORNL, and 24 percent at SNL by the end of FY 2002. (MET GOAL)
Establish instrument suites and identify fabrication capabilities for the Nanoscale Science Research Centers based upon user community input at national workshops.	Establish the instrument suites and identify fabrication capabilities for the new NSRC-based upon user community, based on input at national workshops held in late FY 2001 and FY 2002.	
		Award 40 grants to universities and six projects at DOE laboratories in selected areas of nanoscale science, engineering, and technology. (MET GOAL)

Performance Indicators

- Validation of results by merit review with external peer evaluation.
- Validation of program directions by Basic Energy Sciences Advisory Committee.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	There were no related targets.	There were no related targets.
Initiated 76 grants to universities (from 417 grant applications) and 12 projects at DOE laboratories (from 46 Field Work Proposals) in selected areas of nanoscale science, engineering, and technology.		

Program Strategic Performance Goals

SC5-1 Build leading research programs in focused disciplines of applied mathematics, computer science, and network and collaboratory research important to national and energy security to spur revolutionary advances in the use of high-performance computers and networks. (Mathematical, Information and Computational Sciences subprogram)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Define, based on the analysis completed in FY 2003, a research strategy that will deliver by 2007 effective operating systems for high performance scientific computers with 20,000 or more processors.	Complete the definitive analysis of the advantages and issues associated with lightweight kernel operating systems rather than full kernels for the compute nodes of extreme-scale scientific computers, resolving a critical issue for the future of high performance computers in the U.S.	Complete the development of the Cougar lightweight kernel for clusters of Alpha processor-based computers and begin the assessment of scalability and performance for selected applications. (MET GOAL)
Complete, by the end of FY 2004, a roadmap that defines the critical, applied mathematics research issues which must be addressed to enable the development of mathematical algorithms that can operate efficiently on computers with thousands of processors and address the needs of DOE mission applications. This roadmap will be completed through a series of workshops sponsored by ASCR.		

Performance Indicators

- Eighty percent of all new research projects will be peer reviewed and deemed excellent and relevant
- Annually 30 percent of all ongoing projects will be subject to peer review with merit evaluation;
- All research areas and facilities will be periodically reviewed by subcommittees of the Advanced Scientific Computing Advisory Committee and determined to be world class.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Initiated project to understand the advantages and issues associated with lightweight kernel operating systems rather than full kernels for the compute nodes of extreme-scale scientific computers.		
	Develop advanced computing capabilities, computational algorithms, models, methods, libraries, and advanced visualization and data management systems to enable new computing applications to science. (MET GOAL)	Provide fundamental research in environmental sciences, biology, molecular sciences, and computational modeling that will underpin the cleanup of contaminated sites. (MET GOAL)

Program Strategic Performance Goals

SC5-2 Create the Mathematical and Computing Systems Software and the High Performance Computing Facilities that enable Scientific Simulation and Modeling Codes to take full advantage of the extraordinary capabilities of terascale computers, and the Collaboratory Software Infrastructure to enable geographically separated scientists to effectively work together as a team as well as provide electronic access to both facilities and data.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete installation of next generation NERSC computer, NERSC-3e, that will at least double the capability available to solve leading edge scientific problems. The number of Massively Parallel Processor Hours (MPP Hours) available will increase from 53 million in FY 2003 to 110 million in FY 2004.	Begin installation of next generation NERSC computer, NERSC-4, that will quadruple the capability available to solve leading edge scientific problems.	
Deliver enhanced versions of software from Integrated Software Infrastructure Centers established in FY 2001 to scientific application research teams. This software will increase the average efficiency of those applications by 50 percent (from the current 10 percent average baseline efficiency of peak processor power to 15 percent). This improvement in efficiency will enable a 30 percent increase in the amount of science research/analysis that can be accomplished at the existing high performance computing facilities.	Initiate at least eight competitively selected interdisciplinary research teams to provide computational science and applied mathematics advances that will accelerate biological discovery in microbial systems and develop the next generation of computational tools required for nanoscale science based on peer review, in partnership with the Biological and Environmental Research (BER) and Basic Energy Sciences (BES) programs, respectively, of submitted proposals.	Achieve operation of the IBM-SP computer at 5.0 teraflop "peak" performance. These computational resources will be integrated by a common high performance file storage system that facilitates interdisciplinary collaborations. Transfer the users with largest data processing and storage needs to the IBM-SP from the previous generation Cray T3E. (MET GOAL)
Plan upgrade of ESnet that will satisfy transatlantic data requirements of Large Hadron Collider (LHC) experiment at CERN outside of Geneva, Switzerland.	Evaluate effectiveness of a new software tool-(GRID middleware) as a tool to enable SC user communities in High Energy Physics and Global Climate to effectively access very large data resources over the Internet.	

Performance Indicators

- Validation of results by merit review with external peer evaluation.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	Continue to fabricate, assemble, and operate premier supercomputer and networking facilities that serve researchers at national laboratories, universities and within industry, enabling understanding of complex problems and effective integration of geographically distributed teams in national collaborations. (MET GOAL)	There were no related targets.

GOAL 11: Medical Applications

DOE is the recognized leader in the integration of the physical sciences, biology, and engineering, providing innovative interdisciplinary approaches and technologies that improve human health.

Program Descriptions:

The modern era of nuclear medicine is an outgrowth of the original charge of the Atomic Energy Commission (AEC), "to exploit nuclear energy to promote human health." From the production of a few medically important radio-isotopes in 1947, to the development of production methods for radiopharmaceuticals used in standard diagnostic tests in millions of patients throughout the world, to the development of ultra-sensitive diagnostic instruments, e.g. the PET (positron emission tomography) scanner, the medical applications program has led and continues to lead the field of nuclear medicine.

The activities associated with this goal deliver the scientific knowledge and discoveries that will lead to innovative diagnostic and treatment technologies for human health. The research builds on unique DOE capabilities in physics, chemistry, engineering, and biology. Research will lead to new metabolic labels and imaging detectors for medical diagnosis; tailor-made radiopharmaceutical agents and beam delivery systems for treatment of inoperable cancers; and the ability to predict structure and behavior of cells and tissues to better engineer targeted drugs, biosensors, and medical implants.

The Department also continues the more than 50-year effort of supplying isotopes and related services to the public by maintaining the required infrastructure. The wide spread use of medical isotopes has been demonstrated to significantly reduce the national health care costs and improve the quality and effectiveness of patient care.

Means and Strategies:

Support peer reviewed, fundamental research at DOE national laboratories, leading universities, and private research institutions. The Biological

Program Activity Funding: Medical Applications

		Comparable Appropriation		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
FUNDING TOTAL: The total funding for this goal.		392	325	341
ER-7-4: Maintain and enhance national nuclear capabilities by producing highly-trained nuclear scientists and engineers to meet the Nation's energy, environmental, health care, and national security needs; preserving critical user facilities in a safe, secure, environmentally-compliant, and cost-effective manner to support national priorities; replenishing Federal technical and management staff with emphasis on obtaining high-caliber junior professionals with diverse backgrounds; and delivering isotope products and services for commercial, medical, and research applications where there is no private sector capability or sufficient capacity does not exist to meet United States needs such that by December 2004, deliveries continue to be made to customers as needed.	NE			
SC3-4: Develop innovative radiopharmaceuticals for diagnosis and treatment of human disease and develop novel imaging instrumentation and technologies to precisely visualize and measure biological functions, including gene expression, and more accurately detect human disease.	SC			

and Environmental Research (BER) program Advisory Committee reviews BER programs. Scientific personnel include biologists, microbiologists, engineers, and technical program managers. In addition, the Department uses a peer-review process, Nuclear Energy Protocol for Research Isotopes (NEPRI), to determine which isotopes to produce. This process will include open public discussions and inputs from the Isotope Review Advisory Panel (IRAP).

Research capitalizes on the National Laboratories' unique resources and expertise in biological, chemical, physical, and computational sciences for technological advances related to human health. The National Laboratories have highly sophisticated instrumentation (neutron and light sources, mass spectroscopy, high field magnets), lasers and supercomputers, to name a few, that directly impact research on human health. Research is directed to fundamental studies in biological and medical imaging (including construction of the artificial retina), biological and chemical sensors, laser medicine and informatics. This research is highly complementary to and coordinated with clinical research at the National Institutes of Health (NIH) and to basic research in the NIH intramural and extramural programs.

The annual Radiological Facilities Management appropriations will be restricted to isotope infrastructure expenses, and the Department finances all isotope production costs through the revenues from the sale of isotope products and services.

Collaboration Activities:

DOE supports cutting edge, high-risk, proof-of-concept research that develops research tools with broad applications in clinical medicine and in biological research. NIH supports cutting edge, disease-specific research that uses those tools, along with many others, to determine fundamental mechanisms of human disease for better diagnosis and treatment. For example, NIH supports clinical imaging research but not research to develop radiotracers or imaging instruments, whereas DOE is the only agency that supports research to develop imaging instruments and the radiotracers needed to carry out imaging procedures.

The philosophical differences, roles, strengths, and advantages of the DOE versus NIH medical sciences research programs are clear:

- DOE medical sciences research is built on a base of chemistry, physics, engineering, computation, and biology. NIH medical sciences research is built on a complementary base of biology and medicine. DOE research leverages the unique combination of multidisciplinary competencies available at the DOE national laboratories.
- DOE develops research tools for medicine by supporting high-risk research often based on theoretical predictions of success rather than preliminary studies that demonstrate a promise of success. As in other fields of science, high risk research often leads to spectacular advances, e.g., the human genome project and genetics. NIH develops disease-specific applications for these research tools by supporting research that is generally based on substantive preliminary studies that actually demonstrate a promise of success.

With respect to isotope production, cooperative isotope supply agreements have been established with facilities in other countries to aid in a reliable isotope supply. Privatization efforts continue to lower costs where practical.

External Factors Affecting Performance:

External factors in addition to budgetary constraints that affect the level of performance include (1) changing mission needs; (2) scientific opportunities as determined, in part, by proposal pressure and scientific workshops; (3) unanticipated failures in critical components of scientific user facilities that cannot be mitigated in a timely manner and, (4) the results of external program reviews and international benchmarking activities of entire fields or sub fields, such as those performed by the National Academy of Sciences (NAS).

For Isotope production, fluctuations and shifts in worldwide demand for isotopes and related services can greatly impact the cost recovery objective. In addition, profitability will entice private competition, both nationally and abroad, that will drive the pricing of these isotopes and services.

Planned Program Evaluation:

Progress against established plans is evaluated by periodic internal and external performance reviews. These reviews provide an opportunity to verify and validate performance. Monthly, quarterly, semiannual, and annual reviews consistent with specific program management plans are held to ensure technical progress, cost and schedule adherence, and responsiveness to program requirements.

Program Strategic Performance Goals

ER7-4 Maintain and enhance nationaly nuclear capabilities by producing highly-trained nuclear scientists and engineers to meet the Nation's energy, environmental, health care, and national security needs; preserving critical user facilities in a safe, secure, environmentally-compliant, and cost-effective manner to support national priorities; replenishing Federal technical and management staff with emphasis on obtaining high-caliber junior professionals with diverse backgrounds; and delivering isotope products and services for commercial, medical, and research applications where there is no private sector capability or sufficient capacity does not exist to meet United States needs such that by December 2004, deliveries continue to be made to customers as needed.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Keep cost and schedule milestones for upgrades and construction of major research/critical facilities within 10 percent of approved baselines.	Keep cost and schedule milestones for upgrades and construction of major research/critical facilities within 10 percent of approved baselines.	
Keep number of weeks of operation for each major research/critical facility within 10 percent of the approved plan.	Keep number of weeks of operation for each major research/critical facility within 10 percent of the approved plan.	

Performance Indicators

- Number of annual deliveries for isotopic products and services.
- Percent of customer specifications met for isotope products and services.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete 75 percent of the facility construction and equipment installation for the new 100 MeV Isotope Production Facility, which is needed to continue production of short-lived radioisotopes essential for U.S. medical research. (MET GOAL)	Complete at least 40 percent of the construction of the Los Alamos Isotope Production Facility, which is needed for the production of short-lived isotopes for medical research. (MET GOAL)	Initiate construction and commissioning of the Los Alamos Isotope Production Facility to improve isotope quality with greater operating efficiency. (MET GOAL)

Program Strategic Performance Goals

SC3-4 Develop innovative radiopharmaceuticals for diagnosis and treatment of human disease and develop novel imaging instrumentation and technologies to precisely visualize and measure biological functions, including gene expression, and more accurately detect human disease.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
	The following targets are related but do not align with current targets and will be tracked separately.	The following targets are related but do not align with current targets and were tracked separately.
Develop 2-4 novel radiopharmaceuticals to be used to image the brains of patients suffering from mental, neurological diseases and cancer.	Establish new infrastructure in radiochemistry to develop novel radiopharmaceuticals needed to image changes in the brains of patients with mental and neurological diseases.	Developed novel radiopharmaceutical tracers to image the brain in obesity and addictive disorders.
Develop technology to detect steady state levels of the products produced by genes in real time and complete first image of the expression of one gene using cells in culture.	Develop technology to image gene expression in real time using *in vitro* systems – precursor of a new medical imaging tool for disease diagnosis and monitoring treatment efficacy.	Developed PET and technetium radiotracers that will be used to detect expression of specific genes.
Complete fabrication of prototype micro array for use as an artificial retina.	Design an artificial retina – a microelectronic array to be used for the treatment of blindness.	Development of a low-density microelectronic array (prototype artificial retina) that was inserted into the eye of a dog.
Complete fabrication of a compact device for the rapid diagnosis of tuberculosis.	Design a small biosensor device for rapid diagnosis of specific infectious diseases, using tuberculosis as a model organism. This technology will have broad application including, for example, in vivo monitoring of blood glucose in diabetics.	Development and modeling of the platform for a small biosensor for rapid diagnosis of specific infectious diseases.

Performance Indicators

- Number of novel imaging devices delivered.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

GOAL 12: Scientific Facilities

DOE is the provider of the Nation's research facilities for the physical sciences and computation and contributes unique, vital facilities to the biological and environmental sciences.

Program Description:

An important component of the Department's Office of Science (SC) activities is its operation and management of 10 national laboratories and 27 scientific user facilities, including x-ray and optical light sources, supercomputers, fusion devices, and particle accelerators across the country. The suite of user facilities plays a vital role in the Nation's science and technology portfolio, annually drawing over 18,000 users from universities, industry, and government.

Means and Strategies:

All SC Programs formally peer review their scientific user facilities to assess the scientific output, user satisfaction, and the overall cost-effectiveness of each facility's operations, and their ability to deliver the most advanced scientific capability to its user community. Facilities are reviewed using (1) external, independent review committees operating according to the procedures established for peer review of laboratory programs and facilities and (2) a specially empanelled subcommittee from one of the SC Programs Advisory Committees. Important aspects of these reviews include assessments of the quality of research performed at the facility; the reliability and availability of the facility; user access policies and procedures; user satisfaction; facility staffing levels; research and development (R&D) activities to advance the facility; management of the facility; and long-range goals of the facility.

Program Activity Funding: Scientific Facilities

		Comparable Appropriation		
Program Strategic Performance Goal (PSPG)	**DOE Office**	**FY 2002 ($M)**	**FY 2003 Request ($M)**	**FY 2004 Request ($M)**
TOTAL FUNDING: The total funding for this goal.		1,032	1,044	1,082
SC7-1: Manage HEP facility operations to the highest standards of performance, using merit evaluation with independent peer review. Meet U.S. commitments to the accelerator and detector components of the Large Hadron Collider (LHC) facility now under construction (Proton Accelerator-Based Physics subprogram and Electron Accelerator-Based Physics subprogram).	SC			
SC7-2: Manage all Nuclear Physics facility operations and construction to the highest standards of overall performance, using merit evaluation with independent peer review. (Medium Energy Nuclear Physics, Heavy Ion Nuclear Physics, and Low Energy Nuclear Physics subprograms)	SC			
SC7-3: Manage facilities operations and construction to the highest standards of overall performance using merit evaluation with independent peer review. (BER)	SC			
SC7-4: Manage BES facility operations and construction to the highest standards of overall performance using merit evaluation with independent peer review. (Materials Sciences and Engineering subprogram; Chemical Sciences, Geosciences, and Energy Biosciences subprogram)	SC			
SC7-5: Provide advanced scientific user facilities where scientific excellence is validated by external review; average operational downtime does not exceed 10 percent of schedule; construction and upgrades are within 10 percent of schedule and budget; and facility technology research and development programs meet their goals. (Mathematical, Information and Computational Sciences subprogram)	SC			

Facility upgrades and construction projects will keep within 10 percent, on average, of cost and schedule milestones for upgrades and construction of scientific user facilities. SC's construction of major research facilities historically has been on time and within budget.

User facilities will be operated and maintained so that unscheduled operational downtime will be kept to less than 10 percent, on average, of total scheduled operating time. SC's operation of major scientific facilities has ensured that a growing number of U.S. scientists have reliable access to those important facilities.

Collaboration Activities:

The Department's SC program closely coordinates with the research activities of other agencies including:

- Office of Science and Technology Policy (OSTP)
- National Science Foundation (NSF)
- European Organization for Nuclear Research (CERN)
- National Aeronautics and Space Administration (NASA)
- National Institutes of Health (NIH)
- Department of Agriculture (USDA)
- Department of Interior (DOI)
- Department of Defense (DoD)

External Factors Affecting Performance:

External factors in addition to budgetary constraints that affect the level of performance include (1) changing mission needs as described by the DOE and SC mission statements and strategic plans; (2) scientific opportunities as determined, in part, by proposal pressure and scientific workshops; (3) the results of external program reviews and international benchmarking activities of entire fields or sub fields, such as those performed by the National Academy of Sciences (NAS); (4) unanticipated failures in critical components of scientific user facilities that cannot be mitigated in a timely manner; and (5) strategic and programmatic decisions made by non-DOE funded domestic research activities and by major international research centers.

Program Strategic Performance Goal

SC7-1 Manage HEP facility operations to the highest standards of performance, using merit evaluation with independent peer review. Meet U.S. commitments to the accelerator and detector components of the Large Hadron Collider (LHC) facility now under construction (Proton Accelerator-Based Physics subprogram and Electron Accelerator-Based Physics subprogram).

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete installation of CMS calorimeter in surface building. Begin vertical integration tests of CMS subsystems. Complete production of Large Hadron Collider beam separation dipole magnets.		Meet on time and within budget the scheduled U.S. DOE commitments to the international Large Hadron Collider (LHC) project, as reflected in the latest international agreement and corresponding plan. (MET GOAL) Complete and deliver A Toroidal LHC Apparatus (ATLAS) detector barrle cryostat and feedthroughs to CERN. (MET GOAL) Complete prototype Large Hadron Collider quadrupole and dipole magnets. (MET GOAL)
The completion targets for the U.S. portion of the Large Hadron Collider project are: • CMS 84 percent • ATLAS 83 percent • Accelerator 90 percent	The completion targets for the U.S. portion of the LHC project: • Compact Muon Solenoid (CMS), 78 percent • Argonne Tandem Linac Accelerator System (ATLAS), 78 percent • Accelerator, 86 percent	The completion figures for the U.S. portion of the LHC project were: • CMS 77 percent • ATLAS 72 percent • Accelerator 85 percent (MIXED RESULTS)
Conduct, using outside experts, a review (1) of the operations and performance of the HEP–supported accelerator facility at SLAC (B-factory) to identify opportunities to optimize efficiency and performance.	Conduct, using outside experts, a review (1) of the operations and performance of the HEP–supported accelerator facility at Fermilab (Tevatron) to identify opportunities to optimize efficiency and performance.	
Maintain and operate HEP facilities such that unscheduled downtime is on average less than 20 percent of the total scheduled operating time.	Maintain and operate High Energy Physics (HEP) forefront scientific facilities such that unscheduled downtime is less than 20 percent of the total scheduled operating time.	HEP scientific facilities were scheduled and operated such that unscheduled downtime on average is about 20 percent of scheduled operating time. (MET GOAL)

Performance Indicators

- Percent on time/on budget;
- Percent unscheduled downtime;
- Validation of results by merit review with external peer evaluation.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Meet on time and within budget the scheduled U. S. DOE commitments to the international Large Hadron Collider (LHC) project, as reflected in the latest international agreement and corresponding plan. (MET GOAL)	There were no related targets.	There were no related targets.
The completion figures for the U.S. portion of the LHC project were: • CMS 61 percent • ATLAS 61 percent • Accelerator 68 percent		
HEP scientific facilities were scheduled and operated such that unscheduled downtime on average is about 20 percent of scheduled operating time.		

Program Strategic Performance Goal

SC7-2 Manage all Nuclear Physics facility operations and construction to the highest standards of overall performance, using merit evaluation with independent peer review. (Medium Energy Nuclear Physics, Heavy Ion Nuclear Physics, and Low Energy Nuclear Physics subprograms)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Maintain and operate Nuclear Physics scientific user facilities so the unscheduled operational downtime will be kept to less than 20 percent, on average, of total scheduled operating time.	Maintain and operate NP scientific user facilities so that the unscheduled operational downtime will be kept to less than 20 percent, on average, of total scheduled operating time.	Maintain and operate NP scientific user facilities so that the unscheduled operational downtime will be kept to less than 20 percent, on average, of total scheduled operating time. (MET GOAL)
	Meet the cost and schedule milestones for construction of facilities and Major Items of Equipment within 10 percent of baseline estimates.	Meet the cost and schedule milestones for construction of facilities and Major Items of Equipment within 10 percent of baseline estimates. Complete the Pioneering High Energy Nuclear Interacting Experiment (PHENIX) Muon Arm Instrumentation. (MET GOAL)
Conduct annual reviews of the Thomas Jefferson National Accelerator Facility and the Relativistic Heavy Ion Collider facility; use results of reviews to identify areas where increased efficiency and scientific productivity can be obtained.		
	Upgrade the RHIC cryogenics system by replacing turbine oil skids and removing the seal gas compressor, eliminating a single point failure.	Complete Helium Storage addition and liquid nitrogen standby cooling system at RHIC leading to better cost effectiveness ($0.5M savings) and operational efficiency (10% increase).
Fabrication of the STAR EMCAL Enhancement, the Fundamental Neutron Physics Beamline at the Spallation Neutron Source, and the Gamma-Ray Energy-Tracking In-beam Nuclear Array (GRETINA) (Major Items of Equipment) will not exceed 10% of cost and schedule baseline estimates.		
	Complete the Solenoidal Tracker at RHIC (STAR) Electro-Magnetic Calorimeter (EMCAL). .	

Performance Indicators

- Percent on time/within budget.
- Percent unscheduled downtime.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Maintained and operated NP scientific user facilities so that the unscheduled operational downtime was 15 percent, on average, of total scheduled operating time.	There were no related targets.	There were no related targets.
Met the cost and schedule milestones for construction of facilities and Major Items of Equipment within 10 percent of baseline estimates. Completed on schedule the Analysis System for Relativistic Heavy Ion Collider (RHIC) Detectors and RHIC Silicon Vertex Detector.		

Program Strategic Performance Goal

SC7-3 Manage facilities operations and construction to the highest standards of overall performance using merit evaluation with independent peer review. (BER)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Begin operation of Laboratory for Comparative & Functional Genomics at Oak Ridge.	Complete construction of the Laboratory for Comparative and Functional Genomics (LCFG) at ORNL.	Construction initiated on Laboratory for Comparative and Functional Genomics at Oak Ridge. (MET GOAL)
Begin operation of Production Genomics Facility as a user facility.	Increase the capacity of the Production Genomics Facility (PGF) to sequence 17 billion base pairs of DNA per year, a 50 percent increase over FY 2002.	Doubled capacity of the Production Genomics Facility (PGF) to sequencing 8 billion base pairs of DNA. (MET GOAL)
The Environmental Molecular Sciences Laboratory's 900 MHz Nuclear Magnetic Resonance (NMR) instrument will be fully operational and have an established user base.	Environmental Molecular Sciences Laboratory (EMSL) now high performance computer is fully operational.	Environmental Molecular Sciences Laboratory developed a new type of mass spectrometer that is 1000 times more sensitive than existing systems for identifying the proteome of organisms. (MET GOAL)
Average operational downtime of BER facilities will not exceed 10 percent of total time scheduled.		

Performance Indicators

- Average operational downtime of facilities will not exceed 10 percent of total time scheduled,
- Construction and upgrades of facilities will be within 10 percent of baseline schedule.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	There were no related targets.	There were no related targets.

The following results are included to provide historical context for the FY 2002 and FY 2003 targets, and do not correspond to a prior year APP target.

Upgrades and construction of scientific user facilities were kept within 10 percent of cost and schedule milestones. Commissioning of the protein crystallography Structural Biology User Station at the Los Alamos National Laboratory (LANL) was initiated and construction of the Center for Comparative and Functional Genomics (CCFG) at Oak Ridge National Laboratory was initiated.

The BER scientific user facilities were maintained and operated so the unscheduled downtime on average was less than 10 percent of the total scheduled operating time.

Program Strategic Performance Goal

SC7-4 Manage BES facility operations and construction to the highest standards of overall performance using merit evaluation with independent peer review. (Materials Sciences and Engineering subprogram; Chemical Sciences, Geosciences, and Energy Biosciences subprogram).

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Maintain and operate the BES scientific user facilities so the unscheduled downtime on average is less than 10 percent of the total scheduled operating time.	Maintain and operate the BES scientific user facilities so the unscheduled downtime on average is less than 10 percent of the total scheduled operating time.	Maintain and operate the BES user facilities so that the unscheduled downtime on average is less than 10 percent of the total scheduled operating time. (MET GOAL)
Maintain the cost and schedule milestones within 10 percent for upgrades and construction of scientific user facilities.	Maintain the cost and schedule milestones within 10 percent for upgrades and construction of scientific user facilities.	Maintain the cost and schedule milestones within 10 percent for upgrades and construction of scientific user facilities. (MET GOAL)
Continue construction of the Spallation Neutron Source, meeting the cost and schedule milestones within 10 percent of the construction project data sheet baselines. At the end of FY 2004, construction will be 80 percent complete.	Continue construction of the Spallation Neutron Source meeting the cost and schedule milestones within 10 percent of the construction project data sheet baselines. At the end of FY 2003, construction will be 61 percent complete.	Continue construction of the Spallation Neutron Source meeting the cost and timetables within 10 percent of the baselines in the construction project data sheet, project number 99-E-334. At the end of FY 2002, construction will be 47 percent complete. (MET GOAL)
Continue PED of the Linac Coherent Light Source at the Stanford Linear Accelerator Facility. At the end of FY 2004, PED will be 40 percent complete.	Complete the upgrade of the SPEAR 3 storage ring at the Stanford Synchrotron Radiation Laboratory, maintaining cost and schedule within 10 percent of baselines.	Continue upgrades of the SPEAR storage ring at the Stanford Synchrotron Radiation Laboratory maintaining the cost and schedule milestones within 10 percent of baseline. At the end of FY 2002, the upgrade will be 70% complete. (MET GOAL)
	Begin PED of the Linac Coherent Light Source at the Stanford Linear Accelerator Facility. At the end of FY 2003, PED will be 18 percent complete.	

Performance Indicators

- Validation of results by merit review with external peer evaluation;
- Validation of program directions by Basic Energy Sciences Advisory Committee.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
		There were no related targets.
	Continue fabrication of instrumentation for the short-pulse spallation source at the Manual Lujan Jr. Neutron Scattering Center at the Los Alamos Neutron Science Center (LANSC). (MET GOAL)	
Maintain and operate the scientific user facilities so that the unscheduled downtime on average is less than 10 percent of the total scheduled operating time. (MET GOAL)	Meet the cost and schedule milestones for the upgrade and construction of scientific facilities. (MET GOAL)	

Program Strategic Performance Goal

SC7-5 Provide advanced scientific user facilities where scientific excellence is validated by external review; average operational downtime does not exceed 10 percent of schedule; construction and upgrades are within 10 percent of schedule and budget; and facility technology research and development programs meet their goals. (ASCR Mathematical, Information and Computational Sciences subprogram)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Maintain and operate facilities, including NERSC and ESnet, so the unscheduled downtime on average is less than 10 percent of the total scheduled operating time.	Maintain and operate facilities, including NERSC and ESnet, so the unscheduled downtime on average is less than 10 percent of the total scheduled operating time.	Maintain and operate facilities, including NERSC and ESnet, so the unscheduled downtime on average is less than 10 percent of the total scheduled operating time. (MET GOAL)
Complete the review of ASCR high performance network facilities by the Advanced Scientific Computing Advisory Committee (ASCAC) and implement action plans to respond to recommendations	Complete the review of ASCR high performance computing facilities by the Advanced Scientific Computing Advisory Committee (ASCAC) and implement action plans to respond to recommendations.	Deliver preliminary report of ASCAC review of ASCR high performance computing facilities. (MET GOAL)

Performance Indicators

- Percent unscheduled downtime.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Operate facilities, including the National Energy Research Scientific Computing Center (NERSC) and ESnet, within budget while meeting user needs and satisfying overall SC program requirements. NERSC delivery of 3.6 teraflop capability at the end of FY 2001 to support DOE's science mission. (MET GOAL)	Increase by 25 percent over FY 1999 the availability of peer-reviewed scientific journal literature, preprints, and reports to DOE and the public through collaborations with publishers, data compilers, exchange partners, and R&D programs using Web-based mechanisms. (MET GOAL) Meet 75 percent of the requirements of computer facilities and networks users. (MIXED RESULTS)	There were no related targets
Initiated the review of Advanced Scientific Computing Research (ASCR) high performance computing facilities by the Advanced Scientific Computing Advisory Committee (ASCAC).		
The following additional results are included to provide historical context for the FY 2002 and FY 2003 targets, and do not correspond to a prior year APP target. Expand and increase access to published and preprinted scientific and technical information via cost-effective, specialized information retrieval systems, resulting in a 25 percent increase in users served. (MET GOAL)		

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Goals 13 through Goals 17 are crosscutting corporate goals. Funding in support of their accomplishment is spread across all program areas. Therefore, no funding is specified for them. For example, funding for the Federal workforce is contained in Program Direction lines and is not reflected under Goal 14, Human Capital Management.

The funding request for the Management Goals is $886 million.

This request includes $348 million for NNSA's Office of the Adminstrator.

GOAL 13: Management Effectiveness

DOE is considered an outstanding steward of taxpayers' dollars.

Program Description:

In an effort to improve federal management and deliver results that matter to the American people, the Department of Energy has embraced the President's Management Agenda (PMA) as a starting point for management reform. The Agenda contains five government-wide goals that reflect the Administration's commitment to achieve immediate, concrete, and measurable results. The five goals are: 1) strategic management of human capital, 2) improved financial performance, 3) budget and performance integration, 4) competitive sourcing, and 5) expanded electronic government.

The Office of Management and Budget (OMB) is responsible for monitoring the progress of all agencies as they work to implement plans and programs to achieve the PMA goals. OMB uses a red-yellow-green evaluation methodology to monitor both the current status of the Department as well as the progress of DOE's improvement efforts in implementing the PMA.

In the area of strategic management of human capital, DOE improved from red to yellow on current status and was rated green for progress in FY 2003. The Department continues to meet planned target dates and initiated a new corporate-wide program to address skill needs and succession planning.

Improved financial performance remains red for current status and green for progress. DOE continues to work toward improving its current status rating and will move from red to yellow when the Department can issue and unqualified assurance statement.

Budget and performance integration remains a challenge. DOE is red for current status and yellow for progress. Additional work is needed to define actions and milestones to align the progress plan with OMB's evaluation criteria. Overall, DOE has dramatically improved in this area and remains committed to further actions to implement the President's plan.

In the area of competitive sourcing, current status is red and progress is rated green. DOE can improve its current status from red to yellow once it initiates studies on half of the estimated positions and can demonstrate recurring competitions on existing service contracts.

The Office of the Chief Information Officer continues to make strides in expanding electronic government. The Department is currently red for current status and green for progress. The Department anticipates improving its current status rating from red to yellow following OMB's review of the FY 2004 business case and improved management of information technology projects to established targets.

Means and Strategies:

During FY 2003, the Office of Management, Budget and Evaluation/Chief Financial Officer (ME) will continue serving as the Department's primary administrative and management support and corporate lead for the President's Management Agenda (PMA) activities. ME will accomplish this by implementing OMB approved PMA Plans to support management reforms for the Human Capital, Budget and Performance Integration, Competitive Sourcing, and Financial Performance initiatives. While the Expanding E-Government initiative is assigned to the Chief Information Officer, ME will support all initiatives as the corporate lead. Additionally, ME will continue its efforts to improve the efficiency and effectiveness of contract management.

In support of the Administration's recent management reform initiatives, ME will work with DOE line managers to meet the goals of the PMA approved plans. Examples of activities for each initiative include:

Human Capital Management: Initiate comprehensive human resource strategies for a new performance management system, improve workforce planning, and eliminate unnecessary layers of management. (See Goal 14 – Human Capital Management for additional information)

Competitive Sourcing: Meet the OMB targets for conversion of the Department's inventory of commercial positions.

Improved Financial Performance: Meet the major milestones for implementation of the of the Integrated Management Navigation System (I-MANAGE), Standard Accounting and Reporting System (STARS), Standard Budget System, and Data Warehouse projects. In addition, obtain an unqualified audit opinion, issue timely and accurate quarterly financial statements, and begin the process of integrating financial information with budget and program information.

Budget and Performance Integration: Implement a new tracking database for tracking and reporting of performance measures, and initiate development of Program Plans based on the published Strategic Plan.

Contract Management: Increase the use of on-line E-Government services such as posting appropriate solicitations on the Government-wide website, award 30 percent of competitive contracts via electronic methods, and increase the use of performance-based contracts.

Collaboration Activities:

ME coordinate with a broad range of external Federal agencies including the Office of Management and Budget, Office of Personnel Management, the General Services Administration, various Congressional offices, and numerous private sector companies and organizations. Due to its administrative, management and corporate role for the PMA, ME also work closely with all DOE organizations and DOE Management and Operating contractors.

External Factors Affecting Performance:

Office of Management and Budget direction on the PMA, Administration policies, Congressional guidance, Departmental activities and requests, as well as other external factors could impact ME performance.

Planned Program Evaluation:

For the PMA and other performance-based programs, ME is implementing a new performance tracking system to measure performance that links ME's strategic goals to the activities necessary to achieve desired results. Each ME organization has developed action plans for their primary functions, and meets with the Director of Management, Budget, and Evaluation/Chief Financial Officer on a regular basis to discuss the status of products and services. Quarterly reports will be given to the Office of Management and Budget for the PMA and rated through the Executive Scorecard to the President.

Program Strategic Performance Goal

CM1-2: By the end of FY 2004, complete three competitive sourcing studies. Conduct additional studies in FY 2005 and beyond based on requirements established by the Office of Management and Budget and an assessment of Departmental needs.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
At least three of the FY 2002/FY 2003 A-76 studies will be completed and two of the three will be fully implemented.	Identify potiential functions for future studies to include expansion of existing studies.	Establish an Agency plan for ensuring the accuracy of Federal Activities Inventory Reform (FAIR) Act data for 2002. (MET GOAL)
For FY 2002/FY 2003 studies that have not been completed, the Performance Work Statements (PWS) will be finished.		
Any approved FY 2004 studies will have completed the preplanning study phase.	Complete public, private or direct conversion competitions for two studies in FY 2003, towards the 15 percent goal.	Plan public, private or direct conversion competitions for 15 percent of the Department's inventory of commercial positions. (MET GOAL)

Performance Indicators

- Number of studies and performance work statements completed as of a given fiscal year.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

Program Strategic Performance Goal

CM1-3: Manage the Department's financial resources and other assets; obtain an unqualified opinion by independent auditors on the Department's annual financial statements; and integrate financial, budget, and program information.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Issue timely and accurate interim financial statements within 21 days of the end of each quarter.	Issue timely and accurate interim financial statements within 45 days of the end of each quarter.	Issue interim financial statements by May 31, 2002 (MET GOAL).
Obtain an unqualified opinion on the Department's FY 2003 financial statements with no material internal control weaknesses reported by auditors by December 15, 2003.	Obtain an unqualified opinion on the Department's FY 2002 financial statements with no material internal control weaknesses reported by auditors by January 31, 2003.	Obtain an unqualified audit opinion on the Department's FY 2001 financial statements with no material internal control weaknesses reported by auditors by February 27, 2002. (MET GOAL)
Meet major milestones for the implementation of the Integrated Management Navigation System (I-MANAGE) Standard Accounting and Reporting System (STARS), Standard Budget System, and Data Warehouse projects.	Meet major milestones for the implementation of the Integrated Management Navigation System (I-MANAGE) Standard Accounting and Reporting System (STARS), Standard Budget System, and Data Warehouse projects.	By September 30, 2002, complete the project design phase for the Phoenix core financial system; update the Project Plan/ Baseline, and the Business Case; and begin the Configure/Build Phase to prepare the system for deployment. (MET GOAL)
Meet major milestones for the planning and implementation of the high priority OMBE e-Government initiatives identified through the Innovative Departmental e-Government Applications (IDEA) Task Force.	Issue policies, guidance, and modify and test financial systems for integrating financial information with budget and program information to ensure implementation in FY 2004.	By September 30, 2002, define requirements for integrating financial information with budget and program information. (MIXED RESULTS)

Performance Indicators

- Schedule variations of annual financial statement issuance, interim financial statement issuance, and systems implementation; and
- Independent auditor attestation with regard to the Department's annual financial statements, and reports regarding internal controls.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete the implementation of the BMIS Phoenix core financial system at a minimum of one service center cluster as part of a phased deployment strategy. (BELOW EXPECTATIONS)	Complete the development of requirements and the creation of a new account structure. Purchase commercial Core Financial System software for 150 users for a pilot implementation at one of the three accounting service centers and two of its satellite sites. Begin implementation of solutions for special DOE requirements. (MET GOAL)	Identify functional and technical systems requirements for developing a Business Management Information System (BMIS) with a special emphasis on financial management, and develop business scenarios for its evaluation. (FMFIA) (NEARLY MET GOAL)

Program Strategic Performance Goal (continued)

CM1-3 Manage the Department's financial resources and other assets; obtain an unqualified opinion by independent auditors on the Department's annual financial statements; and integrate financial, budget, and program information.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Accomplish and close out the initiatives identified in the Project Management Departmental Challenge action plan by the end of FY 2004. (FMFIA)	Issue DOE Manual 413.3x Program and Project Management for the acquisition of capital assets by the end of the 3rd quarter.	Review and revise the Department's policy on program and project management for the acquisition of capital assets, and the Project Management Manual and Practices. (FMFIA) (MET GOAL)
Issue standards for acceptable cost and schedule performance. Ninety (90) percent of DOE's projects will be reported in the Monthly Project Status Report as on track to be completed within 10 percent of the cost and schedule baseline. All projects greater than $5M will be assessed with the 90 percent goal applying to both number of projects and total dollar value.	All project greater than $5 M and past critical decisions will be assessed for cost and schedule performance on a quarterly basis. All project greater than $5 M that are not performing within established targets are reported to the Deputy Secretary. Publish the Departmental directive related to the implementation of a facilities and infrastructure program by June 2003.	
		Complete all planned External Independent Reviews (EIRs) of projects on schedule, to support both the needs of the project managers and the validation of the performance baselines. (MET GOAL
Certify 40 percent of DOE Federal Project Managers participating in the Project Management Career Development Program (PMCDP) by March 2004.		
	Roll out core courses for the Project Management Career Development Program beginning January 2003 with all core courses being taught by the end of July 2003.	

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
	Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of project management. (FMFIA) (NEARLY MET GOAL)	Accomplish the milestones of the FMFIA corrective action plan for the Departmental challenge of project management. (FMFIA) (BELOW EXPECTATIONS)
By April 2001, resolve all recommendations from the National Research Council's report, "Improving Project Management in the Department of Energy." (MET GOAL)		
	By April 2000, implement new project management policies and procedures that strengthen the management of projects, and by July 2000, have new systems in place to verify progress against established project scope, schedule and cost baselines on projects valued at $5 million or more. (NEARLY MET GOAL) By September 30, 2000 reestablish the Acquisition Executive and ESAAB processes for use on critical decisions for projects of $5 million or more. (MET GOAL)	Verify progress against established project scope, schedule, and cost baselines on projects valued at $5 million or more. (BELOW EXPECTATIONS) Complete four Energy Systems Acquisition Advisory Board (ESAAB) critical actions on required strategic and major systems. (MET GOAL)
Complete all planned External Independent Reviews (EIRs) of projects on schedule, to support both the needs of the project managers and the validation of the performance baselines. (MET GOAL) Improve External Independent Review procedures and Statements of Work. (MET GOAL)	Complete all planned External Independent Reviews (EIRs) of projects on schedule, to support both the needs of the project managers and timely delivery of EIR reports. (With the programs' corrective action plans) (MET GOAL)	

Program Strategic Performance Goal

CM1-4: By the end of FY 2004, all of the Department's goal and performance measures in the Strategic Plan, the Annual Performance Plan and the Budget will be aligned, written in quantifiable and measurable terms, and will demonstrate clear outcomes and/or outputs, such that these goals and measures will provide a basis to evaluate progress, justify resource decisions, and ensure management accountability for results.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Complete all FY 2004 actions in the FMFIA corrective action plan for the departmental challenge of performance management, thereby eliminating the challenge and the reportable condition for FY 2004.		Complete the milestones in the FMFIA corrective action plan for the Departmental Challenge of Performance Management. (FMFIA) (MET GOAL) Establish a Program Analysis and Evaluation Office to enhance performance analysis capability. (MET GOAL)
Program performance will be reviewed quarterly, with a report to the Deputy Secretary and, as required, to the DOE Management Council.	Track the performance measures contained in the Department's Annual Performance Plan using the new tracking software.	Implement a new performance tracking system. (MET GOAL)
Development and use of performance measurement will be supported by offering a suite of training courses annually to include: strategic planning; performance measurement; and, as appropriate, OMB initiated activities such as R&D investment criteria or the program assessment rating tool (PART).		Expand applied research and development investment criteria to all applied research programs. (MET GOAL)
The Department's FY 2006 budget submitted to the Office of Management and Budget in September 2004 will: (1) present an integrated view of program performance and budget request, clearly explaining what taxpayers will get for the requested funds, (2) include specific and quantified performance measures linked to at least 90 percent of the requested funds, (3) show how the program funding requests are allocated to support Administration priorities, and to better coordinate out year mortgages for major construction projects.		Establish a 5-year process, with integrated performance data, for the preparation of the FY 2004 budget. (MET GOAL)
	Complete Departmental Strategic Plan and initiate the development of Program Plans based upon the revised Strategic Plan.	Issue guidance and begin development of an updated Department Strategic Plan. (MET GOAL)

Performance Indicators

- Elimination of the Reportable Condition in the Departmental Financial Statement on Performance Measures by end of FY 2004.
- Elimination of the Federal Managers Financial Integrity Act (FMFIA) finding on Reporting on Departmental Performance Measures by December 2004 (with the publication of the FY 2004 Performance and Accountability Report).

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

GOAL 14: Human Capital Management

DOE has highly skilled, well-qualified, and diverse workforce capable of successfully completing the missions of the Department of Energy and DOE is a model for responsible treatment of its workers, both current and past.

Program Description:

Human Capital Management at the Department of Energy encompasses a wide range of activities to insure that DOE has highly skilled, well-qualified, motivated, and diverse workforce. The Department, like many other Federal agencies, is faced with a rapidly aging workforce and skills imbalances in several key areas. Left unaddressed, these problems will grow and adversely impact DOE's mission completion capability. In order to address these issues, the President has made the Strategic Management of Human Capital one of five goals of his President's Management Agenda for improving the management of the federal government. The result of this initiative will require the DOE workforce to adapt quickly in size, composition, and competencies to accommodate changes in mission, technology and labor markets. When changes to the workforce are required, the Department is committed to minimizing the social and economic impacts of these changes to its employees, their families, and the community at large.

Activities associated with minimizing the social and economic impacts of changes in the Department's activities and the disposition of unneeded assets comes under the purview of the Office of Worker and Community Transition. The principal functions of the Office are to: (1) establish policy and provide funding for contractor work force restructuring activities; (2) develop policy for contractor labor relations, oversee the collective bargaining process, and assist the Department's field organizations in labor/management relations; (3) establish policy for community transition and allocate funding to mitigate economic impacts; (4) provide for the disposition of unneeded properties to encourage private sector investment for job creation and economic stability; (5) reduce potential domestic and international economic impacts caused by disposition of unneeded materials by the Defense National Stockpile Center; and (6) provide information and opportunities for participation in the decision-making process affecting the contractor work force and adjacent communities.

During FY 2004, the funding request for worker and community transition activities is significantly reduced. At present, the work force transition activities have decreased in overall magnitude from past years and the consequent need for replacement employment has also decreased. However, with the anticipated closure of facilities, the need for community transition assistance may increase again in the future. In such an event, the Department would strive to anticipate the need for replacement employment so that alternative employment opportunities would already exist in the community for workers affected when facility closure occurs.

Means and Strategies:

Initiate comprehensive human resource strategies for a new performance management system, improve workforce planning, and eliminate unnecessary layers of management.

The Department will achieve the workforce restructuring objectives through Headquarters oversight and contractor performance measures that will encourage cost-effective use of voluntary separation strategies, manage attrition, and ensure internal placement whenever possible. The community transition goal will be achieved through financial and technical assistance provided to community reuse organizations at the affected sites.

Collaboration Activities:

The Office of Worker and Community Transition works through the Lead Program Offices at field facilities to coordinate work force planning and restructuring requirements and strategies in consultation with interested stakeholders. The community transition activities work through the Community Reuse Organizations (CRO) made up of representatives from each diverse group within the community.

External Factors Affecting Performance:

Contracting strategies and mission changes in major operating programs fundamentally influence the need for work force restructuring and community transition assistance. Uncertainties in long-range plans and resources could adversely impact the ability to meet program objectives. Office of Management and Budget direction on the PMA, Administration policies, Congressional guidance, Departmental activities and requests, as well as other external factors could further impact performance.

Planned Program Evaluation:

The Department is implementing a new performance tracking system to measure performance. The Office of Human Resources Management has developed action plans for their primary functions, and meets with the Director of Management, Budget, and Evaluation/Chief Financial Officer on a regular basis to discuss the status of

products and services. Quarterly reports will be given to the Office of Management and Budget for the PMA and rated through the Executive Scorecard to the President.

The Annual Report on Contractor Work Force Restructuring provides a regular review. The GAO and Booz-Allen & Hamilton, Inc. have performed independent reviews and audits with anticipated continued external review and evaluation. Revised community transition criteria were developed in 1999 in response to GAO recommendations. A review and potential update of the criteria is a target for FY 2003.

Program Strategic Performance Goal

CM 1-1: Implement the DOE 5-Year Workforce Restructuring Plan.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Improve Departmental Human Capital Management by implementing comprehensive human resources strategies which will: -Reduce managerial layering and shift staffing resources to front line, mission critical positions consistent with Administration guidelines;	Improve Departmental Human Capital Management by initiating comprehensive human resources strategies which will: -Cascade a new performance management system (based upon the SES model) down to all GS-15 and below managers and supervisors;	Improve Departmental Human Capital Management by initiating comprehensive human resources strategies which will: -Streamline the DOE hiring process through process reengineering, automated recruitment, and other means that reduce the time it takes to fill jobs by at least 20 percent at DOE Headquarters; (MET GOAL)
-Address skills gaps and aging workforce challenges by ensuring that at least 15 percent of the employees hired during FY 2004, in the administrative, technical and professional career fields, are at the entry level;	-Initiate implementation of a workforce planning methodology that identifies critical skills for key scientific and technical positions;	-Increase employee access to mission-related training by at least 30 percent through “online” and other technology assisted learning capabilities; (MET GOAL) -Address skills gaps and aging workforce challenges by hiring at least 15 percent of new administrative, technical and professional employees at entry levels; (MET GOAL)
-Continue the streamlining efforts of the DOE hiring process at HQ through process re-engineering, improved automated recruitment, and other means that reduce the time it takes to issue selection certificates by 20 percent from the FY 2003 baseline.	-Ensure Departmental leadership succession by developing a cross-cutting succession planning process within DOE for mission critical occupations; and	-Achieve cost savings and reduce traditional manually generated personnel and training paper records by at least 20 percent utilizing CHRIS; (MET GOAL)
	-Reduce managerial layering and shift staffing resources to front line, mission critical positions consistent with Administration guidelines.	-Reduce managerial layering and shift staffing resources to front line, mission critical positions consistent with Administration guidelines. (MET GOAL)
Achieve the FY 2004 milestones listed in the FMFIA corrective action plan for the Departmental challenge of human capital management and eliminate as a Departmental challenge.	Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of human capital management. (FMFIA)	Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of human capital management. (FMFIA) (MET GOAL)

Performance Indicators

- Improved functioning of the Department's Human Capital Management Program.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Improve Department Human Capital Management by initiating comprehensive human resources strategies which will: • Implement the FY 2001 milestones in the DOE Corporate Training Plan;	Improve Federal technical workforce capabilities at defense sites by implementing the FY 2000 milestones in the Revised Implementation Plan for DNFSB Recommendation 93-3. (MET GOAL)	Improve Federal technical workforce capabilities at defense sites by implementing the FY 1999 milestones in the Revised Implementation Plan for DNFSB Recommendation 93-3. (MET GOAL)
Recruit and hire additional personnel to address immediate needs in HQ critical financial functions. (MET GOAL)	Improve workforce skills and reduce training costs by implementing the FY 2000 milestones in the DOE Corporate Education, Training, and Development Plan. (MET GOAL)	Improved workforce skills and reduce training costs by implementing the FY 1999 milestones in the DOE Corporate Education, Training, and Development Plan. (MET GOAL)
Increase the electronic transfer of documents in CHRIS, resulting in 15 percent of the documents processed electronically. (MET GOAL)		
Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of human capital management (FMFIA) (MIXED RESULTS)		

Program Strategic Performance Goal

EQ4-1: Minimize the social and economic impacts on individuals and communities caused by changes in the Department's work force by (1) providing separation benefits comparable to industry standards while achieving annual savings that are three times the one-time cost of separation, and (2) creating and retaining jobs in the community to diversify the economy and employ displaced workers.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Achieve annual recurring cost savings from separated workers that are at least three times the one-time cost of separation.	Achieve annual recurring cost savings from separated workers that are at least three times the one-time cost of separation.	Achieve annual recurring cost savings from separated workers that are at least three times the one-time cost of separation. (MET GOAL)
Support local community transition activities that will create or retain, cumulatively, between 30,500 and 31,000 private sector jobs by the end of FY 2004.	Support local community transition activities that create or retain, cumulatively, 29,000 to 30,500 private sector jobs by the end of FY 2003.	Support local community transition activities that create or retain, cumulatively, 27,500 to 29,000 private sector jobs by the end of FY 2002. (MET GOAL)
Publish an annual report providing updates of work force restructuring and community transition activities, as required under Section 3161 of the authorizing legislation.	Publish an annual report providing updates of work force restructuring and community transition activities, as required under Section 3161 of the authorizing legislation.	Publish an annual report providing updates of work force restructuring and community transition activities, as required under Section 3161 of the authorizing legislation. (MET GOAL)
	In cooperation with the community reuse organizations, develop criteria to guide community transition funding allocations.	

Performance Indicators

- Ratio of the annual savings to the one-time cost of separation.
- Number of jobs created or retained in the community.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Achieve annual recurring cost savings from separated workers that are at least three times the one-time cost of separation. (MET GOAL)	Limit involuntary termination of employment at Department of Energy defense nuclear facilities to between 30 and 60 percent of positions eliminated. (MET GOAL)	Keep involuntary separations to between 30 and 60 percent of positions eliminated, while assuring maintenance of essential work force skills mix and productivity. (MIXED RESULTS)
	Achieve annual recurring cost savings from separated workers that is at least three times the one-time cost of separation. (MET GOAL)	Achieve annual recurring cost savings from separated workers that is at least three times the one-time cost of separation. (MET GOAL)
Support local community transition activities that will create, cumulatively, between 24,000 and 27,500 new private sector jobs by the end of FY 2001. (MET GOAL)	Support local community transition activities that will create 3,000 to 5,000 jobs during FY 2000, bringing the total jobs created to between 20,000 and 25,000 by the end of FY 2000. (MET GOAL)	Support local community transition activities that will create, cumulatively, 15,000 to 20,000 new private sector jobs by the end of FY 1999. (MET GOAL)

GOAL 15: Information Management

DOE's official internal and contracting processes are paperless and DOE is responsive to communications via all government-supported media while protecting privacy and ensuring security.

Program Description:

The Office of Chief Information Officer (OCIO) provides advice and assistance to the Secretary of Energy and other senior managers to ensure that information technology is acquired and information resources are managed in a manner that implements the policies and procedures of relevant legislation, including the Government Paperwork Elimination Act and the Clinger-Cohen Act; and the priorities established by the Secretary. Provides cyber security policy, planning, and technical development, to ensure consistent standards and requirements are implemented for the protection of classified and unclassified information used or stored on Departmental systems. The Office coordinates and articulates a shared vision and corporate perspective among the Department's information activities and champions. The OCIO is also the lead on Departmental initiatives to effectively manage information and to provide corporate information technology (IT) systems that add value to the business of the Department. Ensures that information created and collected by the Department is provided to internal and external customers and stakeholders in a timely, cost-effective, and efficient manner.

The President has made Expanded E-Government one of five goals of his President's Management Agenda for improving the management of the federal government. As part of the President's Management Agenda, OCIO will advocate and implement an e-government citizen service delivery office in FY 2003. This office will accelerate the implementation of the geospatial information one-stop project to enhance the implementation of e-government by enabling geospatial data to be more accessible and usable. The OCIO will implement customer/citizen relationship management and utilize intergovernmental best practices to expedite Departmental implementation. In addition, this office will develop an agency strategy for electronic government initiatives. This strategy will establish a framework for existing initiatives under way in the Department, and provide a roadmap for future corporate direction and organization-specific efforts.

Means and Strategies:

E-government: The Office of CIO will (1) work with Federal agencies, Departmental councils, teams and elements to develop and implement the E-government, records management, and website policies and roadmap. (2) Verify that departmental websites adhere to established privacy and cookie policies through individual site checks; and (3) will provide support and collaboration on the Geospatial One-Stop Project .

IT Resource Management: The Office of CIO will (1) review and approve IT investments at the Department level before they are forwarded to OMB; (2) Develop measures of performance to ensure that program officials and CIO's are fulfilling their responsibilities with regard to the Government Information Security Reform Act; (3) for high priority initiatives under the Government Paperwork Elimination Act, focus on providing electronic alternatives for the agency's main customer base. Work with the private sector and government to develop and implement Customer relationship Management, utilizing best practices; (4) empower employees through technology, enabling them to be more effective and efficient; and, (5) continue to implement critical Information Technology data and infrastructure protection and security.

Cyber Security: The Office of CIO will (1) work with the private sector and Federal, State and local governments to develop and implement critical cyber security protection initiatives; (2) provide high-level consistent, risk management-based implementation guidance for the protection of cyber assets; (3) provide consistent, core training requirements for cyber security professionals, system administrators, senior management, and general users; and (4) provide Departmental capabilities for cyber incident response, core cyber security architecture, cyber intrusion detection and reporting, and Public Key Infrastructure (PKI) architecture.

Collaboration Activities:

E-government: The Office of the CIO, in the area of E-government, participates in a number of departmental groups including: (1) The Office of Management and Budget E-Government Task Force; (2) The Department of Energy CIO Executive Council, Records Management Council, and Web Council; (3) HQ Fore- Most Technical Issues Working Group (4) Federal Geographic Data Committee (5) Open Geographic Information System Consortium; and, (6) the DOE GIS Users Group.

IT Resource Management: The Office of the CIO in promoting effective management of Information Technology resources, participates in a number of interagency groups and public-private forums, including; (1) Industry Advisory Council (public-private); (2) Federal Electronics Stewardship Forum (public-private, led by the Environmental Protection Agency); (3) IT Working Group (Departmental, OCIO-led); (4) National Communications Systems Working Group (interagency, public-

private, DoD-led); (5) Federal Telecommunications System Working Group (interagency); (6) Federal CIO council (interagency); (7) Senior Executive Review Board; and (8) CIO Executive Council.

The OCIO will continue to engage industry as both a partner and in an advisory capacity.

Cyber Security: In the area of Cyber Security, the Office of the CIO participates in a number of interagency groups and public-private forums, including: (1) The Partnership for Critical Infrastructure Security (public-private), Office of Science and Technology Policy (OSTP); (2) CIP Research and Development Working Group (Interagency); (3) Communications and Information Sector Working Group (public-private, led by the Department of Commerce; (4) Energy Infrastructure Assurance Coordination Group (interagency, DOE-led); (5) National Petroleum Council /DOE CIP Subcommittee (public-private); (6) North American Electricity Reliability Council CIP Form (public-private); (7) Critical Infrastructure Coordination Group; and (8) Technical Support Working Group (interagency).

External Factors Affecting Performance:

E-government: The E-Government program's indicated performance goals and associated schedules depend heavily on: (1) availability of in-kind support for Geospatial One-Stop activities; (2) funding continuity and sufficiency; and (3) cooperation and support from Departmental elements.

IT Resource Management: The effective management of Information Technology resources in the Department depends heavily on funding continuity and sufficiency. Another factor is the ability to retain and develop or retrain a knowledgeable and highly skilled Federal workforce to provide project direction and oversight. The human capital issue is significant, given the aging Federal workforce.

Cyber Security: The Cyber Security program's indicated performance goals and associated schedules depend heavily on funding continuity and sufficiency. The program is also affected by various laws and regulations, including GISRA, the Clinger –Cohen Act, OMB Circular A-130 and PDD 63.

Planned Program Evaluation:

The Office of the Chief Information Officer conducts Corporate and Major System Reviews of issues, schedules, goals accomplished, and expenditures. The Associate CIO for Operations and cognizant program managers participate to ensure that activities are on schedule and within budget.

The Office of Cyber Security conducts quarterly, detailed reviews of program activities, schedules, and expenditures. The Associate CIO for Cyber Security and all program managers participate to ensure that activities are on schedule.

Program Strategic Performance Goal

CM2-1: Advocate and implement E-Government citizen service delivery office. Support the President's E-Government initiatives by developing a framework for existing IT initiatives, and a roadmap for corporate direction.

Proposed FY 2004 argets	Updated FY 2003 Final Targets	Related FY 2002 Results
Advocate and implement E-government citizen service delivery by taking the following actions: - Continue to review business practices in light of E-Government initiatives to streamline and automate where appropriate. - Establish a core of common IT services offered to the HQ customers and managed by the CIO. - Meeting Service Level Agreements (SLAs) for all services under eXCITE. - Improved delivery of IT services. - Reduce common IT services costs per user-target of $3600 per user per year.	Advocate and implement E-government citizen service delivery by taking the following actions: - Ensure that all major IT investment have a business case that meets the requirements of OMB Circular A-11 (exhibit 53, Form 300) - Ensure all major IT projects operate within 90 percent of Form 300, cost, schedule, and performance targets - Complete the development of Program IT Architecture based on the Federal Enterprise Architecture Model to Level 1 at all layers. - Demonstrate progress or participation in the Departments E-gov projects; - Finalize Departmental policy and guidance on use of websites - Integrate citizen one-stop service delivery through Firstgov.Gov cross agency call centers, and offices or service centers.	Advocate and implement E-government citizen service delivery by taking the following actions: - Assess requirements for the Geospatial One Stop project and develop a project plan by Sept. 30 2002; (MIXED RESULTS) - Develop E-gov framework by June 30, 2002; (MET GOAL) - Develop E-gov roadmap by September 30, 2002, to reduce information collection burden; (MET GOAL) - Identify use of open standards across the Department; (MET GOAL) - Conclude CIO Office e-mail pilot; (MET GOAL) - Increase usage of citizen-centric Energy.gov website by five percent; and (MIXED RESULTS) - Issue draft Departmental policy and guidance on the use of websites, which includes Section 508 compliance, by September 30,2002. (MIXED RESULTS)

Performance Indicators

- Ensure that employees and the public are able to do business with the Department of Energy electronically, wherever practicable, by the end of FY 2003.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

GOAL 16: Facility Management

DOE achieves and maintains a quality, safe and secure, state of the art facility infrastructure this is fully capable of meeting the Department's mission and creates a work environment that will enable the Department to effectively compete with the private sector in attracting and retaining a quality workforce.

Program Descriptions:

EQ-3: Environment, Safety and Health:

The Office of Environment, Safety and Health (EH) advances the Department of Energy's (DOE) mission through the strong commitment to safe, efficient and cost effective conduct of work. EH endeavors to leverage its resources and professional, technically proficient, personnel to provide DOE's line management programs with: essential environment, safety and health performance expectations; information analysis; management tools required to promote the safe conduct of work; and guidance for the protection of the environment in and around DOE sites. Integral to the Department's success is EH's skill in fostering increased awareness and providing support to line management throughout the Department, using open communications, and performance feedback on environmental, safety and health activities, to provide the safety envelope that allows for and promotes the safe conduct of work.

The EH program activities include communication of ES&H performance expectations through Policy, Standards and Guidance; Corporate Safety Support; the Investigation and Enforcement Program; Domestic and International Health Studies Programs; the Radiation Effects Research Foundation (RERF) program; and Energy Employees Occupational Illness Compensation Program (Office of Worker's Advocacy) activities.

EH contributions are critical to the success of the DOE mission. EH's professional staff actively participate in establishing DOE ES&H performance expectations, in the form of standards and controls, work planning, lessons learned sharing, and continuous improvement. EH's role is to enhance mission accomplishment through effective environment, safety, and health actions by line management. These activities provide expert technical support to line management to resolve unique or cross cutting issues; establishing clear performance expectation and program implementation guidance and standard; external safety and standards organizations input; working models for integrating environment, safety, and health into critical work activities; safety and health information and analysis to improve performance; and safety performance measurement to focus on priority, high payback actions.

The need for effective programs to identify environment, safety, and health concerns at the project and individual activity level remains urgent. The realignment and acceleration of cleanup program efforts necessitates a clear focus on establishing a sound safety basis for the conduct of operations at field sites. EH's analytical products provide for the appropriate and timely resolution of identified and emerging issues for the entire DOE complex. The Department of Energy has made the health of current and former workers a top priority. EH is providing strong support for the effective implementation of the Energy Employees Occupational Illness Program Act of 2000. This program will assist workers who may have developed an illness from possible exposure during their employment at DOE facilities. In addition, DOE has placed a priority on expanding the medical monitoring of its former workforce to identify and provide early detection of potential work-related illnesses.

CM-5: Security:

The Office of Security (SO) develops and promulgates safeguards and security policy for the Department. The activities of SO support the Nuclear Safeguards and Security program, Security Investigations, and Program Direction.

The Nuclear Safeguards and Security Program consists of domestic protection of nuclear weapons, nuclear materials, nuclear facilities, and classified and unclassified information against theft, sabotage, espionage, terrorist activities, or any loss or unauthorized disclosure that could endanger our National security or disrupt operations. Foreign Visits, Assignments and Travel provides and implements DOE foreign interactions policy by managing two DOE-wide databases to control, track, analyze, and approve the suitability of granting access by foreign nations to DOE sites; and to control, track, approve, and account for official foreign travel on behalf of DOE. Physical Security provides cost-effective plans, policies, and technical solutions to ensure that nuclear weapons, special nuclear materials, classified information, and key DOE facilities and personnel are adequately protected from evolving threats. The Nuclear Materials Accountability Systems maintain real-time, reliable, and complete information on DOE

nuclear materials that are subject to special control and inventory procedures. Protection of Government property, classified matter, and personnel is provided to the National Capital area through the Headquarters Security program. The Nonproliferation and National Security Institute is a national asset for education, training, support services and professional development throughout not only DOE, but also other Federal, state, local and international agencies. Technology Development assists DOE facilities with resolving validated safeguards and security vulnerabilities through deployment of innovative technological solutions for appropriate protection measures for DOE's critical assets. Classification/Declassification prevents adversaries from acquiring classified weapons and energy infrastructure information by reviewing documents to ensure that no classified or controlled information is compromised. Operations Support establishes and maintains a comprehensive program to ensure continuity of essential Departmental functions under all contingencies. The Security Investigations program funds background investigations for all DOE Federal employees and contractors who, in the performance of their official duties, require access authorizations for Restricted Data, National Security Information, or certain special nuclear material. Program Direction provides funds for all Federal personnel and other contractual support required at DOE Headquarters to carry out the program's mission in a cost effective and efficient manner.

Means and Strategies:

EQ-3: Environment, Safety and Health:

Policy, Standards and Guidance activities involve the maintenance of current, up to-date DOE policies, standards, and guidance while adopting consensus standards as they apply to the DOE work environment. DOE regulatory liaison activities include transactions and participatory relationships with other regulators (OSHA, NRC and the States) to accommodate their identified interests and jurisdiction.

Corporate Programs activities provide products and support in environment, safety, and health that efficiently use DOE resources when managed centrally by EH. Such programs include the Department of Energy Laboratory Accreditation Program (DOELAP), the Federal Employees Occupational Safety and Health (FEOSH) program, and the nationally recognized Voluntary Protection Program (VPP). Environment, Safety, and Health Performance Analysis activities include collecting and analyzing DOE performance data to support policy decisions and focus limited resources on the most hazardous vulnerabilities. Corporate Programs also include crosscutting Department-wide functions such as environment, safety, and health monitoring; programs directed toward strengthening safety performance and incorporating it into the routine of daily work; communication of environment, safety, and health program guidance and practices; and lessons learned and the maintenance of an operating experience database. Management Planning directly supports the Department's goal of clearly identifying and funding environment, safety, and health priorities and ensuring that resources are appropriately spent on those priorities. Specific objectives include: (1) ensure all Departmental sites conduct sufficient work-scope planning and identify and fund environment, safety, and health priorities in the FY 2002 budget and annually thereafter; and (2) monitor annually and report on environment, safety, and health expenditures (commitments) and improve related internal controls.

The **National Environmental Policy Act** (NEPA) Program provides compliance assurance to DOE line management by supporting the implementation of the Department's NEPA activities. Information Management provides for the overall management of environment, safety, and health data and information for the DOE complex and other stakeholders.

Safety Performance activities provide information and analysis needed to ensure that the Department of Energy (DOE) and contractor management, the public, the Secretary of Energy, and the Assistant Secretary for Environment, Safety and Health have an accurate, comprehensive understanding of the effectiveness, vulnerabilities, and trends of the Department's environment, safety, and health policies and programs. This data and analysis provide critical information on how effectively line management is implementing Integrated Safety Management. The activities to accomplish this mission include Evaluations, Price-Anderson Amendments Act Enforcement, and the Departmental Representative to the Defense Nuclear Facilities Safety Board (DNFSB).

Health Studies activities include Occupational Medicine (medical surveillance); Epidemiologic Studies (surveillance and communication of worker injury and illness); Public Health Activities (health studies, health education and promotion, etc., at DOE sites); and International Health Programs (Marshall Islands program and health studies in the former Soviet Union and Spain).

Radiation Effects Research Foundation (RERF) activities support analysis of the medical effects of radiation with the intention of contributing to the maintenance of the health and welfare of atomic bomb survivors, and to the enhancement of worldwide radiation protection practices and standards.

Employee Compensation Initiative was formed to recognize special needs of DOE workers who were unknowingly exposed to dangerous material, or who were not adequately protected from these exposures. When illnesses force

workers into retirement, many are left with little or no medical and /or wage benefits. The EH Office of Advocacy will assist DOE workers in understanding worker compensation opportunities and requirements, and employer-provided benefits. Where appropriate, EH will assist in filing compensation claims.

CM-5: Security:

The Office of Security is leading an effort in conjunction with Secretarial Offices to develop and publish a DOE-wide Strategic Plan for Security and security performance metrics to address new problems presented by homeland defense and emerging threats posed by terrorists. The Office of Security will continue to collaborate with the Department's Security Managers to ensure deployment of effective security measures.

Collaboration Activities:

EQ-3: Environment, Safety and Health:

EH maintains close contacts with private industry, regulatory agencies, independent standard-setting groups, and national environment, safety, and health organizations, for the purpose of facilitating information exchanges between DOE line management and their counterparts in the private sector. EH staff also provide corporate support to DOE managers in developing improved strategies for including safety and health in planning and conducting work; applying regulations (guidance on Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), the States, and Nuclear Regulatory Commission (NRC) regulations); and DOE policy and guidance. EH provides a liaison between DOE and the Defense Nuclear Facilities Safety Board.

CM-5: Security:

The Office of Security will continue to collaborate with other Federal, State, and local Governments to ensure the security of the Department's critical national assets.

External Factors Affecting Performance:

EQ-3: Environment, Safety and Health:

Specific ES&H events, departmental program activities, and requests from field sites will affect the level and deployment of EH's resources.

CM-5: Security:

- Terrorists threats and attacks;
- Funding;
- Presidential, Congressional, and Homeland; Defense direction; and
- Improved technological developments.

Planned Program Evaluation:

EQ-3: Environment, Safety and Health:

An extensive peer and program review process is followed to assure that reports reflect the highest quality achievable. EH provides field assessments, safety analysis, event and accident investigation and special reviews in response to management direction, by request or due to declining safety performance or issues.

CM-5: Security:

Internal policy and operational assessments.

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Program Strategic Performance Goal

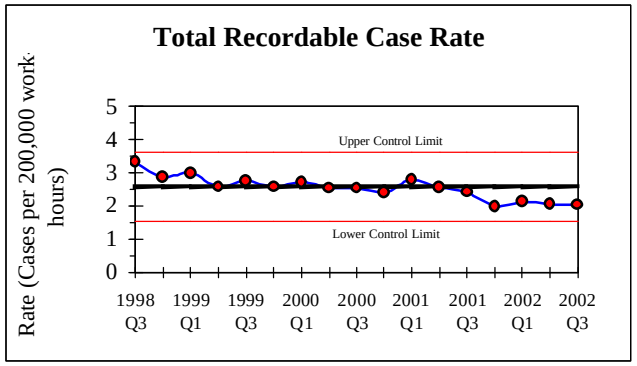
EQ3-1 Reduce the number of reportable deaths, injuries and illnesses and environmental releases from environment cleanup and other operational activities; identify health concerns, integrate worker health screening programs, and upgrade medical record systems for Energy Employees Occupational Illness Compensation Program Act worker compensation programs.

Proposed FY 2004 Proposed Targets	Updated FY 2003 Targets	Related FY 2002 Results
Reduce the number of reportable deaths, injuries and illnesses and environmental releases.	Reduce the number of reportable deaths, injuries and illnesses and environmental releases.	Increase the adoption and use of voluntary consensus technical standards (e.g., ANSI, ASTM, ASME) used in DOE directives and safety documentation by 20 to 30, to help improve safety and cost-effectiveness. (MET GOAL)
Prepare transition plans for changeover of six additional DOE sites to EH-funded and field-managed status.	Provide medical screening to a minimum of 4,000 DOE workers exposed to beryllium, radiation, or other hazards during their employment at DOE facilities. Assess injuries and illnesses in at least 70,000 workers across 12 DOE sites.	Establish a Beryllium Registry in January 2002 for current and former DOE workers who may have been exposed. (FMFIA) (MET GOAL)
		Publish an additional 10 interim or final international health scientific and technical reports from the RERF, Marshall Islands, and Russians to increase our ability to define the relationship between ionizing radiation dose and its effect on human health. (MET GOAL)

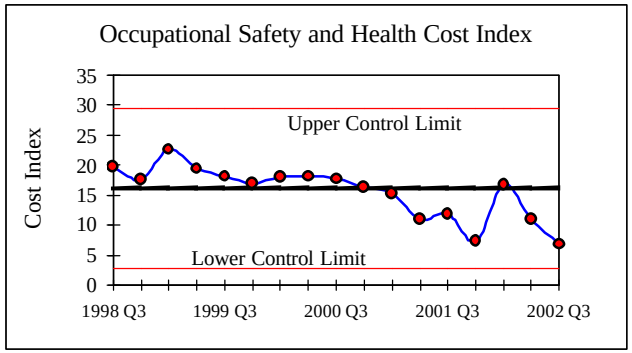
Performance Indicators

- Total Recordable Case Rate.
- Occupational Safety and Health Cost Index.
- Hypothetical Radiation Dose to the Public.
- Worker Radiation Dose.
- Reportable Occurrences of Releases to the Environment.
- Number of DOE sites with occupational medicine pilot programs.
- Cost per worker.

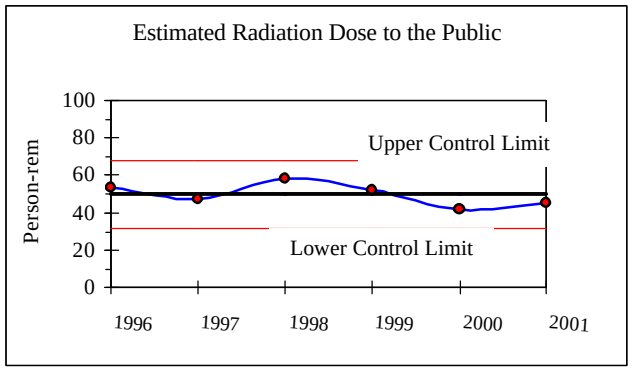
Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Fully implement Integrated Safety Management at all DOE sites. (FMFIA) (MIXED RESULTS)	Conduct oversight special reviews, assessments, evaluations, and inspections of such topics as emergency management, safety management, and accidents. (MET GOAL)	Conduct oversight special reviews, assessments, evaluations, and inspections of such topics as emergency management, safety management, and accidents. (MET GOAL)
		Issue an initial status report on the development of a public health agenda by December 31, 1998, and a final public health agenda for each site, which reflects customer and stakeholder input. (MIXED RESULTS)
Make biennial presentations of the results of epidemiologic surveillance analyses to workers and management at participating DOE facilities; and expand public access to the Office of Epidemiologic Studies through improved web linkages. (MET GOAL)	Propose legislation to Congress that would establish a program to compensate: - Current and former Federal and contractor workers and beryllium vendor employees who are ill because of beryllium exposure; and - Certain workers at the Oak Ridge East Tennessee Technology Park and the Paducah Gaseous Diffusion Plant in Kentucky who have illnesses associated with exposures, which occurred during their employment. (MET GOAL)	
Publish 10 interim or final international health scientific and technical reports from the RERF, Marshall Islands, and Russians to increase our ability to define the relationship between ionizing radiation dose and its effect on human health. (MET	Provide medical screening to all DOE workers formerly exposed to beryllium during their employment at DOE facilities. (MET GOAL)	
	Develop a stronger, more coherent public health agenda at and surrounding DOE sites. (MET GOAL)	



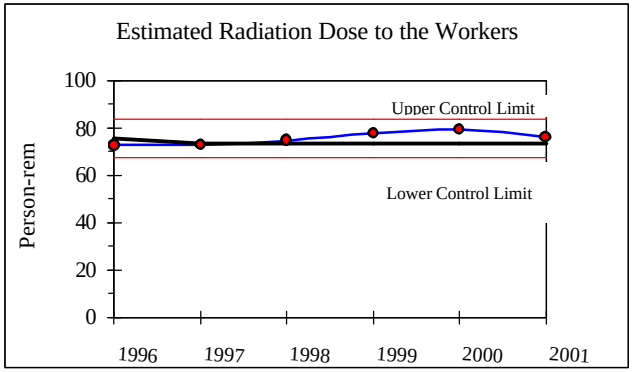
Recordable Case Rate measures work-related death, as well as injury or illness that results in loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment beyond first aid.



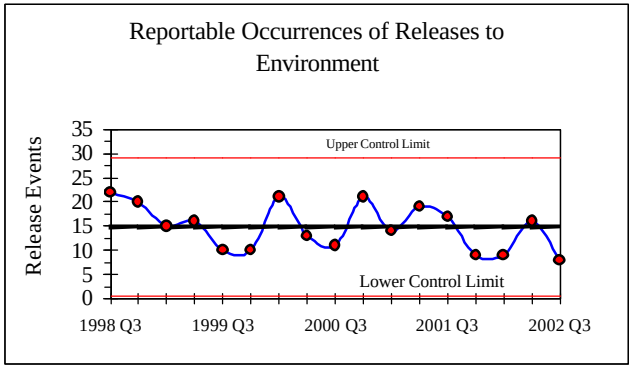
Occupational Safety Cost Index is a measure of the direct and indirect costs based on the Cost Index formula, due to safety-related injuries/illnesses.



Hypothetical Radiation Dose to the Public is an estimate of the collective radiation dose to the public within 50 miles of DOE facilities due to a irborne releases of radionuclides.



Worker radiation dose is calculated by dividing the collective Total Effective Dose Equivalent (TEDE) by the number of individuals with measurable dose.



Reportable Occurrences of Releases to the Environment include releases of radionuclides, hazardous substances, or regulated pollutants that must be reported to Federal, State, or local agencies.

Program Strategic Performance Goal

CM5-1 Develop policies and strategies to protect national security and other critical assets entrusted to the Department of Energy (DOE), deploy technological solutions to enhance security, protect Headquarters personnel and facilities, and provide other specialized security activities.

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
		Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of security. (FMFIA) (MIXED RESULTS)
		Improve Headquarters response capabilities for handling and resolving security situations by: (MET GOAL) • Increasing the total interior and exterior perimeter video coverage by at least 20 percent; (MET GOAL) • Increasing portable explosive detection capability by 50 percent; (MET GOAL) • Increasing the number of trained and armed Protective Force Officers by 15 percent. (MET GOAL) • Increasing officer retention by 10 percent through implementation of an innovative "officer retention/ recognition" program; (MET GOAL) • Developing and implementing a comprehensive performance testing plan that encompasses Protective Force emergency response responsibilities; (MET GOAL) • Providing chemical and biological response training to 100 percent of Protective Force personnel assigned to critical posts; and (MET GOAL) • Conducting transitional firearms training for 100 percent of armed personnel. (MET GOAL)
	Publish DOE Strategic Plan for Security (10 years) detailing counter measures to evolving security threat with improved protection capabilities. (Carried forward from FY 02.)	Publish DOE-wide Strategic Plan for Security. (MIXED RESULTS)
Revise Safeguards and Security (S&S) policy by September 30, 2004, which will focus on required outputs as opposed to the specific measures to be employed throughout the DOE complex.	Revise DOE Security Strategic Plan by September 30, 2003. That provides a framework for addressing emerging threats from an existing 10 year to a 25 year period.	Develop and publish facility security performance metrics. (MET GOAL)

Performance Indicators

- Effective, clear, and comprehensive security strategies and policies for DOE-wide application to protect national security and other critical assets entrusted to DOE.
- A secure work environment for Headquarters facilities in the national capital area.
- Innovative technological solutions resolving validated safeguards and security vulnerabilities to assist DOE facilities in deploying appropriate protection measures for critical assets as defined in the DOE Design Basis Threat.
- Specialized activities to protect Departmental facilities, nuclear weapons, special nuclear materials, classified information, and personnel.

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

Program Strategic Performance Goal (CM5-1: Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
	Issue revised DOE Order 470.1A on Safeguards and Security Program that will address the open recommendations in an IG report on Inspection of Selected Aspects of DOE's Classified Document Transmittal Process. (Carried forward from FY 01.)	
	Issue revised DOE Order 142.X on unclassified foreign national visits and assignments that will address the open recommendations in an IG report on DOE's Export License Process for Foreign Visits and Assignments. (Carried forward from FY 01.)	
	Finalize and publish an Annual Assessment of Policy Report that promulgates safeguards and security technological solutions to meet priority needs.	
	Issue revised Design Basis Threat that identifies a revised range of Departmental threats that sites will use in providing appropriate security countermeasures.	
Upgrade security training and education programs at the Non-proliferation and National Security Institute (NNSI) to meet challenges created by increased security threats and obtain college status for NNSI as a DOE University accredited with a 2-year degree program.	Complete biannual program reviews of Non-proliferation and National Security Institute (NNSI) to assure courses embrace ever-changing security requirements and develop a Project management Implementation Plan and facility plan with milestones to achieve college status with associate and baccalaureate degrees.	
Implement increased security protective measures for DOE facilities in the National Capital area including conducting 24 hours of mandatory training on use of force and 12 hours of mandatory tactical and CPR training for all armed security force members; and conducting a minimum of 15 emergency response training exercises per month at both Forrestal and Germantown facilities.	Implement increased security protective measures for DOE facilities in the National Capital Area including conducting 24 hours of mandatory training on use of force and 12 hours of mandatory tactical and CPR training for all armed security force members; conducting a minimum of 15 emergency response training exercises per month at both Forrestal and Germantown facilities; reinforcing vulnerable areas of Germantown and Forrestal perimeter with improved physical barriers; and installing badge readers at all facility access control points.	

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

Program Strategic Performance Goal (CM5-1: Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Enhance the Executive Protection Force which provides protection to the Secretary of Energy and other designated principals by providing 4 executive protective training classes consisting of 24 students each to other armed DOE personnel and non-DOE Federal employees regularly engaged in executive protection.	Enhance the Executive Protection Force which provides protection to the Secretary of Energy and other designated principals by: increasing staff, revising Office of Special Operations policies, procedures, and standards for executive protection; and designing a comprehensive Executive Protection training course to train all executive protection personnel employed by DOE.	
Conduct approximately 24,743 personnel security investigations and re-investigations for the Department of Energy.	Complete study to refocus DOE's Emergency Operations Center to a state-of-the-art response facility that maintains current information on security and other critical operational conditions for the Department.	
	Finalize development of a DOE-wide Continuity of Operations Plan and explore alternate back-up locations.	
	Validate data on Government-owned nuclear materials, including sealed sources, in the Nuclear Materials Management System at non-DOE facilities, to address Inspector General audit and emerging security issues.	
	Achieve 100 percent compliance with the centralized tracking of foreign nationals that visit DOE facilities by FY 2003.	
	Complete audit of 6,000,000 pages of material at the National Archives and Records Administration (NARA).	
Ninety percent of the Technology and System Development Program (TSDP) projects will meet or exceed project deliverable and cost schedules.	Demonstrate a positive return on investment of at least 90 percent for the Technology System Development Program (TSDP) projects scheduled for completion in FY 2003. The 90 percent return on investment is measured by an acceptable product and/or transfer of product to private industry for commercialization.	
Examine 5 million pages of National Archives and Records Administration documents and remove all classified documents containing nuclear weapon design and use information.	Examine 5 million pages of National Archives and Records Administration (NARA) documents and remove all classified documents containing nuclear weapon design and use information to prevent the compromise of classified or controlled information.	
	Conduct approximately 22,475 personnel security investigations	

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
There were no related targets.	There were no related targets.	There were no related targets.

Program Strategic Performance Goal (CM5-1: Continued)

Proposed FY 2004 Targets	Updated FY 2003 Targets	Related FY 2002 Results
Achieve 100 percent compliance with the centralized tracking of foreign nationals that visit DOE facilities by FY 2003.	Revise Safeguards and Security (S&S) policy by September 30, 2004, which will focus on required outputs as opposed to the specific measures to be employed throughout the DOE complex.	Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of security. (FMFIA) (MET GOAL)
Complete audit of 6,000,000 pages of material at the National Archives and Records Administration (NARA).	Upgrade security training and education programs at the Non-proliferation and National Security Institute (NNSI) to meet challenges created by increased security threats and obtain college status for NNSI as a DOE University accredited with a 2-year degree program.	Initiate the correction of DOE infrastructure vulnerabilities identified by the President's Commission on Critical Infrastructure Protection. (MET GOAL)
Demonstrate a positive return on investment of at least 90 percent for the Technology System Development Program (TSDP) projects scheduled for completion in FY 2003. The 90 percent return on investment is measured by an acceptable product and/or transfer of product to private industry for commercialization.	Implement increased security protective measures for DOE facilities in the National Capital area including conducting 24 hours of mandatory training on use of force and 12 hours of mandatory tactical and CPR training for all armed security force members; and conducting a minimum of 15 emergency response training exercises per month at both Forrestal and Germantown facilities.	Reduce by 15 actions the processing backlog of requests for classified documents submitted under the Freedom of Information Act and Executive Order 12958 mandatory review provisions.
Examine 5 million pages of National Archives and Records Administration (NARA) documents and remove all classified documents containing nuclear weapon design and use information to prevent the compromise of classified or controlled information.	Enhance the Executive Protection Force which provides protection to the Secretary of Energy and other designated principals by providing 4 executive protective training classes consisting of 24 students each to other armed DOE personnel and non-DOE Federal employees regularly engaged in executive protection.	
Conduct approximately 22,475 personnel security investigations and reinvestigations for the DOE.	Conduct approximately 24,743 personnel security investigations and re-investigations for the Department of Energy.	
	Ninety percent of the Technology and System Development Program (TSDP) projects will meet or exceed project deliverable and cost schedules.	
	Examine 5 million pages of National Archives and Records Administration documents and remove all classified documents containing nuclear weapon design and use information.	

Related FY 2001 Results	Related FY 2000 Results	Related FY 1999 Results
Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of security. (FMFIA) (MIXED RESULTS)		Accomplish the milestones of the FMFIA corrective action plan for the Departmental challenge of unclassified computer security. (MET GOAL)

GOAL 17: Site Management

DOE's real estate holdings (land) are reduced by at least 10 percent (excluding the Nevada Test Site and the Idaho National Engineering and Environmental Laboratory) from its holdings in FY 2000.

Program Description:

This is a crosscutting management goal. As such, resources and programs contributing to this goal exist primarily to achieve the programmatic Goals 1 through 12. Primary among the several DOE programs contributing to this goal are NNSA's Facilities and Infrastructure Recapitalization Program (FIRP) discussed under Goal 6 and Environmental Management programs discussed under Goal 9.

The Facilities and Infrastructure Recapitalization Program (FIRP) is a capital renewal and sustainability program designed to restore, rebuild and revitalize the physical infrastructure of the nuclear weapons complex. FIRP addresses an integrated, prioritized list of maintenance and infrastructure projects, which will significantly increase the operational efficiency and effectiveness of the NNSA sites. FIRP preferentially targets deferred maintenance and footprint reduction.

The overall purpose of the Environmental Management program, discussed under Goal 9, is the cleanup and closure of Cold-War era legacy sites.

Means and Strategies:

NNSA efforts include implementation of a planning process that results in the submission of Ten Year Comprehensive Site Plans that establish the foundation for the strategic planning of the facilities and infrastructure of the complex. EM has developed site-specific Performance Management Plans and Infrastructure Restoration Plans. To support cleanup and closure plans, DOE negotiates and signs environmental compliance and cleanup agreements with the U.S. Environmental Protection Agency (EPA) and / or the state regulatory agencies.

Collaboration Activities:

DOE is working with the local communities near sites, state agencies, and other Federal agencies, such as the U.S. Fish and Wildlife Service, to effect transfers of excess DOE real estate.

External Factors Affecting Performance:

There are no known obstacles to accomplishing this goal.

Planned Program Evaluation:

Evaluation of progress toward this crosscut management goal will be addressed in program evaluations conducted to evaluate the primary mission of DOE programs.

Program Strategic Performance Goal

Unique PSPGs and annual targets for this goal have not been established. Related PSPGs and annual targets are discussed under Goals 6 and 9. Note that the clean up of release sites and geographic site completions does not mean DOE will divest the land, rather property may be retained for ongoing DOE missions.

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Appendix A: Criteria for the Annual Performance Plan Performance Measures and Targets

The following criteria guide the development of annual performance measures & targets:

SPECIFIC	Performance measures should plainly and precisely state what will be accomplished.
QUANTIFIABLE	State in objective terms the level of achievement (measured with accuracy and certainty). It is possible to assign a numeric value on a scale to the result. Percentages without a quantified base are not acceptable. When we state we are "improving" something, we must then specify (in quantifiable terms) the baseline from which we are improving, and the level to be achieved.
COMPLETE	The description of the performance measure must provide a basis for evaluation and should stand alone without reference to last year's Plan or annual performance results.
SUPPORTING	State how the measure supports the performance goal or the Department-level strategic goal, and how the planned outcome will achieve the desired result.
ACHIEVABLE	The performance measure is a firm statement, in quantifiable terms, of what the responsible program manager is committing to accomplish with the resources provided within the program's budget. The expectation is that 100% of the goal/target will be accomplished with the requested resources. Office goals must be restricted to those that are under their control.
CONCISE	Descriptions of performance goals and measures should be short, direct, and to the point (not more than 40 words).
WRITTEN FOR EASE OF UNDERSTANDING	Performance measures should be written in plain language, requiring only newspaper-level knowledge of DOE and world events. Absolutely no acronyms should be used, and the use of jargon or technical terms must be assiduously avoided.
COMPREHENSIVE	The performance measures for an office must reasonably represent all of the resources with which it has been entrusted to support accomplishment of the Department's mission for the fiscal year. Planning/programming personnel in each DOE office must ensure that there is a documented link between the individual annual performance target and the Department-level strategic goal(s).
AUDITABLE	Each performance measure should be based on factual information, so that the DOE IG, OMB and the GAO can satisfactorily conduct program audits/reviews. Justification/empirical evidence must be available and can be provided to verify the stated results.
PROPORTIONAL	The size and scope of the program should dictate the number of performance measures.
PRECISE/ACCURATE	All readers using the data should arrive at the same conclusion on performance.
MEANINGFUL/RELEVANT	The output must contribute significantly to the Department-level strategic goals.

Appendix B: DOE Office Designations

DOE Office Designations	
CI	Congressional & Intergovernmental Affairs
CIO	Chief Information Officer
CN	Counterintelligence
EA	Energy Security and Assurance
ED	Economic Impact & Diversity
EE	Energy Efficiency & Renewable Energy
EH	Environment, Safety & Health
EIA	Energy Information Administration
EM	Environmental Management
FE	Fossil Energy
FERC	Federal Energy Regulatory Commission
GC	General Counsel
HG	Hearings and Appeals
IG	Inspector General
IN	Intelligence
ME	Management, Budget and Evaluation/Chief Financial Officer

DOE Office Designations	
NE	Nuclear Energy, Science & Technology
NA	National Nuclear Security Administration
NA (DP)	Defense Programs
NA (NN)	Defense Nuclear Nonproliferation
NA (NR)	Naval Reactors
NA (FO)	Facilities and Operation
NA (MA)	Management and Administration
OA	Independent Oversight and Performance Assurance
PA	Public Affairs
PI	Policy and International Affairs
PMAs	Power Marketing Administrations
RW	Civilian Radioactive Waste Management
S1	Secretary's Office
SC	Science
SO	Security
WT	Worker & Community Transition