DOE/CR-0080-9

DEPARTMENT OF ENERGY

ANNUAL PERFORMANCE PLAN for FY 2002

SECRETARY OF ENERGY
SPENCER ABRAHAM

Editor's Notes

This plan incorporates and identifies revisions resulting from the amended budget request for FY 2002.

DOE's Inspector General and the Power Marketing Administrations are included in this plan. However, the Federal Energy Regulatory Commission (FERC) has prepared separate GPRA documents. See their web page at: http://www.ferc.fed.us/oedcfo/oedcfo.htm .

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This document will be available on the World Wide Web as part of the Department's Strategic Management System found at: http://www.doe.gov/stratmgt .

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DEPARTMENT OF ENERGY

OVERVIEW

This is the Department of Energy's fifth Annual Performance Plan. It provides the basis for the Congress and the public to see the results the Department proposes to deliver for the requested FY 2002 budget. 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 plan includes four years of performance information. It has *"proposed"* performance goals for FY 2002, *"revised final"* performance goals for FY 2001, and related goals for FY 2000 and FY 1999. The plan is one of the three recurring documents required by the Results Act, namely the Strategic Plan, Annual Performance Plan, and the Annual Performance and Accountability Report. Together, they create a continuing cycle of planning, program execution, and reporting.

We have again organized these performance goals by the programs which fund the work, directly linking resources to results.

This year we have taken a significant step in improving the quality of our performance measures. We have established "general performance goals" which closely map to the long-term strategies in our Strategic Plan. These general performance goals give us a basis to separate long-term, "outcome"-oriented performance indicators from annual, "output"-oriented performance measures. We expect to refine this approach further in the future. As in the past, we appreciate the comments and constructive feedback we receive from Congress, the General Accounting Office (GAO), and OMB. We are committed to making this a useful tool in managing our work in delivering the products and services for the taxpayers.

The Mission of the Department of Energy is:

To foster a secure and reliable energy system that is environmentally and economically sustainable; to be a responsible steward of the Nation's nuclear weapons; to clean up our own facilities; and to lead in the physical sciences and advance the biological, environmental and computational sciences, and provide premiere instruments of science for the Nation's research enterprise.

To implement this mission, the resources requested for FY 2002 are: $ 19.2 Billion.

INTRODUCTION

Results for Resources

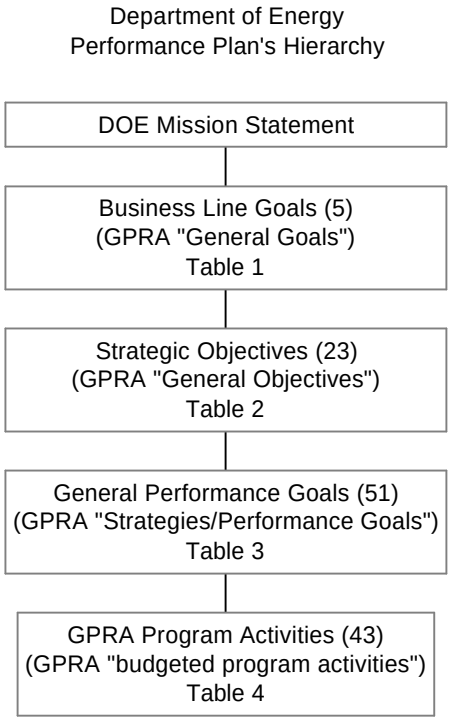
Our government is becoming more accountable to the taxpayers through implementation of the Government Performance and Results Act of 1993 (the "Results Act"or GPRA). This law requires agencies to develop long range strategic plans, annual performance plans, and annual performance reports. This document is the Department's fifth annual performance plan and has been prepared to meet the law's requirements: (1) establishing performance goals that include the level of performance to be achieved written in an objective, quantifiable, and measurable form; (2) briefly describing the resources required to meet those performance goals; (3) describing how performance will be measured and compared with the goals; and (4) describing how the Department will verify and validate the measured results. The President's Office of Management and Budget has issued guidance to agencies for preparing these plans but has provided flexibility in choosing the appropriate format.

Consistency with the Strategic Plan and Relationship to the Budget

The Department intends to maintain close relationships between the Strategic Plan, Annual Performance Plan, and the Budget. To ensure consistency with the Strategic Plan, this Annual Performance Plan begins with the mission from the Strategic Plan. The mission is accomplished through five *business lines.* Each business line has a business line goal which is supported by *strategic objectives.* These are in turn supported by *general performance goals.* General performance goals are implemented through *GPRA program activities.* The figure at right shows this relationship.

The GPRA program activities are aligned with the Department's FY 2002 Budget Request and contain annual performance measures and targets by fiscal year. This approach allows us to clearly link annual performance with annual budget resources and the strategic plan objectives. We believe this method of linkage allows a clear relationship among budget resources, performance goals, and the Strategic Plan.

Tables 1 through 4, located at the end of this introduction, list the business line goals, strategic objectives, general performance goals, and GPRA program activities for the Department of Energy. There is a clear hierarchy among these levels from the Strategic Plan's mission to the GPRA program activities.



As shown in the figure above, the mission is implemented through 5 business lines. Each business line is supported by a unique set of 3-6 strategic objectives. Each strategic objective is implemented through a unique set of 1-8 general performance goals. Work toward the 51 general performance goals is funded though 43 GPRA program activities. Note that one program activity may fund work toward multiple general performance goals.

This hierarchical relationship to the Strategic Plan is encoded in the reference numbering of each level. Business lines are coded with two letters: ER for Energy Resources, NS for National Nuclear Security, etc. The strategic objectives are numbered sequentially within each business line, i.e., ER1, ER2, etc. The general performance goals are numbered to indicate the business line, the strategic objective, and the sequential number of the general performance goal, e.g., ER1-1. The GPRA program activities are not numbered because they support multiple general

performance goals which can be supporting different strategic objectives in different business lines.

Organization of this Plan

To meet the GPRA requirements to identify performance goals for each program activity, the basic building blocks of this plan are the GPRA program activities. They are presented in sections by the business line they primarily support.

The GPRA program activities are logical groupings of budget line items which make up the Program and Financing (P&F) accounts in the President's budget. The logical groupings are formed by aggregating, dis-aggregating, or both as appropriate to link resources to a logical set of performance goals.

In the chapters that follow, we associated each GPRA program activity with the general performance goals supported by that activity. Then for each general performance goal we show the expected effort and annual progress toward achieving the general performance goal.

Also, in the chapters that follow, each GPRA program activity has performance measures in support of its general performance goal or goals. For FY 1999 and FY 2000, we have included the annual performance measures and an assessment as whether the program activity did in fact meet the annual performance goal for that year.

Note that the Department published a Strategic Plan in 1997. Then, consistent with our legislative mandate, updated the Strategic Plan in September 2000. Thus, the performance measures reported for FY 1999 and FY 2000 refer to the goals that were found in the previous plan.

Consultation

In preparing this performance plan, we are incorporating improvements based on the GAO and Congressional feedback on the FY 1999, FY 2000, and FY 2001 Annual Performance Plans. The general format of the plan is same as the FY 2001 plan, which was developed in consultation with Congressional Staff. We believe the addition of the general performance goals significantly improves the usefulness of this plan and helps our programs focus more on developing outcome oriented performance indicators. 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 annual performance plan is an inherently governmental function. As such, drafting of the plan was done only by Federal employees and no non-Federal parties made any contribution.

Improvements in the FY 2002 Plan

We are continuing to build on the improvements made last year in our FY 2001 annual performance plan. The key issue GAO noted in their review of our FY 2001 annual performance plan was the difficulty in tracking performance goals from year to year due to restructuring the format of our presentation. We see that as a one-time issue. Our FY 2002 performance measures are presented along side the FY 2001, FY 2000, and FY 1999 measures making the progress in each area clear and simple to see.

The key improvement in our FY 2002 plan is the introduction of general performance goals. We believe identifying these for each GPRA program activity will help establish long-term outcome indicators.

GAO also noted that our objectives and goals in the science area did not convey a coherent story. We believe we have made improvements in this area as a result of our strategic plan update process. DOE is working with other agencies such as the National Science Foundation to develop methods that will result in yet better measures for basic R&D.

This year we are strictly adhering to the criteria that we have established in previous years for developing the annual performance measures. We intend that these performance measures be presidential, specific, quantified, meaningful, challenging, concise, written for taxpayers, comprehensive, and auditable. By adhering to these criteria we have been able to reduce the number of performance measures from 241 in FY 2000, to 168 for FY 2001 and 147 for FY 2002. These criteria are consistent with OMB's criteria published in Circular A-11. These criteria are discussed in the Appendix and comments are invited.

We have continued to assess past performance in same terms that we used last year as agreed in meetings with Congressional staff, e.g. EXCEEDED GOAL, MET GOAL, NEARLY MET GOAL, and BELOW EXPECTATION. If performance was significantly above the goal, the term EXCEEDED GOAL is used. If performance was less than the goal, but not significantly less, we used the term NEARLY MET GOAL. These terms are used in place of simply "met

goal" or "did not meet goal" to support management's intent to have stretch goals and encourage performance.

Next Steps for this Plan

This Performance Plan accompanies the Department's FY 2002 performance based budget. Although not required under the Results Act, but allowed by OMB, the Department will develop a revised performance plan for FY 2002 based on the appropriated budget and submit it as part of the FY 2003 Annual Performance Plan. The revised performance plan for FY 2002 will contain the proposed performance goals in this Plan for those activities that are fully funded and will adjust those performance goals that are funded at a level different from the proposed budget.

The Department intends to report to the public semi-annually on the status of performance. Additionally, the Department will report to the Congress annually as required by the Results Act, Government Management Reform Act of 1994, 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 guidance, 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. Detailed discussions of V&V follow the description of performance goals and measures for each GPRA Program Activity in this Annual Performance Plan.

For the overall Agency, GPRA guidance is issued and conducted in the Spring when the staff begins to report on the mid-year status. DOE's end-of-year reporting process includes certifications by heads of organizational elements and reviews of records. 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 ensure that the information provided is accurate and complete. Internal management controls will continue to be applied to ensure the data quality, and heads of elements formally certify the accuracy of the data at the end of the year.

The Department has been using a computer system called SOLOMON to collect and present results and performance assessments for the Secretary's annual Performance Agreement with the President. It has been used since the first Performance Agreement in FY 1995. SOLOMON is a World-Wide-Web based system to allow remote data entry, monitoring, and oversight. Data entry is controlled through a password system that provides an auditable record of changes. Program offices and managers directly update results and performance assessments during the year and the end of year information is used for analysis and 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 that assets were safeguarded against the potential for waste, fraud, abuse, or mismanagement.

The Department's reporting of performance and financial information is audited by the Inspector General. For FY 1996, FY 1997, FY 1999 and FY 2000, we received unqualified audit opinions. For FY 1998 the IG's opinion was qualified due to weaknesses in the controls over the Department's environmental liabilities estimation process. 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 2002 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 this plan we have included performance measures for the planned FY 2001 and FY 2002 milestones, addressing these

Management Challenges. Performance goals from corrective action plans for Departmental challenges are identified in this plan with a "*(FMFIA)*" annotation on the page numbers noted with the challenge in the Appendix. In addition to those performance goals annotated with "*(FMFIA),*" programs often have other actions which are related to a management challenge but are not annotated because they are not part of the formal corrective action plan.

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 and objectives 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 2002 the Department is requesting $19.2 billion. This investment of 3 percent of the total discretionary Federal spending serves vital National interests of pushing the frontiers of science for National Security, Energy, and Environment. Our programs promote scientific progress; advance peace; ensure the availability of secure, clean, and efficient energy resources for the Nation's economic future; clean up the legacy of the Cold War; and strengthen safety and health programs across the DOE complex.

Our human resources include both Federal and contractor personnel. The requested funding includes the cost of 16,329 Full Time Equivalent (FTE) Federal personnel and about 110,000 contractor personnel. Although employment reductions since 1995 have netted $669 million in savings to taxpayers, the Department now faces significant skills gaps within the scientific and technical areas and an aging workforce. The Department has identified "Mission Critical Staffing" as a Departmental Challenge for the CFO, Security Operations, and the Office of Nonproliferation and National Security.

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, the continuing push toward a more seamless, connected science establishment will be aided by further advances in computation and communication. 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. The Department's 5 Business Line Goals and requested budget

Business Line Goals	FY 2001 Comparable Appropriations	FY 2002 Budget Request
Energy Resources (ER): Promote the development and deployment of energy systems and practices that will provide current and future generations with energy that is clean, reasonably-priced, and reliable. (EE, FE, NE, PMAs, EIA)	$ 2,477	$ 2,281
National Nuclear Security (NS): Enhance national security through the military application of nuclear technology, and reduce global danger from weapons of mass destruction. (CN, DP, IN, NN, NR, OA, SO, & WT)	$6,991	$7,172
Environmental Quality (EQ): Aggressively clean up the environmental legacy of nuclear weapons and civilian nuclear research and development programs at the Department's remaining sites, safely manage nuclear materials and spent nuclear fuel, and permanently dispose of the Nation's radioactive wastes. (EM, RW)	$ 6,583	$ 6,358
Science (SC): Advance the basic research and instruments of science that are the foundations for DOE's applied missions, a base for U.S. technology innovation, and a source of remarkable insights into our physical and biological world and the nature of matter and energy. (SC)	$3,164	$3,169
Corporate Management (CM): Demonstrate excellence in the Department's environment, safety and health practices and management systems to support our world class programs. (CI, CR, ED, EH, GC, HG, IA, IG, MA, PA, PO, S1) [The funds shown for Corporate Management include Departmental staff and support offices, with adjustment for revenues, and for FY 2001 only, funding of $203M for Cerro Grande Fire Activities.]	EH $ 161 Others $ 290	EH $ 140 Others $ 93
Total:	**$19,666**	**$19,213**

Table 2. The Department's 23 Strategic Objectives

Energy Resources Business Line (ER)

ER1 *Promote reliable, affordable, clean, and diverse domestic fuel supplies.*

ER2 *Promote reliable, affordable, and clean transformation of fuel supplies into electricity and related products.*

ER3 *Increase the efficiency and productivity of energy use, while limiting environmental impacts.*

ER4 *Inform public policy makers, energy industries, and the general public by providing reliable energy information.*

ER5 *Cooperate globally on international energy issues.*

National Nuclear Security Business Line (NS)

NS1 *Maintain and refurbish nuclear weapons in accordance with directed schedules to sustain confidence in their safety, security, and reliability, indefinitely, under the nuclear testing moratorium and arms reduction treaties.*

NS2 *Achieve a robust and vital scientific, engineering, and manufacturing capability that is needed for current and future certification of the nuclear weapons stockpile and the manufacture of nuclear weapon components under the nuclear testing moratorium .*

NS3 *Ensure the vitality and readiness of DOE's nuclear security enterprise.*

NS4 *Reduce the global danger from the proliferation of weapons of mass destruction.*

NS5 *Provide the U.S. Navy with safe, militarily effective nuclear propulsion plants, and ensure their continued safe and reliable operation.*

NS6 *Ensure that the Department's nuclear weapons, materials, facilities, and information assets are secure through effective safeguards and security policy, implementation, and oversight.*

Environmental Quality Business Line (EQ)

EQ1 *Safely and expeditiously clean up sites across the country that supported nuclear weapons research, production, and testing and conduct DOE-funded nuclear energy and basic science research in the United States. After completion of cleanup, continue stewardship activities to ensure that human health and the environment are protected.*

EQ2 *Complete the characterization of the Yucca Mountain site and, assuming it is determined suitable as a repository and the President and Congress approve, obtain requisite licenses, construct and, in FY 2010, begin acceptance of spent nuclear fuel and high-level radioactive wastes at the repository.*

EQ3 *Manage the material and facility legacies associated with the Department's uranium enrichment and civilian nuclear power development activities.*

Table 2. The Department's 23 Strategic Objectives (continued)

Science Business Line (SC)

SC1 *Provide the leadership, foundations, and breakthroughs in the physical sciences that will sustain advancements in our Nation's quest for clean, affordable and abundant energy.*

SC2 *Develop the scientific foundations to understand and protect our living planet from the adverse impacts of energy supply and use, support long-term environmental cleanup and management at DOE sites, and contribute core competencies to interagency research and national challenges in the biological and environmental sciences.*

SC3 *Explore matter and energy as elementary building blocks from atoms to life, expanding our knowledge of the most fundamental laws of nature spanning scales from the infinitesimally small to the infinitely large.*

SC4 *Provide the extraordinary tools, scientific workforce, and multidisciplinary research infrastructure that ensures success of DOE's science mission and supports our Nation's leadership in the physical, biological, environmental and computational sciences.*

Corporate Management (CM)

CM1 *Ensure the safety and health of the DOE work force and members of the public, and the protection of the environment in all Departmental activities.*

CM2 *Manage human resources and diversity initiatives and implement practices to improve the delivery of products and services.*

CM3 *Manage financial resources and physical assets to ensure public confidence.*

CM4 *Manage information technology systems and infrastructure to improve the Department's efficiency and effectiveness.*

CM5 *Use appropriate oversight systems to promote the efficient, effective, and economical operation of the Department of Energy.*

Table 3. The Department's 51 General Performance Goals

Energy Resources Business Line	
ER1-1	MAINTAINING AN EFFECTIVE STRATEGIC PETROLEUM RESERVE
ER1-2	ENHANCING DOMESTIC OIL AND GAS SUPPLIES
ER1-3	ASSURING ADEQUATE LONG TERM SUPPLIES OF CLEAN LIQUID TRANSPORTATION FUELS
ER1-4	COORDINATING FEDERAL GOVERNMENT RESPONSES TO ENERGY EMERGENCIES
ER2-1	ESTABLISHING A MORE OPEN, COMPETITIVE ELECTRIC SYSTEM
ER2-2	DEVELOPING LARGE, HIGH EFFICIENCY, ADVANCED POWER SYSTEMS
ER2-3	CONDUCTING R&D TO INCREASE THE USE OF RENEWABLE, DISTRIBUTED AND HYBRID ENERGY SYSTEMS
ER2-4	SUPPORTING RESEARCH TO IMPROVE EXISTING POWER PLANTS
ER2-5	RELIABLY DELIVERING FEDERAL HYDROELECTRIC POWER
ER2-6*	APPLYING DOE NUCLEAR EXPERTISE TO SUPPORT USE AND DEVELOPMENT OF MEDICAL ISOTOPES
ER2-7*	APPLYING DOE NUCLEAR EXPERTISE TO SUPPORT EXPLORATION OF THE PLANETS
ER2-8*	PRESERVING THE NATION'S SCIENCE AND ENGINEERING EDUCATIONAL INFRASTRUCTURE FOR ENERGY TECHNOLOGY
ER3-1	DESIGNING AND DELIVERING THE VEHICLES OF THE FUTURE
ER3-2	IMPROVING THE ENERGY EFFICIENCY OF BUILDINGS
ER3-3	IMPROVING EFFICIENCY OF ENERGY INTENSIVE INDUSTRIES
ER3-4*	ENSURING ENERGY-RELATED REGULATIONS AND POLICIES PRODUCE ECONOMIC, ENERGY AND ENVIRONMENTAL BENEFITS
ER 4-1	PROVIDING ENERGY POLICY ANALYSIS
ER4-2	EXPANDING PUBLIC ACCESS TO ENERGY INFORMATION
ER5-1	COOPERATING INTERNATIONALLY TO REDUCE ENERGY RELATED ENVIRONMENTAL IMPACTS
ER5-2	COOPERATING INTERNATIONALLY TO DEVELOP OPEN AND TRANSPARENT ENERGY MARKETS

* NE activities under objective ER2 and ER3 were regrouped since the Department's Strategic Plan was published and as such do not map one for one with the strategies in the strategic plan.

Table 3. The Department's 51 General Performance Goals (continued)

National Nuclear Security Business Line	
NS1-1	MAINTAINING STOCKPILE CONFIDENCE
NS2-1	CONDUCTING CAMPAIGNS
NS3-1	ENSURING ENTERPRISE VITALITY AND READINESS
NS3-2	MANAGING CONTRACTOR WORK FORCE RESTRUCTURING
NS4-1	CONDUCTING NONPROLIFERATION AND VERIFICATION R&D
NS4-2	IMPROVING INTERNATIONAL NUCLEAR SAFETY
NS4-3	SUPPORTING ARMS CONTROL AND NONPROLIFERATION POLICIES
NS4-4	STRENGTHENING RUSSIA'S MATERIALS PROTECTION, CONTROL, AND ACCOUNTING
NS4-5	ASSURING TRANSPARENCY IN THE CONVERSION OF RUSSIAN HIGHLY ENRICHED URANIUM
NS4-6	REDUCING INVENTORIES OF SURPLUS WEAPONS-USABLE FISSILE MATERIALS WORLDWIDE IN A SAFE, SECURE, TRANSPARENT AND IRREVERSIBLE MANNER
NS5-1	PROVIDING SPECIAL NUCLEAR POWER SYSTEMS FOR NATIONAL SECURITY
NS6-1	PROVIDING INTELLIGENCE AND COUNTERINTELLIGENCE
NS6-2	PROVIDING SECURITY AND EMERGENCY OPERATIONS
NS6-3	CONDUCTING INDEPENDENT OVERSIGHT AND PERFORMANCE ASSURANCE
Environmental Quality Business Line	
EQ1-1	COMPLETING GEOGRAPHIC SITE CLEANUP
EQ1-2	DISPOSING OF WASTE GENERATED DURING PAST AND CURRENT DOE ACTIVITIES
EQ1-3	STABILIZING NUCLEAR MATERIAL AND SPENT NUCLEAR FUEL
EQ1-4	DEVELOPING AND DEPLOYING INNOVATIVE CLEANUP TECHNOLOGIES
EQ2-1	CONTINUING WITH YUCCA MOUNTAIN SITE CHARACTERIZATION
EQ3-1	DISPOSING OF THE DEPARTMENT'S DEPLETED URANIUM HEXAFLORIDE AND EXCESS NATURAL URANIUM INVENTORIES
EQ3-2	MANAGING LEGACIES ASSOCIATED WITH CIVILIAN NUCLEAR POWER DEVELOPMENT ACTIVITIES

Table 3. The Department's 51 General Performance Goals (continued)

Science Business Line	
SC1-1	MAKING ADVANCES IN PHYSICAL SCIENCES IN QUEST FOR CLEAN, AFFORDABLE AND ABUNDANT ENERGY
SC2-1	DEVELOPING SCIENCE FOUNDATIONS TO PROTECT OUR LIVING PLANET
SC3-1	ADVANCING OUR UNDERSTANDING OF THE NATURE OF MATTER AND ENERGY
SC4-1	PROVIDING EXTRAORDINARY SCIENTIFIC TOOLS, WORKFORCE, AND INFRASTRUCTURE
Corporate Management	
CM1-1	INSTITUTING A SOUND ES&H CULTURE
CM2-1	MANAGING HUMAN RESOURCES
CM3-1	MANAGING FINANCIAL RESOURCES AND PHYSICAL ASSETS
CM3-2	ENSURING PUBLIC CONFIDENCE IN THE DEPARTMENT'S CONTRACTUAL TRANSACTIONS
CM4-1	PROMOTING EFFECTIVE MANAGEMENT OF INFORMATION TECHNOLOGY RESOURCES IN THE DEPARTMENT
CM5-1	PROMOTING THE EFFECTIVE, EFFICIENT, AND ECONOMICAL OPERATION OF THE DEPARTMENT OF ENERGY THROUGH AUDITS, INVESTIGATIONS, INSPECTIONS AND OTHER REVIEWS

Table 4. The Department's 43 GPRA Program Activities

GPRA Program Activity	FY 2002 Budget Request ($M)	page
Energy Resources Business Line:		
Office of Energy Efficiency and Renewable Energy (EE) Programs		
Renewable and Distributed Energy	279*	5
Building Technology, State and Community Program	369*	11
Energy Management	14	15
Industry Sector	88	19
Transportation Sector	242*	25
Program Direction**	40	-
Total for EE:	1,032	-
Office of Fossil Energy (FE) Programs		
Domestic Oil and Gas Supply RD&D	51	31
High Efficiency, No/Low Emissions Power Systems RD&D	385	35
Clean Fuels RD&D	7	39
FE R&D Crosscutting and Special Activities	80	43
Petroleum Reserves	222	45
Total for FE:	745	-
Office of Nuclear Energy, Science and Technology (NE) Programs		
Nuclear Energy Educational Infrastructure	12	51
Nuclear Energy Science Activities	47	55
Nuclear Energy R&D	27	61
Nuclear Energy Facilities and Infrastructure	112	67
Program Direction**	25	-
Total for NE:	223	-
Other Energy Resources Programs		
Energy Information Administration (EIA)	76	73
Power Marketing Administrations (PMAs)	205	79
Total for Energy Resources Business Line:	**2,281**	-

Table 4. The Department's 43 GPRA Program Activities (continued)

National Nuclear Security Business Line:		
National Nuclear Security Administration (NNSA) Programs		
Defense Programs (DP)	5,300	89
National Nuclear Nonproliferation (NN) Programs:		
Nonproliferation and Verification R&D	206	103
International Nuclear Safety and Cooperation	14	107
Arms Control and Nonproliferation	102	111
International Material Protection, Control and Accounting	139	115
Highly Enriched Uranium Transparency Implementation	14	119
Fissile Material Disposition	290	123
Program Direction**	51	-
Adjustments for prior year balances and safeguards and security**	(42)	-
Total for NN:	774	-
Naval Reactors (NR)	688	127
Office of the Administrator of NNSA**	15	-
Total for NNSA:	6,777	-
Other National Nuclear Security Programs		
Intelligence (IN)	41	131
Counterintelligence (CN)	46	131
Worker and Community Transition (WT)	24	135
Security and Emergency Operations (SO)	269	139
Independent Oversight & Performance Assurance (IA)	15	145
Total for Other National Nuclear Security Programs:	395	-
Total for National Nuclear Security Business Line:	**7,172**	-
Environmental Quality		
Environmental Management (EM)	5,913	152
Civilian Radioactive Waste Management (RW)	445	165
Total for Environmental Quality Business Line:	**6,358**	-

Table 4. The Department's 43 GPRA Program Activities (continued)

Science Business Line:		
Office of Science Programs (SC)		
High Energy Physics & Nuclear Physics	1,077*	177
Biological and Environmental Research	443	185
Basic Energy Sciences	1,005	193
Advanced Scientific Computing Research	163*	197
Fusion Energy Sciences	248*	201
Program Direction, energy research analysis, technical information management, safeguards and security, multiprogram energy laboratories-facility support, less security charge for reimbursable work**	232*	-
Total for Science Business Line:	**3,169**	-
Corporate Management:		
Environmental Safety and Health (EH)	**140**	209
Other (staff offices and revenues)		
Management and Administration (MA)	76	217
Chief Financial Officer (CFO)	37	221
Economic Impact and Diversity (ED)	7	225
Policy (PO)	7	231
International Affairs (IA)	9	235
Office of Inspector General (IG)	31	239
Office of the Secretary, Board of Contract Appeals, Congressional and Intergovernmental Affairs, General Counsel, Public Affairs, and Hearings and Appeals**	44	-
Subtotal for Other (Staff Offices)	211	-
Adjustments for revenues from FERC, Colorado River Basin, and Cost of Work for Others**	-118	-
Total for Other (staff offices and revenues)	**93**	-
Total for the Department of Energy:	**19,213**	-

Notes:

* This reflects the amended FY 2002 budget request.

** These are not treated as GPRA Program Activities, but are listed to complete the budget information. They are primarily program direction accounts that fund salaries of Federal employees who are responsible for delivering on the results of the GPRA Program Activities.

ENERGY RESOURCES

Energy is the vital force powering business, manufacturing, and movement of goods and services throughout the country. The United States spends over one-half trillion dollars annually for energy, and our economic well-being depends on reliable, affordable supplies of clean energy.

The Energy Resources goal establishes the overarching purpose of the Department's energy programs that reside in seven offices. Focus of three of the offices is on energy technology R&D: Offices of Fossil Energy (FE), Nuclear Energy (NE), and Energy Efficiency and Renewable Energy (EE); three are focused on energy policy analysis and information: Offices of Policy(PO), International Affairs(IA), and Energy Information Administration (EIA); and lastly, the Power Marketing Administrations (PMAs) are responsible for delivering Federal hydroelectric power to consumers.

ENERGY RESOURCES GOAL

Promote the development and deployment of energy systems and practices that will provide current and future generations with energy that is clean, reasonably-priced, and reliable.

The Energy Resources goal is supported by the following five strategic objectives:

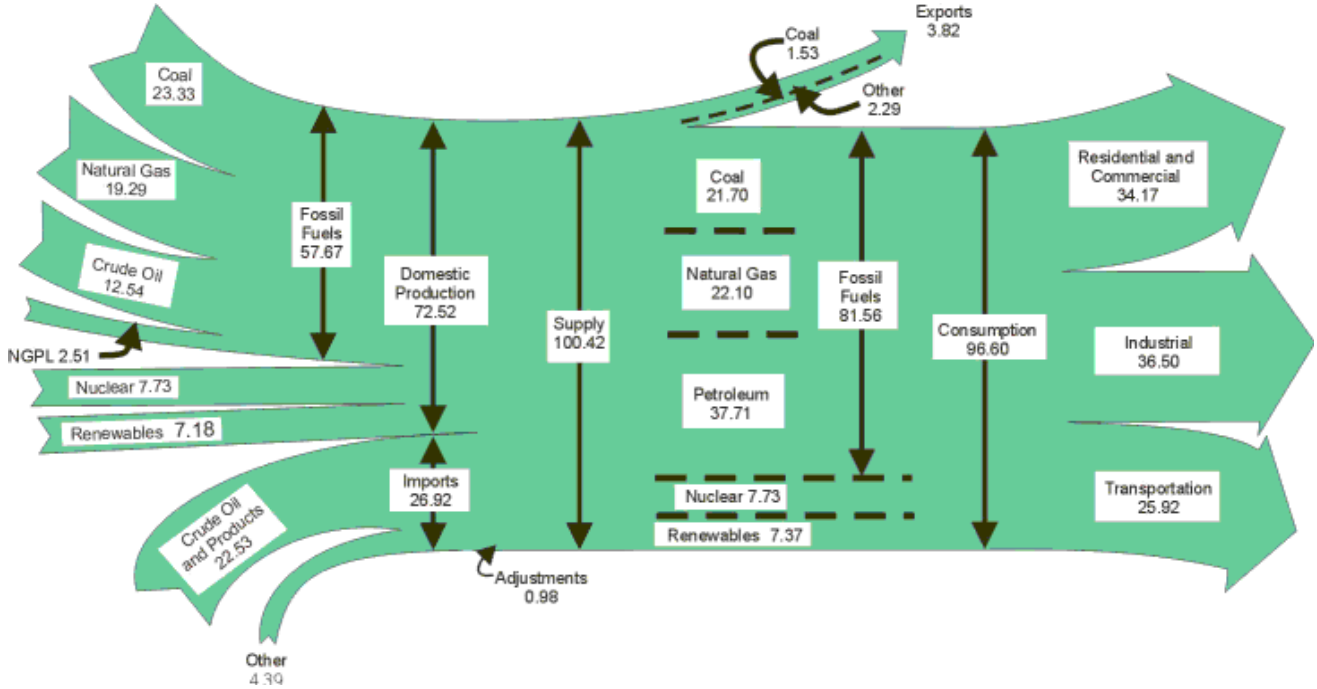
ER1: ***Promote reliable, affordable, clean, and diverse domestic fuel supplies.***

ER2: ***Promote reliable, affordable, and clean transformation of fuel supplies into electricity and related products.***

ER3: ***Increase the efficiency and productivity of energy use, while limiting environmental impacts.***

ER4: ***Inform public policy makers, energy industries, and the general public by providing reliable energy information.***

ER5: ***Cooperate globally on international energy issues.***



Energy Flow, 1999 (Quadrillion Btu)

Source: EIA Annual Energy Review 1999

The following table maps the Presidential Budget's Program and Financing (P&F) accounts and program activities to the Department of Energy's offices and GPRA Program Activities. The alignment includes aggregation, disaggregation, and consolidation of budget decision units. The chart that follows this table shows how the decision units support the Department's Strategic Plan objectives for this business line.

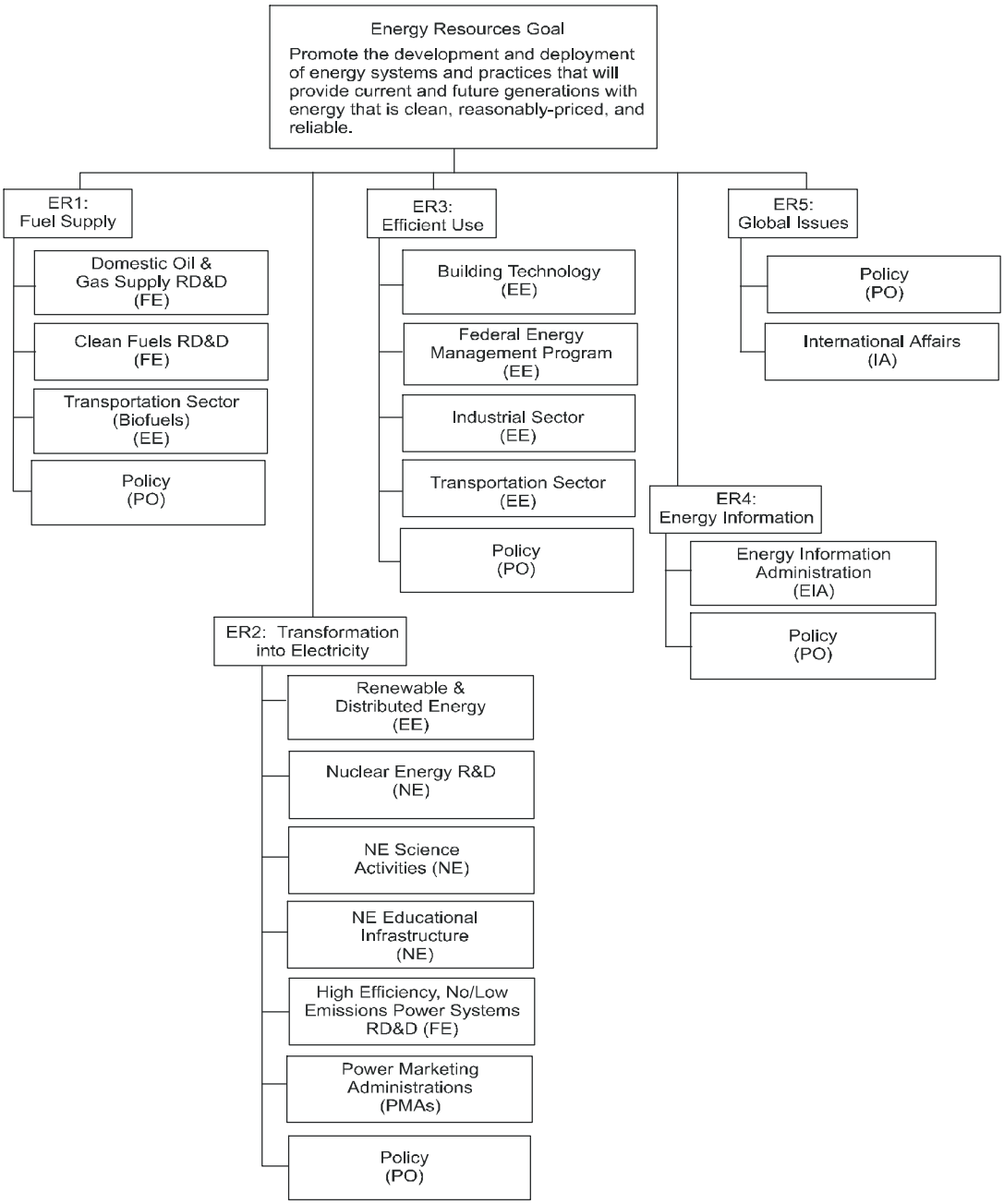
Presidential Budget Program and Financing (P&F) Accounts and Program Activities		**FY 2002 Budget Request($M)**	**DOE Office**	**GPRA Program Activity**
270 Energy Supply				
	Renewable Energy Resources	232*	EE	Renewable & Distributed Energy
		44*	EE	Transportation Sector (Biofuels)
		1	EE	Energy Management
	Subtotal Renewable Energy Resources	277*		
250 Energy Programs				
Energy Conservation				
	Building technology, State and community programs--non-grant	58*	EE	Building technology, State and community programs--non-grant
	Building technology, State and community programs--grant	311	EE	Building technology, State and community programs--grant
	Federal energy management program	13	EE	Energy Management
	Power Technologies Sector	47	EE	Renewable & Distributed Energy
	Industrial sector	88	EE	Industrial Sector
	Transportation sector	198*	EE	Transportation Sector
	Policy and management	40	EE	
	Subtotal for Energy Efficiency	1,032		
250 Energy Programs				
Fossil Energy Research and Development		449	FE	Domestic Oil & Gas Supply R&D
Clean Coal Technology		82	FE	High Efficiency, No/Low Emissions Power Systems
			FE	Clean Fuels RD&D
Great Plains Project Trust (Interest)		(8)	FE	FE R&D Crosscutting & Special Activities
Naval Petroleum and Oil Shale Reserves		17	FE	Petroleum Reserves
Strategic Petroleum Reserve		169	FE	
Elk Hills School Lands Fund		36	FE	
	Subtotal for Fossil Energy	745		
270 Energy Supply				
	Nuclear Energy Research & Development	12	NE	NE Educational Infrastructure
		47	NE	NE Science Activities
		27	NE	NE R&D
		112	NE	NE Facilities and Infrastructure
		25	NE	*(Program Direction)*
	Subtotal Nuclear Energy R&D	223	NE	
	Energy Information Administration	76	EIA	Energy Information Admin.
	Power Marketing Administrations**	205	PMA	Power Marketing Administrations
TOTAL - Energy Resources		**$2,281**		

Notes:

* This reflects the amended FY 2002 budget request.

** Revenues from Colorado River Basin (WAPA) are included under Corporate Management.

The Energy Resources goal is supported by five strategic objectives. Each strategic objective is being pursued through long-term strategies. In this annual performance plan these long term strategies have been stated in terms of General Performance Goals against which outcome performance indicators and annual (output) performance measures have been established. To make the linkage of these outcomes and outputs to the budget resources we have organized the plan by GPRA Program Activities which are aligned with the budget decision units through aggregation, disaggregation, and consolidation. The general performance goals and indicators and annual measures and targets are discussed with the GPRA Program Activities on the following pages. This approach allows us to clearly link annual performance with annual budget resources and the strategic plan objectives. The chart below gives an overview of the linkage of budget decision units and strategic objectives for Energy Resources.



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GPRA Program Activity: Renewable and Distributed Energy

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp.($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
270 Energy Supply					
Renewable Energy Resources		EE	268	325	232*
250 Energy Programs					
Power Technologies		EE	50	47	47
Total			318	372	279*

* This reflects the amended FY 2002 budget request.

Description of the Program:

The mission of the Renewable and Distributed Energy program is to lead the national effort to develop clean, competitive, reliable power technologies for the 21st Century and to accelerate their acceptance and use, nationally and internationally. Within the Office of Energy Efficiency and Renewable Energy (EE), the program supports research and development of clean, reliable renewable and distributed energy technologies and cutting edge power infrastructure technologies that will improve the performance and efficiency of electric power systems. The EE Office of Power Technologies (OPT) implements the program activities that support the following general performance goals.

General Performance Goals:

ER1-3 ASSURING ADEQUATE LONG TERM SUPPLIES OF CLEAN LIQUID TRANSPORTATION FUELS

Develop technologies to produce ultra-clean fuels such as hydrogen from natural gas, oil, coal, and renewable sources such as biomass. Promote the use of alternative fuel vehicles in selected markets and work with fuel providers and individual communities to help promote the development of refueling infrastructure and provide incentives for the use of alternative fuel. Promote the use of non-petroleum and renewable replacement fuels, such as ethanol, as blends in gasoline and diesel fuel. Promote the use of non-petroleum and renewable replacement fuels, such as hydrogen and biodiesel for electric generation.. Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows. In addition, EE's Office of Power Technologies has initiated a feasibility study and conceptual design of a gasifier based cofiring process in FY 2001 and will initiate testing of as many as four Small Modular BioPower Systems, with applications domestically and internationally in FY 2002.

ER2-2 DEVELOPING LARGE, HIGH EFFICIENCY, ADVANCED POWER SYSTEMS

Enhance the economics and environmental performance of electricity generation by expanding the use of multi-product facilities that can also produce heat, clean fuels, and/or chemical products. Pursue evolutionary improvements in existing CO_2 capture systems and explore revolutionary new greenhouse gas capture and sequestration concepts with a view toward significant cost reductions. Develop innovative enabling technologies such as high temperature superconductors to improve efficiency and performance. Develop advanced fossil- and nuclear-based power generation systems that can meet future environmental goals at reasonable cost. EE supports this goal in the areas of advanced turbine systems and development of high temperature superconducting electrical transmission cable development. Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

ER2-3 CONDUCTING R&D TO INCREASE THE USE OF RENEWABLE, DISTRIBUTED AND HYBRID ENERGY SYSTEMS

Improve the performance and expand the use of non-hydroelectric renewable energy generating capacity while maintaining the hydroelectric option in the United States. Develop technologies to increase the amount of the Nation's

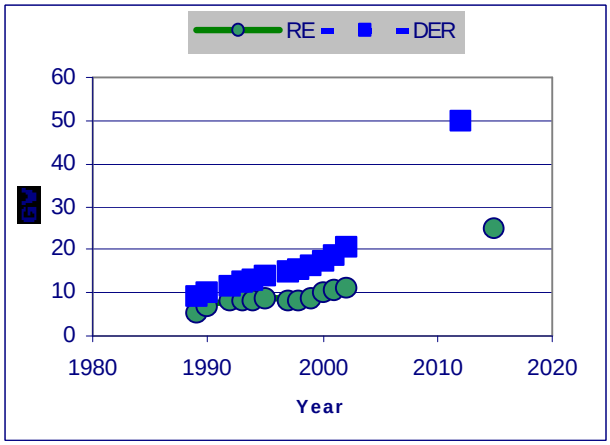
distributed power (i.e., located at the point of use). Develop hybrid applications such as combined heat and power systems and power parks. This GPRA activity provides the primary funding for this goal. EE has lead responsibility for this goal. Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

ER5-1 COOPERATING INTERNATIONALLY TO REDUCE ENERGY RELATED ENVIRONMENTAL IMPACTS

EE supports this goal in the area of international renewable energy and joint implementation and is facilitating more comprehensive information exchange from developed to developing countries on renewable energy and energy efficiency technologies.

ER5-2 COOPERATING INTERNATIONALLY TO DEVELOP OPEN AND TRANSPARENT ENERGY MARKETS

EE supports this goal through activities such as leading the Committee on Energy Efficiency, Commerce and Trade (COEECT).



Performance Indicator: Megawatts of non-hydroelectric renewable generating capacity

The Department's research, development and deployment efforts (past as well as current) will help contribute to[1] nearly 25,000 megawatts of non-hydroelectric renewable[2] generating capacity by 2015 and to 50,000 megawatts (20% of new capacity additions between 2000 and 2012) of distributed energy capacity (located at the point of use and including distributed renewables such as PV and biomass) by 2012. As shown in the figure, in 2002 non-hydro renewable capacity is projected to be nearly 11,000 megawatts and distributed energy capacity is projected to be nearly 20,000 megawatts. This growth is from a 1997 baseline of 8,300 MW and 14,700 MW respectively.

Notes:

1. Other factors other than the OPT program such as production tax credits for renewables, state renewable portfolio standards, international (especially European) programs also contribute to this goal.

2. This also excludes electricity generated with pulp & paper industry by-products.

The following facing pages show four years of performance measures for Renewable and Distributed Energy Program.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Support the Million Solar Roofs Initiative by installing 15,000 energy systems. (ER2-3)* [2] (EXCEEDED GOAL)	• *Facilitate the installation of 20,000 solar energy systems in support of the Million Solar Roofs Initiative, bringing the total number of installed systems to 70,000. (ER2-3)* (EXCEEDED GOAL)
• *Develop codes, standards and safety specifications for residential PV roof systems. (ER2-3)* (NEARLY MET GOAL)	• *Develop a 13 percent efficient stable prototype thin-film photo-voltaic module. (ER2-3)* (NEARLY MET GOAL)
• *Accumulate 750 hours of reliable operation for a distributed concentrating solar power system.(ER2-3)* (EXCEEDED GOAL)	• *Demonstrate fully autonomous operation of a 10 kW dish engine system for off-grid applications. (ER2-3)* (MET GOAL)
	• *Complete two designs of advanced air-cooled condensers for geothermal applications. (ER2-3)* (NEARLY MET GOAL)
• *Complete design of power plant modifications for co-firing of biomass with coal. (ER2-3)* (MET GOAL) • *Develop an industry-led vision and roadmap for an integrated bioenergy industry to advance the development of biomass derived energy and its use in domestic and global markets. (ER2-3)* (NEARLY MET GOAL)	• *Complete three projects which will be co-firing with biomass on a regular basis. (ER2-3)* (MET GOAL) • *Establish an Interagency Council and an Advisory Committee on biobased products and bioenergy. By April 30, 2000 develop a Strategic Plan for the development and use of biobased products and bioenergy as required by Executive Order 13134. (ER2-3)* (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. (ER2-3)* (MET GOAL)	• *Install and begin testing of two proof-of-concept turbines under 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. (ER2-3)* (MET GOAL) [First industrial high temperature superconducting electrical transmission cables were installed at Southwire Plant in Carrollton, Georgia and testing for system reliability was begun.]
• *Initiate the 8,000 hour test of the gas turbine engine for the Advanced Turbine System for use in industrial cogeneration. (ER2-9)* (MET GOAL)	• *Demonstrate two advanced industrial turbine system engines at end-user sites.(ER2-9)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ER2-3 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target[1] (Revised Final)	FY 2002 Proposed Target
• *Facilitate the installation of 20,000 solar energy systems, bringing the total number of installed systems to ~~90, 000~~ 125,000. (ER2-3)*	
• *Develop a 14 percent efficient stable prototype thin-film photovoltaic module. (ER2-3)*	• *Reduce manufacturing cost of PV modules to $2.25 per Watt (equivalent to $0.23 per kWh price of electricity from an installed solar system) (ER2-3)*
• *Evaluate potential for a small (1-10 kW) dish based systems to compete in green distributed markets before 2005. (ER2-3)*	
• *Select industrial partners to build two cost-shared geothermal power plants using Enhanced Geothermal System (EGS) technology. (ER2-3)*	• *Identify and validate two new geothermal reservoirs with electric power production potential.[2] (ER2-3)*
• *Conduct competitive solicitation and select at least one partner for innovative biofuels production technologies and make awards to qualified research organizations. (ER1-3)*	
• *Move advanced wind hybrid control system technology developed jointly with USDA Agricultural Research Center to commercial availability. (ER2-3)*	• *Complete designs for full scale prototypes of Next Generation Wind Turbines targeted at 2004 cost goal of 3 cents per kWh.[2] (ER2-3)*
• *Produce 20 cubic meters per hour of hydrogen via steam reforming of biomass pyrolysis oil in a process development unit. ((ER1-3)*	• *Construct process development unit of ceramic membrane system for membrane system tests for hydrogen production.[2] (ER1-3)*
• *Document 6,000 hours (100% load) operation of the first successful high-temperature superconducting power delivery system to power an industrial use. (ER2-2)*	
• *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. (ER2-2)*	• *Complete installation, begin operations, and conduct testing of first-ever in service superconducting electricity transmission cable in Detroit, Michigan; document operational costs and reliability.[2] (ER2-2)*
• *Complete 5,000 hour durability, performance and emissions testing of the Mercury 50 advanced turbine System engine. (ER2-2)* [This measure was proposed under Industry Sector]	• *Demonstrate microturbine/chiller package at a University site. (ER2-3)*

Notes:

1. For the FY 2001 revised set of measures, two measures were revised and two added to reflect new priorities.
2. Measure is consistent with the FY 2002 amended budget request.

Means and Strategies:

The DOE's programs contribute to increasing non-hydroelectric renewable and distributed energy generating capacity by reducing the cost of energy (COE) for photovoltaic, wind, biomass, geothermal concentrating solar power, engine, turbine, microturbine and fuel cell technologies. Reduced COEs for renewables is achieved by increasing photovoltaic cell efficiency and increasing U.S. photovoltaic manufacturing capacity; improving wind turbine designs and validating advanced wind turbine performance; increasing the reliability of distributed concentrating solar power systems; increasing the availability and payback period of biomass cofiring systems; reducing the cost of biomass gasification systems; and decreasing the drilling costs of geothermal systems. Reduced COEs and lower emissions for fossil based distributed technologies is achieved by increasing the efficiency of engine, turbine, microturbine and fuel cell technologies, improving fuel processing and power conditioning designs and validating performance; and increasing the reliability of distributed systems.

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.

Collaboration Activities:

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

External Factors Affecting Performance:

Program funding, the state of the economy and the cost of competing technologies will affect the installation of renewable and distributed energy systems. State and international efforts in renewable and distributed technologies also affect the market. Continuation of federal tax incentives for renewables also will increase performance.

Validation and Verification:

Data Sources:	The National Renewable Energy Laboratory's Renewable Energy Plant Information System (REPIS), the Energy Information Administration's Annual Energy Review, Renewable Energy Annual and Annual Energy Outlook, Compass Power Systems Research.
Baselines:	The baseline for non-hydro, non-pulp and paper renewable electricity is 8.3 gigawatts (1997). The baseline for distributed energy resources is 14.7 gigawatts(1997).
Frequency:	Annual.
Data Storage:	The Energy Information Administration and other data sources stores the data on their computers.
Verification:	A trade association working group reviews REPIS renewable and DER data. The EIA uses and verifies the REPIS database.

Planned Program Evaluation:

As part of its response to the FY 1999 National Academy of Sciences' National Research Council peer review of the Solar and Renewable Energy Program, the Office of Power Technology (OPT) has initiated both an internal and an external R&D portfolio review. The internal review relies upon the extensive data available as part of the new EERE Strategic Management Systems. In addition, each technology program holds program 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. OPT has 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 the portfolio analysis.

GPRA Program Activity: Building Technology, State and Community Programs

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp.($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
250 Energy Programs					
Building Technology, State and Community Programs--non-grant	BTS–non-grant	EE	99	104	58*
Building Technology, State and Community Programs--grant	BTS–grant	EE	169	191	311
Total			268	295	369*

* This reflects the amended FY 2002 budget request.

Description of the Program:

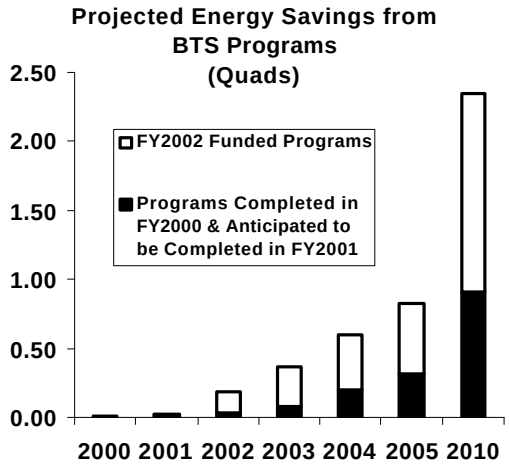
In partnership with industry and government, the Office of Building Technology, State and Community Programs (BTS) develops, promotes, and integrates energy technologies and practices to make buildings more efficient and affordable and communities more livable. BTS implements the program activities that support the following general performance goal.

General Performance Goal:

ER3-2 IMPROVING THE ENERGY EFFICIENCY OF BUILDINGS
Develop products and strategies to increase the efficiency of new and existing residential and commercial buildings. Towards this goal the program provides grants to States, District of Columbia, and the territories to conduct state and local energy programs; and assists communities and businesses to incorporate high performance energy-efficient technologies and practices. The tables that follow give the specific annual measures and targets for FY 1999 - FY 2002.

Performance Indicator: Energy Savings from BTS Programs

The longer-term BTS goal is to reduce annual energy consumption by 1 quadrillion btu by the year 2010, relative to what would have otherwise been consumed. This goal is based on successful completion of a variety of program strategies beginning in FY 2000. The expected energy savings in 2002 from projects funded in FY 2002 is 74 trillion btu which is the amount required to power almost 415,000 households at 1997's rate of usage. The Energy savings will occur in residential buildings, commercial buildings and equipment.



Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Weatherize 67,845 homes, bringing the total number of homes weatherized to 4.7 million. (ER3-3)*[2] (EXCEEDED GOAL)	• *Weatherize 68,000 homes, bringing the total number of homes weatherized to 4.8 million. (ER3-3)* (EXCEEDED 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. (ER3-3)* (EXCEEDED GOAL)	• *Recruit 5 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. (ER3-3)* (EXCEEDED GOAL)
• *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 FY2000, and transfer research recommendations to the Partnership for Advancing Technology in Housing (PATH). (ER3-3*) (EXCEEDED 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 Partnership for Advanced Technology in Housing (PATH). (ER3-3)* (NEARLY MET GOAL)
	• *Issue final rules regarding energy efficiency standards for flourescent lamp ballasts and water heaters and issue proposed rules regarding energy efficiency standards for clothes washers and central air conditioners. (ER3-3)* (NEARLY MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ER3-3 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Weatherize 75,350 ~~74,800~~ homes, bringing the total number of homes weatherized to 4.8 million. (ER3-2)*	• *Weatherize nearly 123,000 homes, bringing the total number of homes weatherized to nearly 5 million. (ER3-2)*
• *Recruit ~~500~~ 400 new ENERGY STAR partners, bringing the total number of stores marketing ENERGY STAR appliances up to 6,500. (ER3-2)*	
• *With Building America Partners, complete 3,000 energy-efficient, environmentally-sound high performance homes. (ER3-2)*	• *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. (ER3-2)*
	• *Establish a High Performance Buildings Roadmap implementation framework leading to the goal of 30% more energy efficient new commercial construction compared to 1996 standard practice. (ER3-2)*
• *Publish Advance Notice Of Proposed Rulemaking (ANOPR) concerning standards for commercial HVAC and water heaters, and distribution transformers. (ER3-2)*	• *Publish proposed rules regarding energy conservation standards for electric distribution transformers, commercial air-source central air conditioners and heat pumps, and packaged terminal air conditioners and heat pumps, which promise high levels of energy savings. (ER3-2)*

Note: For the FY 2001 revised set of measures, one measure was deleted because it was an activity and a new one (in shaded text) was added.

Means and Strategies:

Savings in residential buildings will be realized through research and development focusing on integrating design and equipment; residential building codes; weatherization assistance; contributions to the Partnership for Advancing Technology in Housing (PATH); and community energy programs. Savings in commercial buildings will be realized through research and development targeted towards design, operation, and maintenance of energy-efficient commercial buildings; commercial building codes; state energy grants; and all community energy programs. Equipment savings will be realized through research on building materials (e.g., roofs, walls, windows) and equipment, lighting, appliances, the development and implementation of appliance and equipment standards; and promotion of Energy Star buildings.

Collaboration Activities:

BTS collaborates with the Environmental Protection Agency (EPA) and Department of Housing and Urban Development (HUD), buildings industries, state and local governments and organizations and the National Laboratories in efforts to promote the use of efficiency technologies and practices, in part through the greater involvement of the buildings community in research, development and deployment activities.

External Factors Affecting Performance:

Numerous external factors may impact achievement of BTS' goals, including changes in the state of the economy, energy prices, consumer choice, regional disparities, and overall structural change in the buildings market. The energy savings goal assumes a robust construction market to generate the demand for new, energy efficient housing and commercial space, as well as demand for remodeling and commercial retrofits to replace aging and relatively inefficient equipment.

Characteristics of new construction that would tend to increase energy consumption in residential buildings would be larger homes, more construction in temperate climates, and an increase in tele-commuting. Increased electrification (more computers, printers, fax machines) and shifts in the relative mix of commercial buildings (e.g., hospitals versus office buildings) can contribute to a rise in energy use and intensity in the commercial sector.

Validation and Verification:

Data Sources:	EIA Annual Energy Review (AER); Commercial Building Energy Consumption Survey (CBECS); Residential Energy Consumption Survey (RECS); and Annual Energy Outlook (AEO). US DOC Current Industrial Reports (CIR). Various trade publications. Information collected directly from BTS performer or partner.
Baselines:	Energy savings are based on market penetration of technologies after the year 2000. Savings are relative to what energy consumption would have been in the absence of this additional market penetration.
Frequency:	Complete revalidation of assumptions and results can only take place every 3-4 years due to the reporting cycle of two critical publications CBECS and RECS. However, updates of most of the baseline forecast and BTS program outputs will be undertaken annually.
Data Storage:	EIA and DOC data sources are publicly available. Trade publications are available on a subscription basis. BTS program output information is contained in various reports and memoranda.
Verification:	Calculations are based on assumptions of future market status, equipment or technology performance, and market penetration rates. These assumptions can be verified against actual performance through technical reports, market surveys, and product shipments.

Planned Program Evaluation:
Each year, all programs will be evaluated as to progress towards stated goals and objectives, in terms of milestones accomplished. More in-depth evaluations will be performed on selected programs on a rotating basis. These analyses will gauge actual performance of technology or practice in the field and the extent of energy savings based on this performance and rate of adoption.

GPRA Program Activity: Energy Management

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
250 Energy Programs					
Federal Energy Management Program	Federal Energy Management	EE	24	26	13
Renewable Energy Resources	Departmental Energy Management	EE	-	2	1
Total			24	28	14

Description of the Program:

The mission of the Federal Energy Management Program (FEMP) is to reduce the cost of Federal government by advancing energy efficiency and water conservation, promoting the use of renewable energy and managing utility costs in Federal Facilities and operations, including those of the Department of Energy. Through alternative financing vehicles, technical assistance, and an outreach campaign, FEMP helps Federal customers address their energy management needs. FEMP aids in the design and construction of energy efficient buildings, effective operation and maintenance of existing facilities, major retrofits, purchase of energy efficient products, and utility and load management. FEMP leverages both Federal and private resources to provide technical and financial assistance to Federal agencies.

General Performance Goals:

ER2-3 CONDUCTING R&D TO INCREASE THE USE OF RENEWABLE, DISTRIBUTED AND HYBRID ENERGY SYSTEMS

Improve the performance and expand the use of non-hydroelectric renewable energy generating capacity in the United States. Develop technologies to increase the amount of the Nation's distributed power (i.e., electric generating systems connected to the distribution portion of the grid).

ER3-2 IMPROVING THE ENERGY EFFICIENCY OF BUILDINGS

Develop products and strategies to increase the efficiency of new and existing residential and commercial buildings.

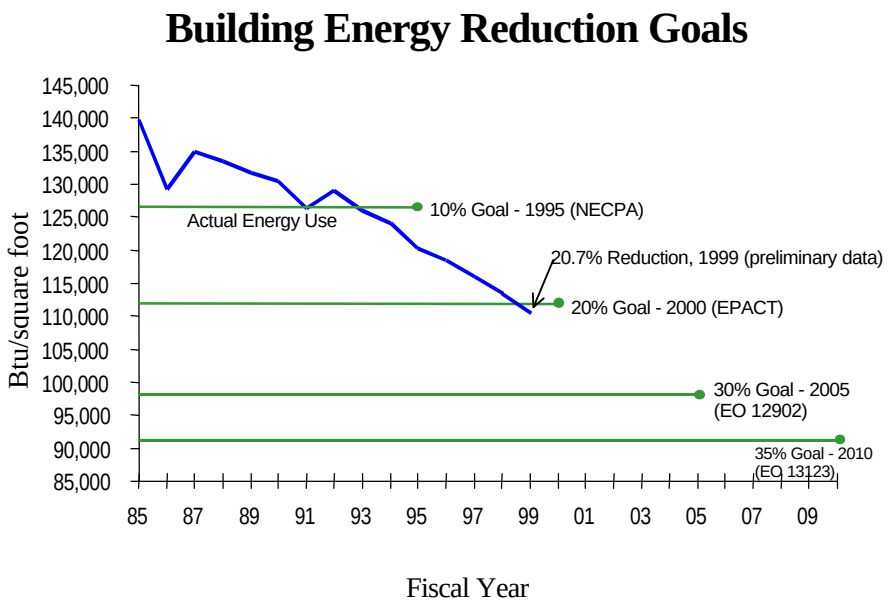
Performance Indicator: **Energy Efficiency in Federal Buildings**

Discussion: The Federal government has established the goal of increasing energy efficiency in Federal buildings by 20% by 2000, by 30% by 2005, and by 35% by 2010, relative to 1985. The Federal government has achieved its 2000 goal one year early by improving energy efficiency from 1985 to 1999 by 20.7 %. The goal for 2001 is to achieve a 22% improvement in energy efficiency relative to 1985.

The Federal government also has goals for efficiency improvement in Federal industrial and laboratory facilities of 20% in 2005, and 25% by 2010 compared to 1990 levels.

The Federal Government also has the goal of obtaining 2.5 percent of its facilities' electricity needs from renewable energy sources by 2005.

Executive Order 13123 established a goal of reducing greenhouse gas emissions attributable to Federal buildings energy use by 30% by 2010 from a 1990 baseline, through cost-effective energy efficiency improvement.



Means and Strategies:

FEMP will achieve the above goals through three strategies: Project Financing, which focuses on developing, and helping agencies to implement alternative methods of financing projects; Technical Guidance and Assistance, which aims to transfer to Federal agencies the knowledge and expertise required to make sound efficiency and renewable energy technology investment choices; and outreach and Interagency coordination which establishes and promotes the existence of a Federal energy management, policy and regulatory infrastructure necessary for consistency.

Collaboration Activities:

FEMP collaborates with states, local governments, utilities, energy service companies (ESCOs), associations, and other private sector organizations. FEMP collaborates with other agencies on specific efficiency and renewable energy projects as an integral part of program delivery strategy. FEMP also collaborates with EPA on energy efficient procurement through coordination with the DOE-EPA Energy Star program.

External Factors Affecting Performance:

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; inefficient growth can adversely affect goal achievement and environmental performance.

Validation and Verification:

Data Sources:	Annual reports from agencies on energy use, cost, gross square footage, and exempt facilities. Annual reports are supplemented by FEMP's tracking & reporting.
Baselines:	Federal energy management goals are measured from 1985 and 1990 levels. Goals are expressed in BTU per gross square foot, and are not normalized for other factors.
Frequency:	Annual
Data Storage:	FEMP maintains a database of reported information. Agencies maintain their own, more detailed data.
Verification:	No third party verification. Reporting anomalies are identified and resolved during annual reporting cycle.

Planned Program Evaluation:

Although no formal program evaluations are planned, FEMP has built in performance feedback into its program execution. FEMP conducts customer surveys for all program elements. Regular meetings are held with agencies, utilities and ESCOs 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.

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GPRA Program Activity: Industry Sector

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
250 Energy Programs					
Industry Sector	-	EE	137	149	88

Description of the Program:

The mission of the Office of Industrial Technologies (OIT) is to improve the energy efficiency, environmental performance, and productivity of energy-intensive industries by rapidly developing and delivering advanced science and technology options which will: 1) lower raw material and depletable energy use per unit output; 2) improve labor and capital productivity; and 3) reduce the generation of wastes and pollutants. OIT implements the program activities that support the following general performance goals.

General Performance Goal:

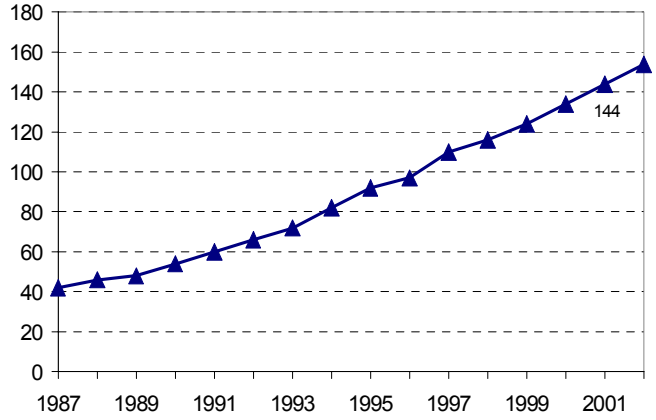
ER3-3 IMPROVING EFFICIENCY OF ENERGY INTENSIVE INDUSTRIES
Develop technologies and methods that can significantly improve the efficiency of the Nation's energy intensive industries and reduce environmental emissions. Specific measures and targets for FY 1999-FY 2002 are listed in the table that follows.

Performance Indicators:

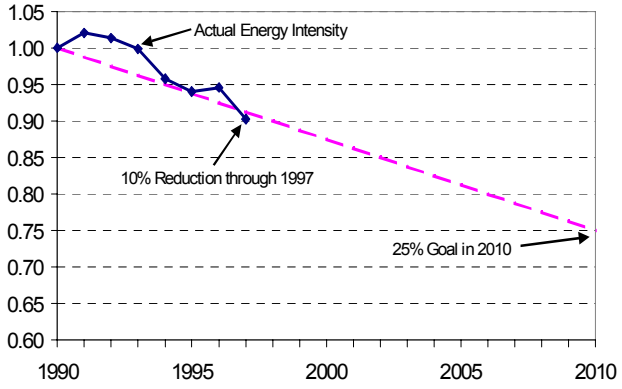
- **Number of Technologies Commercialized**
- **Industrial Energy Intensity**
- **Energy Savings from OIT activities**

Discussion: The Department's longer-term goal is to reduce industrial energy intensity (energy consumption per dollar of output) to 25% below its 1990 level. By 1997 industrial energy intensity was 10% below 1990 levels, which is on track for the 14% target for 2001. Annual energy savings from OIT-developed technologies is estimated to be 190 TBtu in 2002, for a cumulative savings of 1600 TBtu. Annual energy savings from the Industrial Assessment Center (IAC) and best practices programs will be 10.3 TBtu in 2002, for a cumulative savings for the overall program of over $8 billion plus additional, more substantial (two to four times) productivity benefits. Ten OIT technologies will be commercialized in 2001, bringing the total number of commercialized technologies to 144.

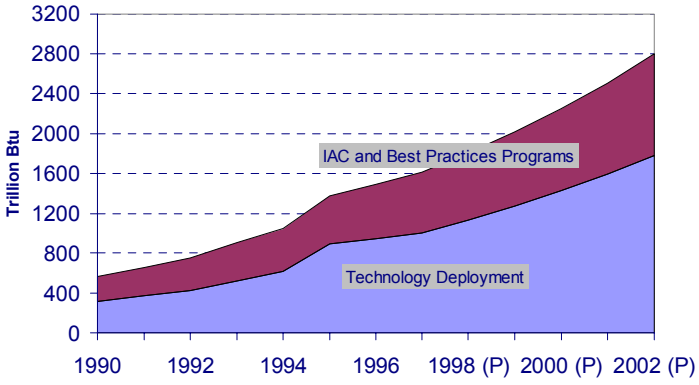
Cumulative Number of Technologies Commercialized



Industrial Energy Intensity
(1990 = 1.00)



Cumulative Energy Savings from
Technology Access and Deployment Programs



The following facing pages show four years of performance measures for Industry Sector.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Complete roadmaps for six of the major energy intensive industries to achieve each industry vision and start implementing the resulting R&D to achieve up to 25 percent reduction of energy consumption by 2010. (ER3-2)*[2] (MET GOAL)	• *Initiate 12 solicitations with industry in support of the roadmaps developed in the Industries of the Future program. (ER3-2)* (EXCEEDED GOAL)
• *Continue support for Industrial Assessment Centers operating at 30 participating universities that will conduct approximately 750 combined energy, waste and productivity assessments. (ER3-2)* (MET GOAL)	• *Continue support for Industrial Assessment Centers operating at 30 participating universities that will conduct approximately 750 combined energy, waste, and productivity assessments. (ER3-2)* (MET GOAL)
	• *Establish partnerships with 50 Industries of the Future plants to provide integrated delivery of tools and technical assistance to target motors, steam, compressed air, and combined heat and power system opportunities. (ER3-2)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ER3-2 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *One new solicitation will be issued in FY 2001 targeted to the Renewables Vision 2020 for Agriculture in support of the goals of the President's Bio-based Products and Bio-energy initiative. (ER3-3)* • *Continue support for Industrial Assessment Centers operating at ~~30~~ 26 participating universities that will conduct approximately ~~750~~ 650 combined energy waste and productivity assessments. (ER3-3)* • *Complete 15 Assessments on 5 case studies of major industrial plants that will document for a variety of system-focused implemented actions. These will influence replication of similar energy savings for other plants. (ER3-3)*	• *Commercialize six new energy efficient technologies in partnership with the most energy intensive industries. (ER3-3)* • *Complete 2 showcase demonstrations, at industry sights, of advanced energy efficient technologies. (ER3-3)* • *Continue support for Industrial Assessment Centers operating at 26 participating universities that will conduct approximately 320 combined energy, waste, and productivity assessment days of service to manufacturing clients. (ER3-3)* • *Complete 6 plant site assessments to assist plant operators in use of industrial process application tools. These will influence replication of similar energy savings for other plants. (ER3-3)* • *Complete testing and evaluation of prototype boiler and commercial process heater designs capable of improved efficiency and producing than 5 ppm NOx emissions. (ER3-3)*

Note: One measure in FY 2001 related to Power Technologies is now presented in the Renewable and Distributed Energy program activity on page 9.

Means and Strategies:

The above goals will be achieved by developing technologies with applications in specific industries and across industries. Strategies for specific industries include: In the agriculture industry, increasing the percentage of basic chemical building blocks derived from plant/crop-based renewables. Reducing unit energy consumption for primary and secondary aluminum production. Reducing energy consumption per pound of chemicals produced. Moving the forest products industry to being a net producer of electricity. Reducing energy requirements for glass melting. Increasing yield, reducing scrap, and improving melting efficiency in the metal casting industry. Reducing the amount of energy used to crush rock in the mining industry. Improving the efficiency of petroleum refining. In the steel industry, improving sensing and controls of the major energy intensive unit processes, and reducing the use of virgin raw materials.
Strategies for developing technologies that cut across industries include: Developing advanced industrial materials such as intermetallic alloys. Increasing ceramic application survival and material strength. Reducing boiler, burner and heater/furnace specific fuel consumption. Commercializing sensors and controls.

Financial and technical assistance will also help achieve the goals. Financial assistance through the NICE3 and Inventions and Innovations programs will increase the number of technologies in the marketplace. Technical assistance and training will be provided through the university based Industrial Assessment Center program. Industry adoption of best available technologies and services will be accelerated through the best practices program.

Collaboration Activities:

The Department collaborates on its RD&D with the industries identified above and with universities. The Department also collaborates with other government agencies including the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), and the Departments of Defense (DOD), Commerce (DOC), Agriculture (USDA), and Interior (DOI).

External Factors Affecting Performance:

Performance will be affected by the state of the economy. If the economy grows 50% slower than is projected then energy intensity in 2010 is estimated to be only 16% below 1990 levels. Performance will also be affected by the varying growth across industries and the value of each industry's output.

Validation and Verification:

Data Sources:	Energy intensity is calculated from the Energy Information Administration's (EIA's) Manufacturing Energy Consumption Survey and Department of Commerce data. The number of technologies and their energy savings is ascertained through interviews with technology developers and suppliers. Energy savings for the IAC and best practices programs are estimated.
Baselines:	Industrial energy intensity: 1990. Energy savings and commercialized technologies: 1976.
Frequency:	Data for energy intensity is collected once every 4 years. Annual estimates can be made based upon data from Department of Commerce annual surveys. Data on energy savings and technologies commercialized are collected annually.
Data Storage:	Energy intensity information is contained on EIA's computers. Data on energy savings and technologies commercialized are stored in OIT's Impacts Database.
Verification:	EIA quality control and outside peer review of the Manufacturing Energy Consumption Survey. Data on energy savings and technologies commercialized are reviewed by industry representatives.

Planned Program Evaluation:

Annual program and portfolio reviews are conducted by the individual programs. Vision and roadmaps in three areas will be evaluated by the RAND Corporation. The National Academy of Sciences will be looking at mining opportunities for the future.

GPRA Program Activity: Transportation Sector

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activity**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
250 Energy Programs 270 Energy Supply					
Transportation Sector	Transportation Sector	EE	229	255	198*
Renewable Energy Resources		EE	38	47	44*
Total			267	302	242*

* This reflects the amended FY 2002 budget request.

Description of the Program:

The mission of the Transportation sector is to support the development and use of advanced transportation vehicles and fuels which will reduce energy demand, particularly petroleum; reduce criteria pollutant and greenhouse gas emissions; and enable the United States to sustain a strong competitive position in domestic and world markets. EE implements the program activities that support the following general performance goals.

General Performance Goals:

ER1-3 ASSURING ADEQUATE LONG TERM SUPPLIES OF CLEAN LIQUID TRANSPORTATION FUELS

Develop technologies to produce ultra-clean fuels from natural gas, oil, coal, biomass, and hydrogen from a variety of sources, which can be used with minimal negative environmental consequences. Promote the use of alternative fuel vehicles in selected markets and work with fuel providers and individual communities to help promote the development of refueling infrastructure and provide incentives for the use of alternative fuel. Promote the use of non-petroleum and renewable replacement fuels, such as ethanol, as blends in gasoline and diesel fuel. EE supports this goal in the area of biofuels and alternative fuels development. Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

ER2-3 CONDUCTING R&D TO INCREASE THE USE OF DISTRIBUTED AND HYBRID ENERGY SYSTEMS

Improve the performance and expand the use of non-hydroelectric renewable energy generating capacity in the United States. Develop technologies to increase the amount of the Nation's distributed power (i.e., electric generating systems connected to the distribution portion of the grid). Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

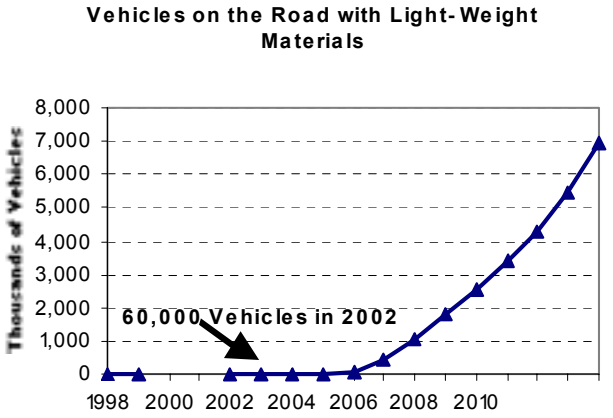
ER3-1 DESIGNING AND DELIVERING THE VEHICLES OF THE FUTURE

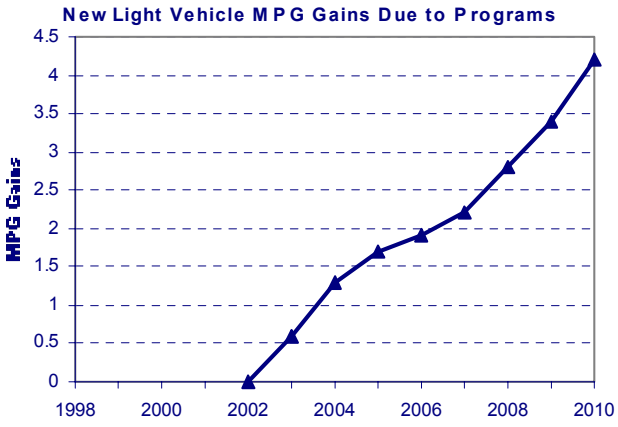
Develop and deploy advanced vehicles, fuels, and systems that will significantly increase gas mileage and reduce environmental emissions without compromising safety, comfort, and cost. Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

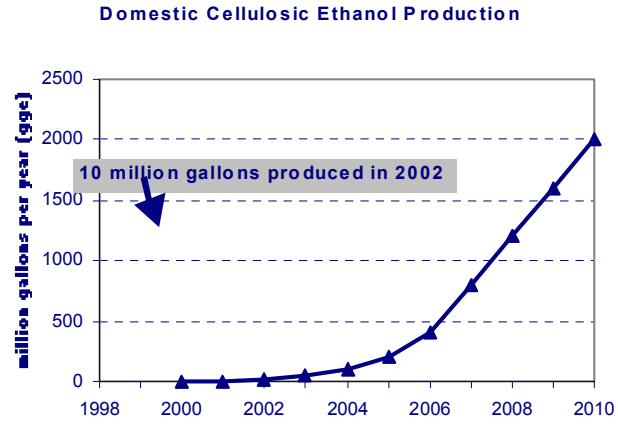
Performance Indicators:

- Vehicles on the Road with Light-Weight Materials
- New Light Vehicle MPG gains from DOE programs
- Domestic Cellulosic Ethanol Production

Discussion: The Department's goals for the Transportation Sector are to reduce the growth of U.S. oil use by 500,000 bpd by 2010, and by 1.5 million bpd by 2020. Transportation Sector programs are designed to increase the fuel efficiency of new light vehicles by 4.2 mpg, to have 7 million vehicles on the road with light weight materials, and to increase cellulosic ethanol production to 2000 million gallons per year. In 2002, 60,000 vehicles will contain light weight materials, and 10 million gallons of cellulosic ethanol will be produced. Fuel efficiency gains will begin in 2002.







The following facing pages show four years of performance measures for the Transportation Sector.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *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. (ER1-4)*[2] (NEARLY MET GOAL)	• *Demonstrate conversion of agricultural wastes to ethanol at a small commercial scale using a genetically engineered fermentative microorganism. (ER1-4)* (MET GOAL)
• *Expand the Clean Cities program to create continuous corridors of alternative transportation fuel availability in and between 10 major urban centers. (ER1-4)* (MET GOAL)	• *Launch two projects that will lead to 100 percent penetration of alternative fuel vehicles in selected niche applications such as a local taxi fleet or the busses for a particular school. (ER1-4)* (EXCEEDED GOAL)
• *Build a single cylinder proof-of-concept diesel engine that delivers up to 55 percent efficiency. (ER1-4)* (NEARLY MET GOAL)	
• *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 emissions treatment technologies. (ER3-1)* (MET GOAL)	• *Complete testing of baseline prototype, 50-volt high power lithium-ion modules for use in hybrid vehicles. (ER1-4)* (MET GOAL)
	• *Work with three domestic automakers to incorporate the most promising Partnership for a New Generation of Vehicles (PNGV) technologies in concept vehicles with up to three times average fuel economy of 1993 Taurus, Lumina and Concorde models. (ER3-1)* (EXCEEDED GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 are listed here that provide context for measures for FY 2001 or FY 2002. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. (ER1-4) for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target [1] (Revised Final)	FY 2002 Proposed Target
• *Conduct competitive solicitation and select at least one partner for demonstrating the conversion of cellulosic feedstock at a corn ethanol plant. (ER1-3)*	• *Develop a prototype yeast capable of fermenting multiple biomass-derived sugars to meet cost goals for the ethanol/gasoline blend markets. (ER1-3)*
• *Support the annual acquisition on 12,000 alternative fuel vehicles in the Federal Fleet. (ER1-3)*	• *Complete initial testing of light trucks with prototype diesel engines to demonstrate a 35% increase in fuel efficiency and Tier 2 emissions when integrated into a vehicle using low sulfur fuel. (ER3-1)*
• *Complete test and evaluation of a fuel-flexible 50 KW integrated fuelcell power system. (ER2-3)*	• *Demonstrate and deliver an advanced 50kW fuel processor for automotive fuel cell systems. (ER3-1)*
• *Complete testing of the 276 volt battery aimed at demonstrating an integrated system having thermal and electrical controls. (ER3-1)*	• *Complete development of second generation Lithium-ion electrochemistry for hybrid power in vehicles of the future.*[2] *(ER3-1)* • *Demonstrate optimized emission control system that achieves 0.07 g/mile NOx and 0.01 g/mile PM short-term performance over simulated drive cycle under real engine operating conditions.*[2] *(ER3-1)*

Notes:

1. For the FY 2001 revised set of measures, one measure was revised to reflect new priorities.
2. Measure is consistent with the FY 2002 amended budget request.

Means and Strategies:

Fuel efficiency gains will be achieved through the introduction of lightweight materials and more efficient technologies. The use of lightweight materials such as aluminum sheets and composites will be made more economically attractive through DOE research and development efforts that reduce their costs. Vehicles with lightweight materials include electric, hybrid, and fuel cell vehicles. The penetration of these vehicles in the marketplace will be enhanced by DOE R&D that: reduces high power battery costs and battery calendar life for hybrid vehicles; decreases battery cost and increases battery specific energy for electric vehicles; and reduces the cost of fuel cell systems. The production of cellulosic ethanol will be enhanced by DOE R&D that increases cellulose enzyme development and reduces the cost of producing cellulosic ethanol.

Collaboration Activities:

The Office of Transportation Technologies collaborates with the Big Three automakers, ethanol producers, and universities in its R&D efforts. It also collaborates with the Department of Commerce, Department of Transportation, the Environmental Protection Agency and other federal agencies on the PNGV and other programs.

External Factors Affecting Performance:

Performance 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.

Validation and Verification:

Data Sources:	Department of Transportation/National Highway Safety Administration, Environmental Protection Agency, laboratory tests.
Baselines:	Fuel efficiency (mpg) gains are measured from 2001. Vehicles with lightweight materials and ethanol production are measured annually.
Frequency:	Annual.
Data Storage:	Office of Transportation Technologies (OTT) Quality Metrics report. Program analysis methodology document is prepared each year and put on the OTT website for comment and review.
Verification:	Review by Arthur D. Little. Presented to professionals for comment.

Planned Program Evaluation:

The National Research Council reviews the PNGV program each year and makes recommendations. Arthur D. Little reviews several programs each year.

GPRA Program Activity: Domestic Oil and Gas Supply RD&D

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
250 Energy Programs					
Fossil Energy Research and Development	Oil Technology	FE	56	57*	30
	Gas Technology	FE	25	39	21
Total			81	96	51

* Includes $12 million transferred from the Strategic Petroleum Reserve account.

Description of the Program:

The Department's Domestic Oil and Gas Supply Program seeks 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 RD&D activities focus on enhancing the efficiency and environmental quality of domestic oil and natural gas exploration, recovery, processing, transport, and storage operations. Funding is also included for activities that foster development and deployment of technologies to enhance reliability and deliverability of the Nation's natural gas pipelines and gas storage facilities. FE activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goals:

ER1-2 ENHANCING DOMESTIC OIL AND GAS SUPPLIES
Provide policy, legislative, regulatory, and technology options, as well as improved practices to enhance the availability of domestic oil and natural gas supplies, while minimizing the environmental impacts of production.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Demonstrate four advanced production enhancement technologies that could ultimately add 190 million barrels of domestic reserves, including 30 million barrels during FY 1999. (ER1-1)*[2] (EXCEEDED GOAL)	• *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. (ER1-1)* (MET GOAL)
• *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. (ER1-1)* (NEARLY MET GOAL)	• *Complete field testing and monitoring of two technologies for downhole separation for oil and water, resulting in reduction in produced water and potential increase in oil production per well. (ER1-1)* (NEARLY MET GOAL)
• *Complete development of 1 Advanced Drilling, Completion & Stimulation technology system that could contribute to an additional 6 TCF of domestic gas reserves by 2010. (ER2-2)* (MET GOAL)	• *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. (ER2-2)* (NEARLY MET GOAL)
	• *Identify a site containing gas hydrates suitable for testing the feasibility of methane recovery. (ER5-2*) (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ER1-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Complete demonstration of five advanced secondary and tertiary technologies. Based on models it is estimated these technologies will increase near-term incremental production by ~~1.1~~ 1.7 million barrels of oil, and long-term incremental production by over ~~2~~ 2.4 billion barrels of oil. (ER1-2)*	• *Complete air tracer sampling using a small, remotely controlled blimp to determine the actual impact of oil and gas activities on regional pollution problems in the San Joaquin Valley. (ER1-2)*
• *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. (ER1-2)*	• *Demonstrate safe economic slimhole drilling technology in actual use under Arctic conditions. This technology can significantly reduce cost and environmental impacts. (ER1-2)*
	• *Develop and demonstrate two technologies to detect and quantify areas of high fracture density in currently uneconomic low permeability gas reservoirs. This program has the near-term commercial potential to double average per-well productivity. (ER1-2)*
	• *Demonstrate a light-weight composite drill pipe that will lower overall exploration/production costs. (ER1-2)*
	• *Complete laboratory testing and begin field demonstrations of an improved remedial technology for storage wells. This program seeks to reduce the cost of deliverability enhancement by 10% per year for the gas storage industry by 2007. (ER1-2)*
• *Quantify a hydrate deposit by correlating core samples with geophysical and well log data. (ER1-2)*	

Note: For the FY 2001 revised set of measures, one measure related to demonstration of technologies was deleted because it did not meet the criteria.

Means and Strategies:

Benefits from demonstrated technologies will be achieved by expediting technology transfer to producers, particularly independents, by developing and demonstrating advanced production technologies and conducting pilot and field-scale demonstrations of proven laboratory technologies, and by working with and supporting industry associations, such as the Petroleum Technology Transfer Council, to provide focused technology workshops, information resource centers, and computer-based information.

Collaboration Activities:

Field demonstrations are conducted with collaboration of industry, academia, and others and with input from National Laboratories. Cost-shared projects improve chances of success and have a direct technology transfer component. DOE is collaborating with EPA and their Common Sense Initiative in order to demonstrate the environmental and economic advantages of new leak detection technology. Such a demonstration is needed to gain regulatory approval of this advanced technology.

External Factors Affecting Performance:

Program results may be affected by world oil prices, corporate mergers and acquisitions, issues related to access to public lands, and new and evolving environmental legislation and regulations.

Validation and Verification:

Data Sources:	DOE fact sheets, project reports, and published articles (i.e. technical journals, trade press)
Baselines:	Project reports. US Geological Survey 1995 assessment of oil and gas resources.
Frequency:	Varies by project (quarterly, semi-annual, annual)
Data Storage:	Project contract files maintained at the NETL
Verification:	FE technical review of project reports and peer review of published articles.

Planned Program Evaluation:

The program and projects contained herein will be evaluated at periodic Contractor Review Workshops. National Research Council review of historic oil and gas program costs and benefits is being conducted and will be completed in FY 2001.

GPRA Program Activity: High Efficiency, No/Low Emissions Power Systems RD&D

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
250 Energy Programs					
Fossil Energy Research and Development	Coal and Power Systems (C&PS)/ Central Systems	FE	113	199	211
	C&PS/Distributed Generation Systems	FE	43	53	45
	C&PS/Sequestration R&D	FE	9	19	21
	C&PS/Advanced Research	FE	23	26	26
Clean Coal Technology	Clean Coal Technology	FE	(146)	104	82
	Use of PY Balances	FE	0	(95)	0
Total			42	302	385

Description of the Program:

The power systems 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. Coal program is focused on four goals. The first is to develop progressively higher efficiency and cleaner power generation systems with 10-20% lower busbar electricity costs, which will ultimately evolve into a "Vision 21" fleet of new power and energy plants with near zero levels of pollutants. The second is to develop super-clean emission control systems for SO_2, NOx, air toxics, and particulate matter that can be applied to existing plants. The third 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. Power Systems includes Central Systems, Distributed Generation Systems, Sequestration R&D, and Advanced Research. FE activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goal:

ER2-2 DEVELOPING LARGE, HIGH EFFICIENCY, ADVANCED POWER SYSTEMS
Enhance the economics and environmental performance of electricity generation by expanding the use of multi-product facilities that can also produce heat, clean fuels, and/or chemical products. Pursue evolutionary improvements in existing CO_2 capture systems and explore revolutionary new greenhouse gas capture and sequestration concepts with a view toward significant cost reductions. Develop advanced fossil- and nuclear-based power generation systems that can meet future environmental goals at reasonable cost.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Complete full-scale component testing of two advanced, utility-scale turbines with over 60 percent efficiency when used in combined cycles (new plants are currently about 55 percent) and with ultra-low NOx emissions. Initiate advanced gas turbine full speed, no load testing with one gas turbine manufacturer. (ER2-4)* [2] (MET GOAL)	• *Complete validation testing for critical components of advanced utility-scale turbines with over 60 percent efficiency (combined cycles mode) and ultra-low NOx emissions. (ER2-4)* (NEARLY MET GOAL) • *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. (ER2-4)* (MET GOAL) • *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. (ER2-4)* (MET GOAL)
• *Successfully operate 100 kWe solid oxide fuel cell for 4000 hours. (ER2-4)* (MET GOAL)	• *Begin testing of first market prototype solid oxide fuel cell for distributed power applications. (ER2-4)* (MET GOAL) • *In support of Vision 21, complete testing of a 250kw fuel cell/turbine hybrid and deliver a conceptual design of a 1-MW fuel cell/turbine hybrid powerplant to facilitate market entry. (ER2-4)* (NEARLY 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 draft report which identifies key research needs in several aspects of sequestration and select six concepts to identify promising sequestration options.* (MET GOAL) *(ER5-2)*	• *Commence 3-4 small scale carbon sequestration development projects from those selected in the FY 1998 Novel Concepts solicitation, and feasibility studies for 1-2 sequestration projects selected under FE's August and September 1999 solicitations.* *(ER5-2)* (MET GOAL)
• *Complete 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 powerplants. (ER2-4)* (MET GOAL)	• *Complete demonstration of the third integrated gasification combined cycle project (Pinion 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 powerplants.* (NEARLY MET GOAL) *(ER2-4)*

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).
2. The performance goal linkages as noted at the end of each measure, e.g. ER1-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Deliver to EPA two years worth of high-quality $PM_{2.5}$ ambient monitoring data from the upper Ohio River Project. (ER2-2)*	• *Complete Phase I report characterizing concentration and composition for ambient PM2.5 emissions as input to the EPA PM2.5 National Ambient Air Quality Standards (NAAQS) review. This data will identify the impact of emission sources on air quality. (ER2-2)*
• *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. (ER2-2)*	• *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. (ER2-2)*
• *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. (ER2-2)*	
• *Begin testing of a 300 kW-1MW solid oxide fuel cell/turbine hybrid commercial prototype for distributed power applications. (ER2-2)*	• *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. (ER2-3)*
• *Begin construction of a 1MW Solid Oxide Fuel Cell (SOFC) hybrid. (ER2-2)*	• *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 (ER2-3)*
• *For carbon sequestration, expand the number of possible cost-effective, collaborative, multi-national applied R&D options carried to "proof of concept" stage. Complete multiple field experiments on promising technologies. (ER2-2)*	• *Conduct integrated research and field demonstrations of CO_2 sequestration in deep, unminable coal seams and depleted oil reservoirs and develop sufficient data to determine reservoir integrity and fate of injected CO_2. (ER2-2)*
• *Complete design and continue construction of Circulating Atmospheric Fluidized Bed demonstration project at Jacksonville, FL. (ER2-2)*	• *Complete construction and start operations of Circulating Atmospheric Fluidized Bed demonstration project at Jacksonville, Fl. (ER2-2)*
• *Initiate construction of a fixed-bed slagging gasification and fuel cell demonstration project (Kentucky Pioneer Energy Project). (ER2-2)*	

Note: For the FY 2001 revised set of measures, six measures were deleted because they they were either activities or did not meet the criteria and three new ones were added to reflect new priorities.

Means and Strategies:

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.

Collaboration Activities:

FE will continue to collaborate with the Office of Science, other parts of DOE, and other government agencies, as appropriate, to meet the carbon sequestration program goals. For all activities FE will also 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.

External Factors Affecting Performance:

Program results may be affected by world prices for competitive feedstocks and energy technologies, and from new and evolving environmental regulations, or any new legislation - in particular, 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.

Validation and Verification:

Data Sources:	DOE fact sheets, project reports, and published articles (i.e., technical journals, trade press)
Baselines:	Project reports
Frequency:	Varies by project (monthly, quarterly, semi-annual, annual)
Data Storage:	Project contract files maintained at the NETL Clean Coal Compendium of Information available at www.lanl.gov/projects/cctc. Carbon Sequestration Websites.
Verification:	FE technical review of project reports and peer review of published articles

Planned Program Evaluation:

The program and projects contained here will be evaluated at the Annual Contractor's Meeting.

GPRA Program Activity: Clean Fuels RD&D

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
250 Energy Programs					
Fossil Energy Research and Development	Coal-Derived Fuels	FE	20	23	7
	Gas-to-Liquids	FE	6	6	0
	Ultra-Clean Fuels	FE	0	10	0
Total			26	39	7

Description of the Program:

Clean Fuels R&D seeks to develop fuels from a variety of sources that can be used with reduced environmental impact. This activity includes development of new ceramic membranes that would separate coal gas, biomass-derived gas, or natural gas into constituents that could be chemically combined to new types of liquid fuels, and development of premium solid carbon products from coal. FE activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goals:

ER1-3 ASSURING ADEQUATE LONG TERM SUPPLIES OF CLEAN LIQUID TRANSPORTATION FUELS

Develop technologies to produce ultra-clean fuels from natural gas, oil, coal, biomass, and hydrogen from a variety of sources, which can be used with minimal negative environmental consequences. Promote the use of alternative fuel vehicles in selected markets and work with fuel providers and individual communities to help promote the development of refueling infrastructure and provide incentives for the use of alternative fuel. Promote the use of non-petroleum and renewable replacement fuels, such as ethanol, as blends in gasoline and diesel fuel.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
	• *Complete solicitation for, and selection of, candidate industrial teams for the Early Entrance Coproduction Plant (EECP) project in which innovative alternative fuels will be coproduced along with electricity and chemical products. (ER1-4)*[2] (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ER1-4 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Complete negotiations with industrial teams selected to implement the Early Entrance Coproduction Plant (EECP) projects and initiate Phase I of the three-phase activity. (ER1-3)* • *Complete laboratory evaluation of initial set of hydrogen separation membranes. (ER1-3)* • *Begin laboratory scale test operations of a novel syngas ceramic membrane reactor to reduce gas-to-liquid fuel conversion costs and initiate construction of first stage scale-up of the reactor. (ER1-3)*	• *Complete laboratory scale test operations of novel ITM-syngas ceramic membrane reactor to reduce gas-to-liquid fuel conversion costs. (ER1-3)*

Note: For the FY 2001 revised set of measures, one measure related to operation of the LaPorte Slurry Phase Reactor was deleted and one related to hydrogen separation membranes was added.

Means and Strategies:

The program to develop innovative processes, in partnership with industry and other Government organizations for the production of ultra-clean fuels required by the transportation sector in the 21st Century will be accelerated.

The R&D will continue to stress technologies that improve the environment. Specifically, this will be achieved by reducing and/or eliminating: a) waste products from coal, petroleum coke, and heavy oil utilization and/or conversion processes and b) the emissions of airborne toxic emissions by removing the precursor elements before they enter the energy utilization/conversion process and are subsequently discharged.

Collaboration Activities:

Criteria essential to setting performance goals and programmatic content are being obtained through informational exchanges and meetings with the Environmental Protection Agency (EPA), the Department of Commerce, the Department of Transportation, and the Department of Defense.

External Factors Affecting Performance:

Actions taken by the EPA in implementing Tier II Regulations and/or the transportation sector, in conjunction with the associated schedule for their implementation, as well as expected diesel low sulfur fuel regulations will greatly influence the priority given to these activities. Program results may be affected by world prices for competitive feedstocks and energy technologies. Finally, new and evolving environmental regulations or any new legislation – in particular, related to CO_2 and air toxics – that affect coal use, could have an impact.

Validation and Verification:

Data Sources:	DOE fact sheets, project reports, and published articles (i.e., technical journals, trade press)
Baselines:	Project reports
Frequency:	Varies by project (monthly, quarterly, semi-annual, annual)
Data Storage:	Project contract files maintained at the NETL. Clean Coal Compendium of Information available at www.lanl.gov/projects/cctc
Verification:	FE technical review of project reports and peer review of published articles

Planned Program Evaluation:

The program and projects contained therein will be evaluated at the Annual Contractor's Meeting.

GPRA Program Activity: FE R&D Crosscutting and Special Activities

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activity**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
250 Energy Programs					
Fossil Energy Research and Development	Program Direction and Management Support	FE	75	80	70
	Plant and Capital Equipment	FE	3	4	2
	Environmental Restoration	FE	10	10	10
	Cooperative Research and Development	FE	7	8	0
	Fuels Programs	FE	2	2	1
	Advanced Metallurgical Research	FE	5	5	5
	Great Plains Project Trust (Interest)	FE	(1)	(1)	(8)
Total			101	108	80

Description of the Program:

This GPRA Program Activity includes items that are in the overall FE R&D area but are not part of the main FE R&D business lines. In particular:

- Program Direction and Management Support provides funding for salaries, benefits and overhead expenses for management of the FE program at Headquarters, the Federal Energy Technology Center, and the National Petroleum Technology Office.
- Environmental Restoration funds activities to ensure protection of workers, the public, and the environment in performing the FE mission at FE field facilities.
- Cooperative R&D funds collaborative strategic research at two former FE facilities
- The Fuels Program includes management of the regulatory review of natural gas imports and exports, exports of electricity, and the construction and operation of electricity lines that cross U.S. international borders
- Advanced Metallurgical Research carries out research concerning the extraction, processing, use and disposal of mineral substances at the Albany Research Center in Oregon.

These funds primarily support the salaries and benefits of the Federal staff that manage FE programs or are relatively small, special activities in FE. Therefore, this group of budget lines does not have performance goals that meet the criteria for inclusion in this plan.

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GPRA Program Activity: Petroleum Reserves

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
250 Energy Programs					
Strategic Petroleum Reserve (SPR)	SPR Facilities Development – Crude Oil Reserve	FE	158	157	161
	Northeast Home Heating Oil Program		0	8	8
	Use of SPR Petroleum Account		0	(4)	0
Naval Petroleum and Oil Shale Reserves			0	2	17
Elk Hills School Land Fund			0	36	36
	Transfer from SPR0		0	(12)	0
Total			158	187	222

Description of the Program:

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 drawdown 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, following the February 1998 sale to the private sector of Elk Hills, its primary asset, continues to manage, operate, maintain and produce three properties remaining under its jurisdiction. The program is relatively small, and no performance goals are included in the Performance Plan. Also included is the Elk Hills School Lands Fund, which was established to settle certain Elk Hills related land claims with the State of California.

On July 10, 2000, President Clinton directed the Department of Energy to establish a heating oil component of the SPR in the Northeast to help protect Americans from possible fuel shortages this winter. In the first quarter of FY 2001, the Department completed its establishment of a two million barrel Northeast Home Heating Oil Reserve involving commercial exchange of crude oil from the SPR for both the heating oil and leased storage tank capacity located in the Northeast. FE activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goals:

ER1-1 MAINTAINING AN EFFECTIVE STRATEGIC PETROLEUM RESERVE
Maintain an effective Strategic Petroleum Reserve (SPR) to deter and respond to oil supply disruptions and cooperate with the importing member nations of the International Energy Agency. Ensure achievement of a calculated site availability of 95% or greater with drawdown capability of 4.2 million barrels per day for a sustained 90 day period within 15 days notice by the President. Maintain the Northeast Home Heating Oil Reserve to respond to and mitigate the regional effects of a severe short-term energy supply disruption in the Northeast. Ensure the capability to complete drawdown within 12 days of a Presidential notice.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

The following facing pages show four years of performance measures for the Petroleum Reserves.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results (Mid-Year)
• *Initiate additional SPR infrastructure Life Extension Program projects, thereby bringing program implementation to approximately 96% 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. (ER1-2)* [2] (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 SPR inventory, with deliveries of a remaining 4 million barrels in FY 2001. (ER1-2)* (MET GOAL) • *Complete the Life Extension Program to ensure the long-term reliability, effectiveness, and operational readiness of SPR facilities and systems. (ER1-2)* (MET GOAL) • *Ensure the achievement of a calculated site availability of 95% 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. (ER1-2)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ER1-2 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Establish a Northeast Heating Oil Reserve of up to 2 million barrels. (ER1-1)* • *Complete the transfer of Federal Royalty Oil to SPR by November 2000 per the FY 1999 Agreement with Interior Department. (ER1-1)*	• *Complete delivery of exchanged Federal Royalty Oil to SPR that was transferred to DOE in FY1999-2001 per the FY 1999 Agreement with the Interior Department. (ER1-1)*

Note: For the FY 2001 revised set of measures, one new measure was added and one edited to reflect new priorities.

Means and Strategies:

SPR will continue its mission to maintain the operational readiness of 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 (direct purchase and storage service agreements with public, private and foreign entities) to acquire oil to complete SPR fill. A FY 1999 Departmental agreement with the Interior Department provides for using Federal Royalty Oil to help fill the SPR. It is anticipated that this will add nearly 30 million barrels of crude through transfer and/or exchange, completing in early FY 2002.

Continual monitoring of SPR's crude inventory for geothermal heating and gas intrusion has indicated the necessity for initiating the investment in FY 2002 of long-term vapor pressure control systems. SPR will continue to manage the Northeast Home Heating Reserve and assure readiness to complete drawdown of the Reserve within 12 days of a Presidential decision.

Collaboration Activities:

DOE coordinates its activities for the SPR with the White House National Economic Council 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 Interior Department's Minerals Management Service. The Defense Contract Management Administration (DCMA) conducts quality and inventory control review for heating oil, stored in DOE's Northeast Home Heating Oil Reserve.

External Factors Affecting Performance:

Performance can be affected by petroleum market conditions and developments in the commercial distribution system (i.e. pipelines, terminals). Continuing royalty-in-kind transfers during FY 2001 and beyond, in addition to those per the FY 1999 agreement, will be contingent on future successful negotiations with Department of the Interior.

Performance of the Home Heating Oil Reserve's distribution can be affected by pipeline and transportation ability in the Northeast.

Validation and Verification:

Data Sources:	Operations status reports, project assessment reports, and project and program reviews. Energy Information Administration (EIA) oil industry databases. DCMA reports on Heating Oil Reserve inventory.
Baselines:	Technical project baselines, Operational Readiness performance criteria, SPR annual Performance Plan, contractor annual operating and work authorization plans, budget baseline and Northeast Home Heating Oil Reserve Plan.
Frequency:	Daily operational status reports, monthly project reviews and quarterly program reviews. Annual and monthly EIA data sources. Monthly DCMA inventory reports.
Data Storage:	Operations and facilities management data is maintained at SPR field office. This includes project assessment and M&O contractor performance data. Program policy analysis and initiatives, legislative guidance, and oil industry research data is maintained at the Headquarters SPR Program Office.
Verification:	Combination of daily field and Headquarters staff interaction, monthly and quarterly reporting/reviews, and online access to performance data provides a continuous means throughout the fiscal year to verify and validate performance data.

Planned Program Evaluation:

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 activity. 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, Drawdown Readiness quarterly reviews.

GPRA Program Activity: Nuclear Energy Educational Infrastructure

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp.($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
270 Energy Supply					
University Reactor Fuel Assistance and Support	-	NE	12	12	12

Description of the Program:

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 have declined precipitously since the mid-1980s, the Nation's need for nuclear engineers and nuclear trained personnel is on the rise due to the excellent job market, the lack of large numbers of recent nuclear engineering graduates, and the increasing number of retirements in the nuclear field. NE activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goal:

ER2-8 PRESERVING THE NATION'S SCIENCE AND ENGINEERING EDUCATIONAL INFRASTRUCTURE FOR ENERGY TECHNOLOGY

Support and promote the Nation's university, college, and preparatory technology programs that deliver information and contribute to learning in science and engineering education; enable advanced educational research opportunities; build capabilities at educational institutions; and improve educational opportunities for diverse groups.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 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 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.* – *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. (ST4-1)*[2] (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;* - *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. (SC4-1)* (EXCEEDED GOAL)
• *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.* – *Providing summer on-the-job training to 29 junior and senior nuclear engineering scholarship recipients. (ST4-1)* (MET GOAL)	• *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;* – *Providing scholarships and summer on-the-job training to approximately 50 sophomore, junior and senior nuclear engineering and science scholarship recipients. (SC4-1)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ST4-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Targets (Revised Final)	FY 2002 Proposed Targets
• *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 ~~17~~ 18 or more DOE/Industry Matching Grants Program for universities.* – *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. (ER2-8)*	• *Support U.S. universities' nuclear energy research and education capabilities by:* – *Providing fresh fuel to university reactors.* – *Funding approximately 23 universities with research reactors for reactor upgrades and improvements.* – *Partnering with private companies to fund 18 or more DOE/Industry Matching Grants for universities.* – *Providing funding for Reactor Sharing with the goal of enabling each of the 29 schools eligible for the program to improve the use of their reactors for teaching, training, and education. (ER2-8)*
• *Attract outstanding U.S. students to pursue nuclear engineering degrees by:* – *Providing ~~22-24~~ 24 fellowships.* – *Increasing the number of Nuclear Engineering Education Research Grants to approximately ~~45~~ 50 existing and new grants.* – *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. (ER2-8)*	• *Attract outstanding U.S. students to pursue nuclear engineering degrees by:* – *Providing 20 -24 graduate student fellowships.* – *Supporting 50 university Nuclear Engineering Education Research Grants to encourage creative and innovative thinking at U.S. universities.* – *Providing scholarships and summer on-the-job training to approximately 50 sophomore, junior and senior nuclear engineering and science scholarship recipients. (ER2-8)*

Note: For the FY 2001, strikeout and shaded text in the measures indicates revisions.

Means and Strategies:

The University Reactor Fuel Assistance and Support program supports the Nation's science and engineering infrastructure to help meet our future needs for nuclear scientists and engineers in energy technology, medical research, and national security. The program provides fellowships, scholarships, and grants to students enrolled in nuclear science and engineering programs at U.S. universities; DOE/Industry matching grants for participating U.S. universities; and other assistance to students and U.S. universities in cooperation with industry. The program also provides fuel assistance and reactor upgrade funding for university-owned research reactors.

Collaboration Activities:

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

During the past year, several studies have been completed in an attempt to ascertain the current status and future outlook for nuclear engineering education in the U.S. and recommend initiatives to strengthen this vital sector of the university education curriculum. The Organization of Economic Cooperation and Development/Nuclear Energy Agency conducted a review of nuclear engineering education in its member countries and the Nuclear Energy Department Heads Organization surveyed U.S. industry and universities concerning manpower requirements. The conclusion of these two studies was that the enrollment trends of the 1990's is not encouraging and more students need to be educated in nuclear engineering to provide the manpower required today and in the future. A third study by an expert panel appointed by the independent Nuclear Energy Research Advisory Committee (NERAC) recommended major increases in funding to maintain the nuclear engineering infrastructure in the U.S. A three person panel of experts from NERAC is collecting and assessing information on all university reactors including their research and training capabilities and operating costs. By April 2001, this panel will report back to the Department so a strategy can be formulated to support the maintenance of vital university research reactor facilities in the U.S.

External Factors Affecting Performance:

Industry participation in the DOE Matching Grants program is essentially to trigger a DOE cost-share for this activity which supports nuclear engineering education at 21 U.S. universities.

Validation and Verification:

Data Sources:	Monthly progress and quarterly technical reports; quarterly, semiannual, and annual reviews.
Baselines:	Technical baselines are specified in project plans and contracts.
Frequency:	Data is collected periodically–on a monthly basis for some programs; quarterly and semiannually for others.
Data Storage:	The headquarters and field organization managing the project maintains the data on technical progress.
Verification:	Internal, independent technical expert, or peer reviews of technical reports and progress are conducted.

Planned Program Evaluation:

Progress against established plans is evaluated by periodic internal and external reviews. These reviews provide an opportunity to verify and validate the performance data. 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 user agencies' requirements.

GPRA Program Activity: Nuclear Energy Science Activities

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp.($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
270 Energy Supply					
Advanced Radioisotope Power Systems		NE	29	32	29
Medical Isotopes		NE	19	19	18
Total			48	51	47

Description of the Program:

The Nuclear Energy Science Activities program is focused on applying nuclear expertise to support the use and development of medical isotopes and to support exploration of the planets. The Medical Isotopes Program serves the national need for a reliable supply of isotope products, services, and related technology used in medicine, industry, and research by producing and selling isotopes and supporting medical research and education. Medical, industrial, and research isotopes made at DOE facilities are not produced elsewhere. Through the Advanced Nuclear Medicine Initiative, the program gives medical isotope research and education grants that are not available from any other federal source. These efforts support the growth of isotope applications.

The Advanced Radioisotope Power Systems program supports the development, demonstration, fabrication, testing, and delivery of power systems required by the United States to support space exploration and special national security activities. Radioisotope power systems (RPS) are the enabling technology for space and national security applications that require proven, reliable and maintenance-free power supplies capable of producing up to several kilowatts of power and operating under severe environmental conditions such as space for many years. Over the past 40 years, 26 space missions have used 44 of these power systems in a variety of applications, including earth orbit observations, lunar surface exploration, scientific satellites flying close to the outer planets, and probes on the surface of Mars. Space exploration will continue as a national priority and many of the future planned space missions cannot be accomplished without these power systems. National security applications using these systems have also been under way for many years and will continue in the future. NE activities under this program support the following general performance goals that flow from the Department's Strategic Plan.

General Performance Goals:

ER2-6 APPLYING DOE NUCLEAR EXPERTISE TO SUPPORT USE AND DEVELOPMENT OF MEDICAL ISOTOPES

Conduct medical isotope-based research to broaden and improve the application, type, and effectiveness of new treatments and diagnoses. Provide a reliable supply of quality isotopes to our customers.

ER2-7 APPLYING DOE NUCLEAR TECHNOLOGY EXPERTISE TO SUPPORT EXPLORATION OF THE PLANETS

Develop nuclear energy conversion, power generation, and propulsion systems for deep-space missions and/or national security applications. Provide compact, safe, nuclear power systems and related technologies.

Performance Indicators: Performance indicators for these goals are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Supply quality stable and radioactive isotopes for industrial, research, and medical applications that continue to meet customer specifications and maintain 95 percent on-time deliveries. (ST2-1)*[2] (EXCEEDED GOAL)	• *Supply quality stable and radioactive isotopes for industrial, research, and medical applications that continue to meet customer specifications and maintain 95 percent on-time deliveries. (SC2-1)* (MET GOAL)
• *Initiate construction and commissioning of the Los Alamos Isotope Production Facility to improve isotope quality with greater operating efficiency. (ST2-1)* (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. (SC2-1)* (MET GOAL)
• *Complete equipment installation necessary for an emergency backup supply of molybdenum-99, issue a request for proposals to privatize molybdenum-99 production and business activities by May 1999, and after evaluation, award a contract by September 1999 to the most qualified firm. (ST2-1)* (NEARLY MET GOAL)	• *Invest in two new process development technologies as requested by researchers that enhance isotope production, services and delivery application systems. (SC2-1)* (MET GOAL)
	• *Implement the Advanced Nuclear Medicine Initiative by providing isotopes or financial assistance for at least five researchers. (SC2-1)* (EXCEEDED GOAL)
	• *Complete bench scale demonstration of the process to recover Pu-238 scrap for reuse in power systems for future missions using radioisotope power systems. (SC2-1)* (MET GOAL)
[NOTE: 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.]	• *Execute 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. (SC2-1)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ST2-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Targets (Revised Final)	FY 2002 Proposed Targets
• *Supply quality stable and radioactive isotopes for industrial, research, and medical applications that continue to meet customer specifications no less than 97 percent and maintain 95 percent on-time deliveries. (ER2-6)*	• *Supply quality stable and radioactive isotopes for industrial, research, and medical applications that continue to meet customer specifications no less than 97 percent and maintain 95 percent on-time deliveries. (ER2-6)*
• *Complete ~~90~~ 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. (ER2-6)* [Revised to reflect schedule adjustment to meet other facility needs]	• *Complete 80 percent of the construction of the Los Alamos Isotope Production Facility, which is needed for the production of short-lived isotopes for medical research. (ER2-6)*
• *Provide 5 grants under the Advanced Nuclear Medicine Initiative. (ER2-6)*	• *Complete research and curriculum development funded by 14 three-year Advanced Nuclear Medicine Initiative grants to universities, hospitals and research institutions. (ER2-6)*
• *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. (ER2-7)* [Revised to reflect delays due to fire and contamination incident at Los Alamos in 2000]	• *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. (ER2-7)*
• *Competitively select system integration contractor to develop a flight qualified Stirling Radioisotope Power System for future space exploration missions. (ER2-7)*	• *Develop preliminary design of Stirling Radioisotope Power System suitable for space exploration missions. (ER2-7)*
• *Complete initial assessment of special purpose fission technologies that are focused on concepts and technologies for space applications. (ER2-7)*	• *Complete assessment of special purpose fission technology options required to power advanced spacecraft to the outer planets and on the surface of Mars. (ER2-7)*

Note: For the FY 2001, strikeout and shaded text in the measures indicates revisions. Two measures were deleted, one because it did not meet the criteria and one because of change in NASA's priorities, and two were added as a result of NASA's new priorities.

Means and Strategies:

The Department will develop new or improved isotope products and services that enable medical diagnoses and therapy, and other applications that are in the national interest, and encourage private sector investment in new isotope production ventures and sell or lease facilities and inventories for commercial purposes. The Department will develop, demonstrate, test, and deliver advanced radioisotope power systems for space and national security missions.

Collaboration Activities*:*

A panel of recognized experts in the medical isotope community, developed a report entitled, "Forecast Future Demand for Medical Isotopes," prepared for and endorsed by the Nuclear Energy Research Advisory Committee (NERAC), that encourages a more extensive collaborative effort between the Department and the National Institutes of Health in the areas of basic medical isotope research. NERAC is also developing recommendations for the Department's long-term isotope research and development plan. In addition, the Medical Isotope Program has established cooperative supply agreements with facilities in Russia and South Africa, and the Medical Isotope Program will seek additional cooperative supply agreements with other isotope manufacturers to assure that the U.S. has a reliable diverse supply of important medical isotopes.

The Department coordinates with NASA and other mission agencies in developing radioisotope power systems and conducting technology assessments of special purpose fission systems such as those used on space exploration missions. Coordination is required to ensure proposed systems and technologies satisfy the necessary technical requirements for identified mission scenarios. The Department also conducts small collaborative efforts with other federal agencies on technologies having potential benefit for future space nuclear power system applications.

External Factors Affecting Performance*:*

The Medical Isotope Program is a user of facilities operated by other DOE programs. Because of this parasitic relationship, any unscheduled outage or change in facility operating schedules negatively affects the Medical Isotope Program's construction activities, isotope production, revenue and expenses, and results in unfilled customer orders unless other foreign producers can provide those isotopes. Also, the market for medical isotopes drives prices, and as such, directly impacts revenues.

Changing mission requirements from agencies who 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 user agencies.

Validation and Verification:

Data Sources:	Monthly and quarterly technical, production and business reports; quarterly, semiannual, and annual reviews.
Baselines:	Production and technical baselines are specified in production output and schedule, project/program plans and contracts.
Frequency:	Both financial and non-financial data is collected periodically–on a monthly basis for some activities; quarterly and semiannually for others.
Data Storage:	The headquarters and field organization managing the project maintains the data on progress. Isotope customer responses are tracked.
Verification:	Internal, independent audits and technical expert, or peer reviews of business, production, process improvement, and technical reports and progress are conducted.

Planned Program Evaluation:

The Medical Isotope Program staff holds an annual financial and planning meeting, and two site-wide program managers meetings at various site visits throughout the year. Conferences such as the Society of Nuclear Medicine Conference are also attended. At these conferences, workshops are conducted to meet with stakeholders and customers that further assists with gaining knowledge of the needs of the program.

Progress against established plans is evaluated by periodic internal and external reviews. These reviews provide an opportunity to verify and validate the performance data. 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 user agencies' requirements.

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GPRA Program Activity: Nuclear Energy R&D

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp.($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
270 Energy Supply					
Research and Development		NE	35	47	27
Advanced Accelerator Applications		NE	-	34	-
Total			35	81	27

Description of the Program:

The mission of the Nuclear Energy Research and Development program is to continue to expand the benefits of nuclear science and technology to our Nation by investing in innovative research, in our Nation's R&D infrastructure, and in our universities that train the scientists and engineers of the future. Our Nation's investments in Nuclear Energy R&D are made in response to the benefits that are now routinely expected and in anticipation of those new benefits that are likely to accrue. Twenty percent of our Nation's electricity is produced today using emission-free nuclear power plants. Government, industry, and academia alike face similar challenges in sustaining the critical nuclear science and technology infrastructures – our research facilities and human resources – that are required to maintain and expand upon our past success. NE activities under this program support the following general performance goals that flow from the Department's Strategic Plan.

General Performance Goals:

ER2-2 DEVELOPING LARGE, HIGH EFFICIENCY, ADVANCED POWER SYSTEMS
Enhance the economics and environmental performance of electricity generation by expanding the use of multi-product facilities that can also produce heat, clean fuels, and/or chemical products. Develop advanced fossil- and nuclear-based power generation systems that can meet future environmental goals at reasonable cost. Towards this goal NE will identify innovative nuclear energy research concepts developed under NERI for further development, and continue the bilateral research programs with other countries.

ER2-4 SUPPORTING RESEARCH TO IMPROVE EXISTING POWER PLANTS
Develop technology to improve the performance of older fossil and nuclear power plants, permitting continued operation in an increasingly competitive and environmentally-constrained industry. As part of this goal, NE will continue ongoing R&D and initiate new R&D associated with managing the long-term effects of plant aging and improving the reliability and productivity of existing nuclear power plants.

ER2-8 PRESERVING THE NATION'S SCIENCE AND ENGINEERING EDUCATIONAL INFRASTRUCTURE FOR ENERGY TECHNOLOGY
Support and promote the Nation's university, college, and preparatory technology programs that deliver information and contribute to learning in science and engineering education; enable advanced educational research opportunities; build capabilities at educational institutions; and improve educational opportunities for diverse groups.

Performance Indicators: Performance indicators for these goals are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *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. (ER2-8)* [2] (MET GOAL) • *Complete Memoranda of Understanding with the Nuclear Regulatory Commission and the Electric Power Research Institute (EPRI) to guide future implementation of the Joint DOE-EPRI Strategic Research and Development Plan to Optimize U.S. Nuclear Power Plants. (ER2-7)* (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. (ER2-8)* (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. (ER2-8)* (MET GOAL) • *Issue the first update to the Joint DOE/EPRI Strategic Research and Development Plan to Optimize U.S. Nuclear Power Plants. (ER2-7)* (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. (ER2-7)* (MET GOAL) • *Establish a science and engineering based research program into ATW technology development. Commence 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. [Added Measure] (EQ2-4)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ER2-8 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Targets (Revised Final)	FY 2002 Proposed Targets
• *Complete funding for the first 3-year phase of Nuclear Energy Research Initiative (NERI) research and development and select feasible and important reactor and fuel cycle concepts for continued development, and issue approximately 15 new awards. (ER2-2)*	• *Complete the first 3-year phase of NERI research and development. (ER2-2)*
• *Establish ~~Initiate the International Clean Energy Initiative/International Nuclear Energy Research Initiative (I-NERI) to promote~~ bilateral research programs with other countries to improve the cost, and enhance the safety, non-proliferation and waste management of future nuclear energy systems. (ER2-2)*	
• *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. (ER2-2)*	• *Complete the Near Term Deployment section of the Generation IV Technology Roadmap, and complete the draft Generation IV Technology Roadmap for development of next generation nuclear energy systems. The Roadmap is to be submitted to Congress by March 2003. (ER2-2)*
• *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.* [2]	
• *Establish a new Advanced Accelerator Applications university fellowship program and fund 10 new graduate students in engineering and science.* [2]	

Notes:

1. For the FY 2001, strikeout and shaded text in the measures indicates revisions. Two measures were deleted because they were either activities or did not meet the criteria, one was updated and two new ones added to reflect new direction.

2. These measures support an appropriation for FY 2001. The Department is not requesting any additional funding for FY 2002.

Means and Strategies:

The NEPO program supports a key national objective by conducting the R&D necessary to ensure that most of the current fleet of 103 operating commercial nuclear reactors are available beyond their initial 40 year license period by resolving open issues related to plant aging, and by applying new technologies to improve plant availability, and productivity. The program was recommended by the President's Committee of Advisors on Science and Technology (PCAST) Panel on Federal Energy Research and Development in its November 1997 report. The utility industry provides cost-sharing of at least 50 percent. The NEPO program is guided by an industry-government committee - the Coordinating Committee for the Joint DOE-Electric Power Research Institute (EPRI) Strategic Research and Development Plan to Optimize U.S. Nuclear Power Plants (hereafter referred to as the Coordinating Committee). Oversight is provided by the NERAC Subcommittee on Operating Nuclear Power Plant Research, Coordination, and Planning. The projects for the NEPO program are conducted at industrial companies, national laboratories, and universities. The focus of the issue specific R&D is on developing technologies to increase the number of years of operation, number of operating hours per year, and electrical output per hour of operation for existing nuclear power plants.

The NERI program has been the cornerstone for renewed interest in nuclear science and technology development in this country since its introduction in FY 1999. In FY 2002, 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. NERI has helped return the United States to a key leadership role in the international exploration of nuclear technology, prompting the interest and support of many other nations and leading to expanded research and development collaboration.

During FY 2002, a process will also be developed to identify those NERI projects that have successfully completed the first three-year phase of research and warrant additional research investment. The Department will continue the bilateral cost-shared research in cooperation with other nations initiated in FY 2001. These cooperative projects are focused on scientific research and advanced technology development to improve the cost and enhance the safety, proliferation resistance and waste management of advanced nuclear energy systems. Advice on the conduct of the NERI research and development program is provided by the NERAC Subcommittee on Long Range Planning for Nuclear Energy Research.

The goal of the Generation IV Nuclear Power Initiative is to make, no later than 2030, nuclear energy the most sustainable, cost-competitive, reliable, and secure means of generating electricity that advanced nuclear technology and prior experience can produce. The goals defined for this program focus not only on the traditional goals of safety and cost-competitiveness, but of equal importance, on the fuel cycle and overall systems aspects that make nuclear energy sustainable in terms of the consumption of fuel and structural materials, and its ultimate radioactive waste products. The Generation IV Technology Roadmap initiated in FY 2001 and planned for completion in March 2003 will provide a comprehensive R&D plan to close existing technology gaps and permit the design and construction of Generation IV systems. The Roadmap will include a Near Term Deployment section that will identify the technological and institutional gaps that must be closed to enable one or more orders for commercial nuclear power plants in the United States by 2005 for deployment by 2010.

The Department initiated efforts in FY 2001 to assess improvements needed to Advanced Light Water Reactor (ALWR) technology to improve economic competitiveness; assess the feasibility of deploying small reactors in remote regions; and initiate planning and implementing activities for commercial applications of the gas reactor technology being developed for nuclear weapons material disposition.

For FY 2001 Congress combined the Accelerator Production of Tritium (APT) program and the Accelerator Transmutation of Waste (ATW) program into a new program program titled the Advanced Accelerator Applications (AAA). While Congress did not dictate the specifics of the program , the Congress required a plan for the development of AAA. The Department prepared the plan and has submitted it to Congress.

Collaboration Activities:

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. The Nuclear Energy Research Advisory Committee (NERAC) provides advice on the conduct of the Nuclear Energy Plant Optimization (NEPO) and Nuclear Energy Research Initiative (NERI) research and development programs, and the Generation IV Technology Roadmap development.

NEPO is conducted with a minimum 50 percent cost-share provided by industry consistent with the "Joint DOE-Electric Power Research Institute Strategic Research and Development Plan to Optimize U.S. Nuclear Power Plants". The projects for NEPO are conducted at national laboratories, industrial organizations, and universities.

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 will be conducted on at least a 50-50 cost-shared basis with international partners.

External Factors Affecting Performance:

The I-NERI and the Generation IV Nuclear Power Initiative, including development of the Generation IV Technology Roadmap, are receiving broad international cooperation and support, consistent with the objectives of the programs. On the NEPO program, as legislatively required, the utility industry, at a minimum, is matching government funding for the research and development activities. National energy policy influences all of the research and development programs covered in this performance plan.

Validation and Verification:

Data Sources:	Monthly and quarterly progress reports, periodic technical reports; quarterly, semiannual, and annual reviews.
Baselines:	Technical baselines are specified in project plans and contracts.
Frequency:	Data is collected periodically–on a monthly basis for some programs; quarterly and semiannually for others.
Data Storage:	The headquarters and field organization managing the project maintain the data on technical progress.
Verification:	Internal, independent technical expert, or peer reviews of technical reports and progress are conducted.

Planned Program Evaluation:

Progress against established plans is evaluated by periodic NE and external reviews. These reviews provide an opportunity to verify and validate the performance data. 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 user agencies' requirements.

NERAC, the NERAC Subcommittee on Operating Plants, the EPRI Nuclear Power Council, and the Coordinating Committee assess and evaluate the NEPO program. Recommendations resulting from these reviews guide the implementation of the NEPO program.

NERI, is evaluated by the NERAC Subcommittee 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 NE 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 NE and members from the participating countries.

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

GPRA Program Activity: Nuclear Energy Facilities and Infrastructure

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activity**	**DOE Office**	**Comparable Approp.($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
270 Energy Supply					
Nuclear Facilities Management		NE	42	35	31
Infrastructure Maintenance		NE	68	78	81
Total			110	113	112

Description of the Program:

Nuclear Energy Facilities and Infrastructure activities are focused on management of the Department's vital resources and capabilities at NE-managed sites to assure that the Department can meet its vital mission requirements; and NE sites are maintained in a safe, secure, environmentally-compliant and cost-effective manner to ensure the protection of the workers, the public, and the environment. Activities also include carrying out the long-term treatment and management of DOE's sodium-bonded spent nuclear fuel; further developing electrometallurgical treatment technology; placing unneeded facilities in industrially safe, stable and environmentally-compliant conditions for low-cost, long-term surveillance and maintenance; and managing and disposing of DOE material legacies associated with the Department's nuclear energy activities. NE activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goal:

EQ3-2 MANAGING LEGACIES ASSOCIATED WITH CIVILIAN NUCLEAR POWER DEVELOPMENT ACTIVITIES

Maintain in a safe and stable configuration nuclear energy research facilities that are presently in either shutdown or standby condition. Continue to develop technologies for electrometallurgical treatment that could resolve problems with DOE's spent nuclear fuel. As part of this goal, NE will maintain the Fast Flux Test Facility (FFTF) in a safe, environmentally-compliant condition while conducting shutdown activities.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Complete the demonstration of the electrometallurgical spent fuel treatment technology by the end of FY 1999 using Experimental Breeder Reactor-II spent nuclear fuel. (EQ6-2)* [2] (MET GOAL) • *Complete the conversion and disposition of 100 percent of the secondary sodium coolant from the Experimental Breeder Reactor-II and 40 percent of the Fermi reactor sodium coolant in storage at Argonne National Laboratory-West. (EQ6-2)* (NEARLY MET GOAL) • *Maintain the Fast Flux Test Facility in a safe, environmentally-compliant standby condition to permit implementation of an anticipated Secretarial decision in FY 1999 to deactivate or pursue potential restart to support a range of national research requirements. (EQ6-2)* (MET GOAL)	• *Complete the conversion and disposition of 100 percent of the secondary sodium coolant from the Experimental Breeder Reactor-II (EBR-II) and 40 percent of the Fermi reactor sodium coolant in storage at Argonne National Laboratory-West. (EQ2-4)* (MET GOAL) • *Initiate draining sodium from EBR-II primary system and processing it for disposal. (EQ2-4)* (MET GOAL) • *Depending upon the conclusion of the NEPA analysis currently underway, complete Fuel Conditioning Facility maintenance and resume sodium-bonded fuel treatment activities. (EQ2-4)* (MET GOAL) • *Maintain the Fast Flux Test Facility in a safe, environmentally-compliant standby condition while implementing a Secretarial decision to conduct a National Environmental Policy Act review of the environmental impacts of enhancing the Department's nuclear research facility infrastructure. (EQ2-4)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. EQ6-2 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Targets (Revised Final)	**FY 2002 Proposed Targets**
• *Complete the conversion and disposition of 100 percent of the Fermi reactor sodium coolant in storage at Argonne National Laboratory-West. (EQ3-2)* • *Complete draining the Experimental Breeder Reactor II (EBR-II) primary system and process 100 percent of all EBR-II sodium in compliance with the INEEL Site Treatment Plan. (EQ3-2)* • *Treat a minimum of ~~0.6~~ 0.5 MTHM (metric tons of heavy metals) of EBR-II spent nuclear fuel. (EQ3-2)* [Revised based on the Record of Decision, September 2000] • *Complete the National Environmental Policy Act review of the environmental impacts of enhancing the Department's nuclear research facility infrastructure and issue a Record of Decision. (EQ3-2)*	• *Following completion of primary sodium drain, complete deactivation of Experimental Breeder Reactor II (EBR-II) and all directly related surplus facilities by March 2002. (EQ3-2)* • *Treat a minimum of 0.5 MTHM (metric tons of heavy metals) of EBR-II spent nuclear fuel. (EQ3-2)* • *Complete upgrades on the Fast Flux Test Facility (FFTF) Sodium Removal System. (EQ3-2)* • *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. (EQ3-2)* • *Complete the conceptual design and National Environmental Policy Act determination for the Remote Treatment Facility to dispose of highly radioactive waste at Argonne National Laboratory-West. (EQ3-2)*

Note: For the FY 2001, strikeout and shaded text in the measures indicates revisions. One measure related to FFTF was deleted based on the Record of Decision in January 2001.

Means and Strategies:

The Department will resolve spent nuclear fuel disposition problems and address other critical DOE missions supporting the goal of managing the legacies associated with civilian nuclear power development activities. Under this approach, the Department will complete deactivation of the Experimental Breeder Reactor-II and apply electrometallurgical treatment in accordance with the National Environmental Policy Act reviews and Record of Decision to the disposition of DOE sodium-bonded spent nuclear fuel. The Department will also continue the permanent deactivation of the Fast Flux Test Facility (FFTF) to help meet its obligations under a tri-party agreement with the State of Washington Department of Ecology and the U.S. Environmental Protection Agency (EPA - Region III). Finally, the Department will responsibly manage and disposition legacy materials generated from past DOE nuclear energy activities.

The Department will also ensure that essential systems, resources, and support services are available to conduct priority missions for the Department and are maintained and operated in compliance with DOE, Federal and State safety and environmental requirements and in a secure and cost-effective manner.

Collaboration Activities:

None

External Factors Affecting Performance:

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 Experimental Breeder Reactor-II (EBR-II) spent nuclear fuel stored at the Argonne National Laboratory-West (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, 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.

External factors for performance of the FFTF deactivation fall in two inter-related areas: availability of skilled staff; and ability to meet obligations under the Tri-Party Agreement on the Hanford Clean-up with the State of Washington Department of Ecology and the U.S. EPA.

Over 120 skilled technicians and operators must be added to the current FFTF staff over several years to efficiently deactivate FFTF and meet approved milestones. Certain skills, such as hot cell operator, are in short supply. Should there be greater than expected difficulty in hiring in such a skill area, then deactivation milestones could potentially be impacted. Measures will be taken to tap all reasonably available skill resources, including other laboratories such as ANL-W, and it is expected personnel needs will be met for the FFTF deactivation.

The Tri-Party Agreement (TPA) with Washington and the EPA for the Hanford Site clean-up includes legally binding FFTF deactivation milestones, which, if not met would result in Notices of Violation and fines. Addressing these would absorb some of the resources otherwise going toward deactivation activities. TPA FFTF deactivation milestones are external factors since they are independent of funding actually appropriated for the current fiscal year.

For the Idaho Test Reactor Area, if the Idaho Department of Environmental Quality were to find an environmental violation requiring immediate correction, the resultant reallocation of resources would impact planned performance.

Validation and Verification:

Data Sources:	Monthly progress and quarterly technical reports; quarterly, semiannual, and annual reviews.
Baselines:	Technical baselines are specified in project plans and contracts.
Frequency:	Data is collected periodically–on a monthly basis for some programs; quarterly and semiannually for others.
Data Storage:	The headquarters and field organization managing the project maintains the data on technical progress.
Verification:	Internal, independent technical expert, or peer reviews of technical reports and progress are conducted.

Planned Program Evaluation:

The Nuclear Facilities Management program staff discuss progress against established plans at periodic tele-video conferences with field office and contractor representatives. For activities at Argonne National Laboratory (ANL) -West, these conferences will include the Chicago Operations Office Group responsible for ANL and ANL-West staff, and for FFTF deactivation, the Richland Operations Project Office responsible for the FFTF and Fluor-Hanford FFTF staff. In addition, semiannual and annual program reviews are held to verify and validate the performance data. Finally, the Chicago Operations Office Group located at the ANL-West site meets frequently with State of Idaho regulators to review progress against prescribed commitments in State permits, Consent Orders, and the 1995 Settlement Agreement.

The Infrastructure program is closely monitored through the use of: frequent telephone conference calls between Headquarters and program staff, the field operations office, and the contractor; weekly and monthly reports on technical, cost, and schedule milestones; and on-site program review meetings conducted at least twice a year.

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GPRA Program Activity: Energy Information Administration

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
270 Energy Supply					
Energy Information Administration	-	EIA	72	76	76

Description of the Program:

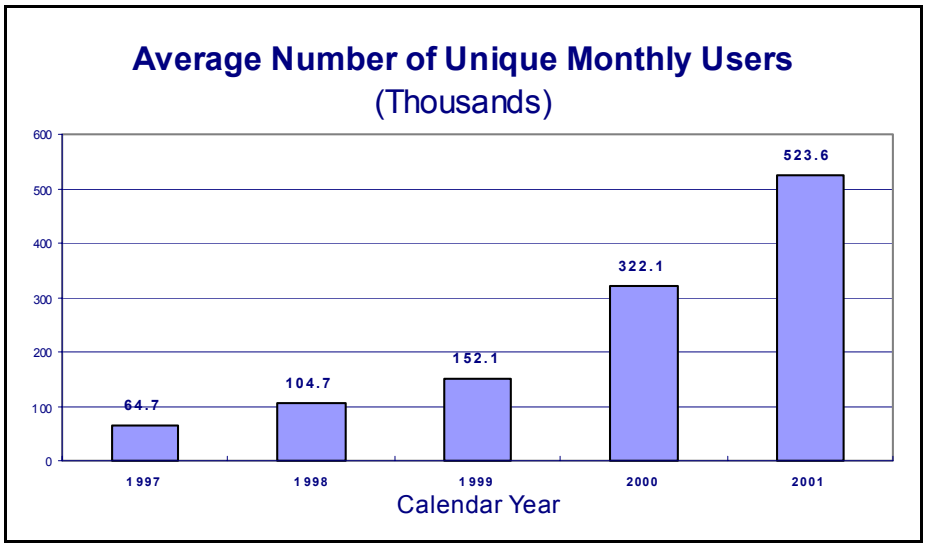
As an independent statistical/analytical agency, EIA has two principal roles. First, its primary responsibility is to conduct the functions required by statute. This responsibility consists of the development and maintenance of a comprehensive energy database and the publication of reports and analyses for a wide variety of customers in the public and private sectors. There are also specific reports which 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.

General Performance Goal:

ER4-2 EXPANDING PUBLIC ACCESS TO ENERGY INFORMATION
Provide forecasts for energy supply and consumption through the year 2020. Make information more easily accessible to the general public by designing and issuing on-line products for electronic dissemination. Undertake information and education programs to familiarize the general public with DOE energy technologies and their applications, availability, and benefits (e.g., environment, health, economics, and reliability). Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Performance Indicator: Average number of unique monthly users of EIA's web site

Discussion: In 1997 EIA, in cooperation with Office of the Assistant Secretary for Energy Efficiency and Renewable Energy (EE), committed to increasing the average number of unique monthly users of it's web site by 20% 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 web site – an increase of over 110% from the previous year. For the first five months of Fiscal Year 2001, EIA is averaging over 523,600 unique monthly users of its web site. The average monthly usage of EIA's web site for FY 2001 is 8 times that experienced in the baseline year of FY 1997.


Average Number of Unique Monthly Users
(Thousands)
600
500
400
300
200
100
0
64.7
104.7
152.1
322.1
523.6
1997
1998
1999
2000
2001
Calendar Year

The following facing pages show four years of performance measures for EIA.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Publish domestic and international Annual Energy Outlooks forecasting energy supply and consumption through the year 2020. (ER5-1)*[2] (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 Web Site (from about 71,000 per month in 1997). (ER5-1)* (EXCEEDED GOAL)	• *Publish domestic and international Annual Energy Outlooks forecasting energy supply and consumption through the year 2020. (ER5-1)* (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 Web Site (from about 71,000 per month in 1997). (ER5-1)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ER5-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Publish domestic and international Annual Energy Outlooks forecasting energy supply and consumption through the year 2020. (ER 4-2)*	• *Publish domestic and international Annual Energy Outlooks forecasting energy supply and consumption through the year 2020. (ER 4-2)*
• *Achieve a growth rate of at least 20 percent per year in the average number of unique monthly users of the Energy Resources Board Web Site (from about 71,000 per month in 1997). (ER 4-2)*	• *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 Web Sites will continue to grow at least 20 percent per year through 2005 (from a baseline of about 70,000 per month in 1997.) (ER 4-2)*

Means and Strategies:

In FY 2002, 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, ListServ, 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 consortiums of statistical agencies on issues related to data dissemination, presentation and collection of large-scale databases on the web; and the Joint Program in Survey Methodology (JPSM) – to train college graduates in applied survey methodology, initiate a summer intern program and develop 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 our membership on the Federal Committee on Statistical Methodology, a consortium of government experts, appointed from within the statistical agencies for their technical abilities. The FCSM undertakes studies of methodological issues, 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. 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, because: (1) With 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 are 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 restructuring's 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 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.

Validation and Verification:

Data Sources:	Measure 1: EIA's Action Tracking System (ATS) Measure 2: Web Site Server Logs
Baselines:	1. Not Applicable 2. 1997
Frequency:	1. Annual 2. Continuous
Data Storage:	1. Microsoft Access Database 2. Initial storage on server, later displaced to CD-ROM
Verification:	1. EIA's Web Site at: http://www.eia.doe.gov/oiaf/aeo/ 2. Software: Webtrends Inc., Webtrends 4.1

Planned Program Evaluation:

EIA annually conducts a customer satisfaction survey. The results of the customer survey are reviewed by EIA's senior management. Often specific survey questions about EIA's web site 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 web site, EIA has initiated an ongoing cognitive testing initiative of its web site. 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 easily and quickly be able to find the data for which they are looking 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 have lead to a redesign of the site to make it easier to use for the diverse range of users. The redesigned Web site has been available to the public since late December 1999. Monitoring of customer feedback and usage of the redesigned 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 Web site.

EIA's performance measures are presented to senior management on a quarterly basis. Included is the number of unique monthly users of the EIA's web site 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 services.

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GPRA Program Activity: Power Marketing Administrations

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activity	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
270 Energy Supply					
Southeastern Power Administration	Operation & Maintenance, SEPA	SEPA	8	4	5
Southwestern Power Administration	Operation & Maintenance, SWPA	SWPA	29	28	28
Western Area Power Administration	Constr, Rehab, Oper & Maint.	WAPA	193	165	169
	Falcon-Amistad O&M	WAPA	1	3	3
Bonneville Power Administration	Bonneville Power Administration Fund	BPA	-	-	-
Total, PMAs			230	200	205
Colorado River Basin Fund		WAPA	(21)	(21)	(26)

Notes:
- In FY 2001 and 2002, Southeastern, Southwestern and Western Power Administrations will fund Purchased Power and Wheeling activities through the use of revenues from the sale of power and other alternative financing methods such as net billing and bill crediting.
- The Colorado River Basin Power Marketing Fund and Colorado River Dam Fund (CRDF)-Boulder Canyon Project are revolving funds and require no appropriations. Net Receipts from the Colorado River Basin Fund are included in Corporate Management.
- DOE's Budget Request is considered Discretionary funding. The Bonneville Fund is considered Mandatory funding, so its expenses are not included in this table.

Description of the Program:

The Power Marketing Administrations' (PMAs) mission fulfills the requirements of the Bonneville Project Act of 1937, Section 9 of the Reclamation Project Act of 1939, Section 5 of the Flood Control Act of 1944, the Federal Columbia River Transmission Act of 1974, the Regional Power Act of 1980, and various other acts by marketing and reliably delivering 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 operating costs and repaying the Federal investment in power facilities in a timely manner.

The PMAs' programs help achieve the Department's Energy Resources goal through the strategic objectives of providing reliable, affordable, and clean supplies of electricity to customers in the West, Mid-West, and Southeastern United States; and by increasing the efficiency and productivity of energy use while limiting environmental impacts.

PMA activities support the following general performance goal:

General Performance Goal:

ER2-5 RELIABLY DELIVERING FEDERAL HYDROELECTRIC POWER

Through the power marketing administrations, market and reliably deliver Federal hydroelectric power with preference given to public bodies and cooperatives. Specific measures and targets for FY 1999 - FY 2002 are listed in the tables that follows.

Annual Performance Measures[1]:

FY 1999 Results	**FY 2000 Results** (Revised Final)
• *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. (ER1-6)*[2] (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. (ER1-6)* (MET GOAL) • *Meet planned repayment of principal on power investment. (ER1-6)* (NEARLY MET GOAL) Bonneville and Southwestern are at "Met Goal" and Southeastern and Western are "Nearly 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. (ER1-6)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ER1-6 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	**FY 2002 Proposed Target**
• *Receive monthly a control compliance rating of "pass" using the North American Electric Reliability Council performance standard. (ER2-5)*	• *Receive monthly a control compliance rating of "pass" using the North American Electric Reliability Council performance standard. (ER2-5)*
• *Meet planned repayment of principal on power investment. (ER2-5)*	• *Meet planned repayment of principal on power investment. (ER 2-5)*
• *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. (ER2-5)*	• *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. (ER2-5)*

Means and Strategies:

In order to achieve safety and reliability while staying competitive, the PMAs will accomplish their missions with 4,406 Federal employees (BPA 2,867, SEPA 42, SWPA 177, and WAPA 1320), $179 million of budget authority, and use of power revenues and alternative financing authority. The PMAs accomplish their missions through five program activities: Operations and Maintenance, Construction and Rehabilitation, Purchased Power and Wheeling, Program Direction, and Utah Reclamation Mitigation and Conservation. (Not every PMA has every program activity.)

To achieve the first goal of Reliability, the PMAs will make improvements and perform maintenance on the transmission, communications, and control systems. They will also make improvements to their analytic capabilities, work force skills, and employee retention. To achieve the second goal of Repayment, the PMAs will utilize sound business practices and prudent risk management; and to achieve the third goal of Safety, 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 mangement levels in order to keep safety culture strong. Accidents will be reviewed to ensure that lessons are learned and proper work protocol is in place.

Collaboration Activities:

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

External Factors Affecting Performance:

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 ability to replace the expertise, weather conditions, encroachments to the right-of-ways, terrain, and location of the equipment being maintained.

Validation and Verification(Goal 1-Reliability):

Data Sources:	Data on the measures of Area Control Error variability and magnitude (CPS1 and CPS2) are provided by NERC Control Area operators each month.
Baselines:	Control Performance Rating = Pass if CPS1 $\geq$100% and CPS2 $\geq$ 90%
Frequency:	Monthly
Data Storage:	Control Area Operators
Verification:	Data on the measures of Area Control Error variability and magnitude (CPS1 and CPS2) are provided by NERC Control Area Operators

Validation and Verification(Goal 2-Repayment):

Data Sources:	Chief Financial Officers at the PMAs track and report data.
Baselines:	Planned principal payments to the U.S. Department of Treasury.
Frequency:	Annually
Data Storage:	Chief Financial Officer
Verification:	External auditors

Validation and Verification(Goal 3-Safety):

Data Sources:	Injury and illness reports are prepared by the safety office. Inquiries are made with managers and employees.
Baselines:	Department of Labor statistics
Frequency:	Continuous
Data Storage:	PMA safety offices.
Verification:	Safety committees reviews reports

Planned Program Evaluation:

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

NATIONAL NUCLEAR SECURITY

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

Three major offices within NNSA carry out the Department's national security mission. The Office of Defense Programs is responsible for maintaining the safety, security, and reliability of the U.S. nuclear weapons stockpile. The Office also maintains the capability to design and produce nuclear weapons and maintains the capability to resume underground nuclear testing. The Office of Naval Reactors provides the U.S. Navy with safe, militarily effective nuclear propulsion plants. Naval Reactors ensures the safe and reliable operation of those plants–beginning with technology development, continuing through reactor operation, and ultimately, disposing of the reactor plants. The Office of Defense Nuclear Nonproliferation is responsible for promoting international nuclear safety and nonproliferation. The Office is also responsible for: research and development of technologies to detect proliferation; implementing of the Highly Enriched Uranium Purchase Agreement; elimination of surplus U.S. weapons and highly enriched uranium; and assistance to help Russia eliminate its surplus weapons-grade plutonium.

Four staff offices outside of NNSA retain policy, oversight, and some national security responsibilities: the Offices of Security and Emergency Operations, the Office of Intelligence, the Office of Counterintelligence, and the Office of Independent Oversight and Performance Assurance. The Office of Worker Transition and Community Assistance, which is also outside of NNSA, manages programs to minimize the social and economic impacts of changes in the Department's activities.

NATIONAL NUCLEAR SECURITY GOAL

Enhance the national security through the military application of nuclear technology and reduce global danger from weapons of mass destruction.

The funding requested for the National Nuclear Security Business Line is within the 050 Atomic Energy Defense Activities account under "Weapons Activities" and "Other Defense Activities". The Weapons Activities account funds the Office of Defense Program in their efforts to maintain a safe, secure, and reliable nuclear weapons stockpile utilizing a science-based approach rather than nuclear weapons testing. The Other Defense Activities budget account also provides funds for this business line, Environmental Quality, and Corporate Management.

Within the National Nuclear Security Business Line are the efforts to reduce the danger to U.S. National Security posed by weapons of mass destruction (WMD), specifically efforts to prevent the spread of WMD materials, technology, and expertise. The 050 account also funds efforts of a new, consolidated Security Office to ensure the security of DOE's work; the Offices of Intelligence and Counterintelligence which address intelligence and counterintelligence matters; and efforts to minimize the adverse impacts of program downsizing on those who won the Cold War and the nearby communities.

The national nuclear security portion of environment, safety and health and contract hearings and appeals are funded in the 050 account, but their performance is presented under Corporate Management.

The National Security goal is supported by the following six strategic objectives.

NS1: ***Maintain and refurbish nuclear weapons in accordance with directed schedules to sustain confidence in their safety, security, and reliability, indefinitely, under the nuclear testing moratorium and arms reduction treaties.***

NS2: ***Achieve a robust and vital scientific, engineering, and manufacturing capability that is needed for current and future certification of the nuclear weapons stockpile and the manufacture of nuclear weapon components under the nuclear testing moratorium .***

NS3: ***Ensure the vitality and readiness of DOE's nuclear security enterprise.***

NS4: ***Reduce the global danger from the proliferation of weapons of mass destruction.***

NS5: ***Provide the U.S. Navy with safe, militarily effective nuclear propulsion plants, and ensure their continued safe and reliable operation.***

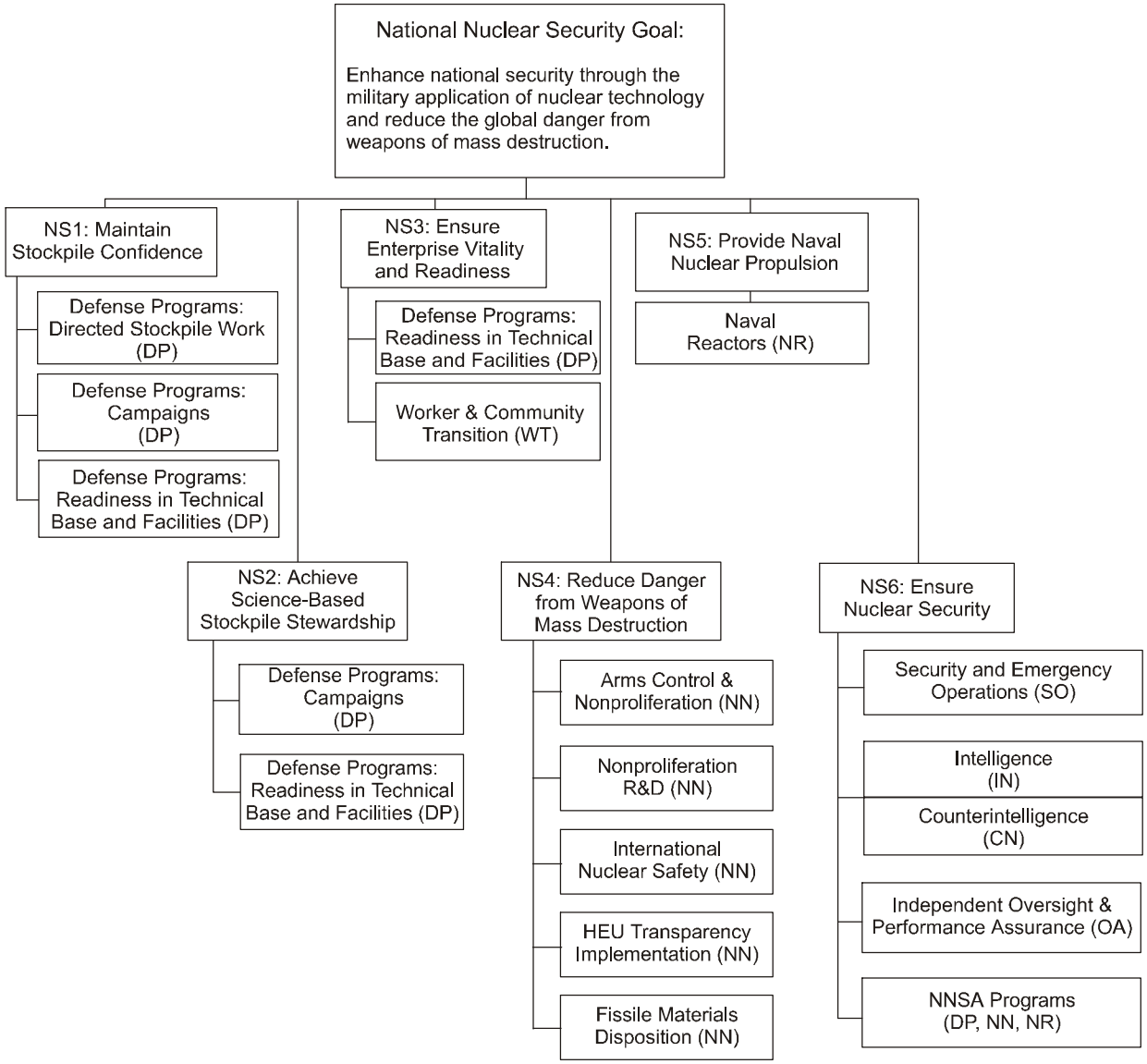
NS6: ***Ensure that the Department's nuclear weapons, materials, facilities, and information assets are secure though effective safeguards and security policy, implementation, and oversight.***

The following table maps the Presidential Budget's Program and Financing (P&F) accounts and program activities to the Department of Energy's offices and GPRA Program Activities. The alignment includes aggregation, disaggregation, and consolidation of budget decision units. The chart that follows this table shows how the decision units support the Department's Strategic Plan objectives for this business line.

Presidential Budget Program and Financing (P&F) Accounts and Program Activities	FY 2002 Budget Request ($M)	DOE Office	GPRA Program Activity
050 Atomic Energy Defense Activities			
National Nuclear Security Administration(NNSA)			
Defense Programs			
Directed Stockpile Work	1,044	DP	Defense Programs
Campaigns	1,996	DP	
Readiness in Technical Base and Facilities	1,447	DP	
Transportation Safeguards	122	DP	
Program Direction	271	DP	
Safeguards and Security	449	DP	
Adjustments	(29)	DP	
Subtotal Defense Programs	5,300	DP	Subtotal Defense Programs
Defense Nuclear Nonproliferation			
Defense Nuclear Nonproliferation	206	NN	Nonproliferation & Verification R&D
	102	NN	Arms Control & Nonproliferation
	139	NN	International Materials Protection, Control, and Accounting
	14	NN	International Nuclear Safety
	14	NN	HEU Transparency
	290	NN	Fissile Materials Disposition
Program Direction	51	NN	Program Direction
Adjustment for PY Bal., S&S	(42)		
Subtotal Defense Nuclear Nonproliferation	774	NN	
Naval reactors	688	NR	Naval Reactors
NNSA Office of the Administrator	15	NA	
Total for NNSA	**6,777**		
Intelligence	41	IN	Intelligence and Counterintelligence
Counterintelligence	46	CN	
Worker and Community Transition	24	WT	Worker and Community Transition
Security and Emergency Operations	269	SO	Security and Emergency Operations
Oversight Activities	15	OA	Independent Oversight and Performance Assurance
Total for other Def. Activities	**395**		
TOTAL - National Nuclear Security	**7,172**		

The program direction budget lines, i.e., for Defense Programs, Defense Nuclear Nonproliferation, and NNSA Office of the Administrator, are their own Program Activities in the President's Budget Program and Financing (P&F) schedule but are not for performance planning purposes. These funds support the management of programs and salaries and benefits of the Federal staff. Therefore, these budget lines do not have performance goals but manage the performance goals of their respective programs.

The National Nuclear Security goal is supported by six strategic objectives. Each strategic objective is being pursued through long-term strategies. In this annual performance plan these long term strategies have been stated in terms of General Performance Goals against which outcome performance indicators and annual (output) performance measures have been established. To make the linkage of these outcomes and outputs to the budget resources we have organized the plan by GPRA Program Activities which are aligned with the budget decision units through aggregation, disaggregation, and consolidation. The general performance goals and indicators and annual measures and targets are discussed with the GPRA Program Activities on the following pages. This approach allows us to clearly link annual performance with annual budget resources and the strategic plan objectives. The chart below gives an overview of the linkage of budget decision units and strategic objectives for National Nuclear Security.



GPRA Program Activity: Defense Programs

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activity**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
050, Atomic Energy Defense Activities					
Directed Stockpile Work		DP	732	915	1,044
Campaigns		DP	1,831	2,023	1,996
Readiness in Technical Base and Facilities		DP	1,313	1,414	1,447
Secure Transportation Asset		DP	104	115	122
Program Direction		DP	238	251	271
Safeguards and Security		DP	394	395	449
Adjustments			(49)	(43)	(29)
Total			4,564	5,069	5,300

Description of the Program:

The DOE Stockpile Stewardship Program maintains confidence in the safety, reliability, and performance of the nuclear weapons in the Nation's stockpile without underground nuclear testing. The program develops and maintains the world class scientific, engineering, manufacturing, and experimental capabilities needed to achieve weapons stockpile certification for the long term. It ensures the vitality of the DOE national security enterprise, including the physical and intellectual infrastructure for the three defense national laboratories, (Los Alamos National Laboratory (LANL), Lawrence Livermore National Laboratory (LLNL), and Sandia National Laboratory (SNL), the Nevada Test Site, and the Kansas City, Pantex, and Y-12 production plants and Savannah River Tritium facilities.

Achieving confidence in our ability to certify without underground nuclear testing that the nuclear weapon stockpile remains safe and reliable for the long term requires capable and experienced people working on significant scientific and engineering challenges to develop and advance specialized knowledge, tools and techniques. Success requires appropriate integration and balance of these three elements in meeting current and future mission; carrying out the directed stockpile workload as well as maintaining the program's infrastructure and developing capabilities needed in the future.

In January 2001, President Bush asked the Secretary of Defense to conduct three reviews to create a new vision for the role of the Nation's military in the 21st Century. The first will examine the appropriate national security strategy, force structure and budget priorities to guide future decision no military spending. The second will examine the requirements of deterrence in the current security environment. This review will examine the size of the future nuclear stockpile, and address the Nation's missile defense needs. The third will examine the overall quality of life for our military personnel. Completion of these projects could impact the FY 2002 and outyear budgets for defense and national security-related activities..

General Performance Goals:

NS1-1 MAINTAINING STOCKPILE CONFIDENCE
Conduct a program of Directed Stockpile Work that supports stockpile refurbishment activities; completes surveillance, maintenance, design, and manufacturing activities necessary for the refurbishment and certification of the stockpile; and applies improved technologies and tools developed by the Campaigns to achieve Directed Stockpile Work performance measures.

NS2-1 CONDUCTING CAMPAIGNS
Conduct a series of science and computing Campaigns pertaining to: certifications of primaries, secondaries and weapon engineering; materials properties; advanced radiography; weapon performance in hostile environments; inertial confinement fusion and ignition; and simulation and computing. This includes developing simulation and modeling tools and capabilities to implement virtual testing of nuclear weapons and components in the absence of underground nuclear testing. Conduct a series of applied science and engineering campaigns pertaining to: advanced design and production technologies; enhanced surveillance; and enhanced surety. Also conduct readiness campaigns pertaining to: pit and secondary manufacturing; high explosives manufacturing and weapon assembly/disassembly; non-nuclear components; and tritium production.

NS3-1 ENSURING ENTERPRISE VITALITY AND READINESS
Provide an appropriately-sized, cost effective, safe, secure, and environmentally-sound enterprise for national nuclear security programs; maintain nuclear test readiness in accordance with Presidential direction; implement recommendations of the Commission on Maintaining U.S. Nuclear Weapons Expertise; continue restructuring, modernizing, and implementing integrated safety and security management throughout the national nuclear security enterprise; and continue construction of new facilities such as the Tritium Extractions Facility, computing facilities, and the National Ignition Facility (NIF). Maintain the DOE Secure Transportation Asset for safe, secure transport of nuclear weapons, special nuclear materials, and weapon components. Ensure that the capability to resume underground nuclear testing is maintained in accordance with Presidential directive through a combined experimental and test readiness program. Ensure the availability of a workforce with the critical skills necessary to meet long-term requirements. Maintain robust emergency response assets in accordance with Presidential directive and Executive Order 12656 and Federal emergency plans.

Performance Indicators: Performance indicators for these goals are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Due to the number of performance goals in this GPRA Program Activity, the performance goals are discussed in three sections organized by the General Performance Goals that the funding supports. The following facing pages have four years of performance measures for NS1-1.

General Performance Goal:

NS1-1 MAINTAINING STOCKPILE CONFIDENCE
Conduct a program of Directed Stockpile Work that supports stockpile refurbishment activities; completes surveillance, maintenance, design, and manufacturing activities necessary for the refurbishment and certification of the stockpile; and applies improved technologies and tools developed by the Campaigns to achieve Directed Stockpile Work performance measures.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *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. (NS1-1)*[2] (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 weapons stockpile. (NS1-1)* (MET GOAL)
• *Meeting all annual weapons maintenance and refurbishment schedules developed jointly by the DOE and DoD. (NS1-1)* (NEARLY MET GOAL)	• *Meet all annual weapons alteration and modification schedules developed jointly by DOE and DoD. (NS1-1)* (BELOW EXPECTATION: Six of the 11 modifications were behind schedule. Revised schedules have been negotiated with DoD that will meet their operational needs.)
• *Adhere to the schedule for the safe and secure dismantlement of approximately 275 weapons that have been removed from the U.S. nuclear weapon stockpile. (NS4-1)* (BELOW EXPECTATION: 207 weapons were dismantled and the difference was due to technical difficulties.)	• *Adhere to approved schedules for the safe and secure dismantlement of nuclear warheads that have been removed from the U.S. nuclear weapon stockpile. (NS4-1)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. NS1-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	**FY 2002 Proposed Target**
• *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. (NS1-1)*	• *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. (NS1-1)*
• *Meet all annual weapons maintenance and refurbishment schedules developed jointly by the DOE and DoD. (NS1-1)*	• *Meet all annual weapons maintenance and refurbishment schedules developed jointly by the DOE and DoD. (NS1-1)*
• *Meet annual schedules for the safe and secure dismantlement of nuclear warheads that have been removed from the U.S. nuclear weapon stockpile. (NS1-1)*	• *Meet annual schedules for the safe and secure dismantlement of nuclear warheads that have been removed from the U.S. nuclear weapon stockpile. (NS1-1)*

Means and Strategies:

In FY 2002 the Department will conduct a wide range of tests and activities to assess the continuing safety and reliability of the Nation's nuclear weapon 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 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, DOE will make deliveries of limited life and other weapon components for nuclear weapon stockpile management and refurbishment according to schedules developed jointly by the DOE and 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.

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.

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 2002 and beyond.

Validation and Verification:

Data Sources:	Production and Planning Directive and quarterly reviews
Baselines:	Established annually
Frequency:	Quarterly
Data Storage:	n/a
Verification:	DoD

Planned Program Evaluation:

The Stockpile Management Integration Council meets quarterly to assess progress against major performance objectives. An outside organization of Management and Operating (M&O) contractors, the Defense Programs Advisory Group (DPAG), is also available to evaluate program performance if requested by the Deputy Administrator for Defense Programs.

The following facing pages have four years of performance measures for NS2-1.

General Performance Goal:

NS2-1 CONDUCTING CAMPAIGNS

Conduct a series of science and computing Campaigns pertaining to: certifications of primaries, secondaries and weapon engineering; materials properties; advanced radiography; weapon performance in hostile environments; inertial confinement fusion and ignition; and simulation and computing. This includes developing simulation and modeling tools and capabilities to implement virtual testing of nuclear weapons and components in the absence of underground nuclear testing. Conduct a series of applied science and engineering campaigns pertaining to: advanced design and production technologies; enhanced surveillance; and enhanced surety. Also conduct readiness campaigns pertaining to: pit and secondary manufacturing; high explosives manufacturing and weapon assembly/disassembly; non-nuclear components; and tritium production.

Annual Performance Measures[1]**:**

FY 1999 Results	FY 2000 Results
• *Demonstrated a 3 trillion operations per second computer system. (NS2-1)* [2] (EXCEEDED 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 ASCI computer system. (NS2-1)* (EXCEEDED GOAL)
• *Continue construction of the National Ignition Facility (NIF) according to the Project Execution Plan schedules. (NS2-2)* (BELOW EXPECTATION: A new project baseline is being developed.)	• *Continue construction of the National Ignition Facility (NIF) and rebaseline future construction, total costs, and schedules by June 2000. (NS2-2/ FMFIA)* (MET GOAL)
	• *Begin execution of the Defense related project management campaign implementation plan. (NS2-2/FMFIA)* (MET GOAL)
• *Conduct two to three subcritical 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. (NS2-3)* (MET GOAL)	• *Conduct further subsets of the subcritical experiment begun in FY 1999 (Oboe) and one additional subcritical experiment at the Nevada Test Site to provide data on the behavior of nuclear materials during the implosion phase of a nuclear weapon. (NS2-3)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).
2. The performance goal linkages as noted at the end of each measure, e.g. NS2-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	**FY 2002 Proposed Target**
• *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. (NS2-1)*	• *Perform a prototype calculation of a full weapon system with three-dimensional engineering features during FY 2002. (NS2-1)*
• *Implement the Secretary's Six Point Plan to improve project management of the National Ignition Facility (NIF) project and approve a new baseline. (NS2-1/FMFIA-project management)*	
	• *Complete Defense related project management improvement campaign. (NS2-1/FMFIA-project management)*
• *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 stockpile without underground nuclear testing. (NS2-1)*	• *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. (NS2-1)*
	• *Meet the FY 2002 milestones in the production readiness campaigns to address issues associated with high explosives, materials, and non-nuclear technologies. (NS2-1)*
	• *Begin construction of the Tritium Extraction facility at the Savannah River Site. (NS2-1)*

Note: Both FY 2001 measures were revised to be more measurable and a third measure was dropped as unmeasurable. The additional measure (in shaded text) was based on the FMFIA process.

Means and Strategies:

In FY 2002, the Department 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 plants. The campaigns are: (1) Primary Certification; (2) Dynamic Materials; (3) Advanced Radiography; (4) Secondary Certification and Nuclear Systems Margins; (5) Enhanced Surety; (6) Weapons Systems Engineering Certification; (7) Nuclear Survivability; (8) Enhanced Surveillance; (9) Advanced Design and Production Technologies; (10) Inertial Confinement Fusion and High Yield; (11) Advanced Simulation and Computing; (12) Pit Manufacturing and Certification; (13) Secondary Readiness; (14) High Explosives Manufacturing and Assembly/Disassembly Readiness; (15) Nonnuclear Readiness; (16) Materials Readiness; and (17) Tritium Readiness.

Collaboration Activities:

There are a small number of collaborations with universities and colleges, mainly associated with the strategic computing activities and the inertial confinement fusion research program.

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 2002 and beyond.

Validation and Verification:

Data Sources:	Campaign Implementation Plans and Campaign Program Plans
Baselines:	Established annually in approved plans.
Frequency:	Quarterly review by DP program managers
Data Storage:	n/a
Verification:	Peer and external reviews.

Planned Program Evaluation:

Federal campaign managers will use the each plan (above) as a program management tool to manage, monitor and evaluate progress toward milestones. Periodic status reports will be provided to all campaign managers and quarterly reviews are planned.

The following facing pages have four years of performance measures for NS3-1.

General Performance Goal:

NS3-1 ENSURING ENTERPRISE VITALITY AND READINESS

Provide an appropriately-sized, cost effective, safe, secure, and environmentally-sound enterprise for national nuclear security programs; maintain nuclear test readiness in accordance with Presidential direction; implement recommendations of the Commission on Maintaining U.S. Nuclear Weapons Expertise; continue restructuring, modernizing, and implementing integrated safety and security management throughout the national nuclear security enterprise; and continue construction of new facilities such as the Tritium Extractions Facility, computing facilities, and the National Ignition Facility (NIF). Maintain the DOE Secure Transportation Asset for safe, secure transport of nuclear weapons, special nuclear materials, and weapon components. Ensure that the capability to resume underground nuclear testing is maintained in accordance with Presidential directive through a combined experimental and test readiness program. Ensure the availability of a workforce with the critical skills necessary to meet long-term requirements. Maintain robust emergency response assets in accordance with Presidential directive and Executive Order 12656 and Federal emergency plans.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Ensure that all facilities required for successful achievement of the Stockpile Stewardship Program remain operational. (NS3-1)*[2] (BELOW EXPECTATION: Enriched Uranium Operations at the Y-12 Plant were behind schedule.)	• *Ensure that all facilities required for successful achievement of the Stockpile Stewardship Program remain operational. (NS3-1)* (BELOW EXPECTATIONS: Operations at LANL were severely impacted by the Pu intake accident and the Cerro Grande fire at LANL.)
• *Meet the established schedules for downsizing and modernizing our production facilities. (NS3-1)* (NEARLY MET GOAL)	• *Meet the established schedules for downsizing and modernizing our production facilities. (NS3-1)* (NEARLY MET GOAL)
• *Ensure that the capability to resume underground nuclear testing is maintained in accordance with Presidential Decision Directive and safeguard C of the CTBT. (NS3-5)* (MET GOAL)	• *Ensure that the capability to resume underground nuclear testing is maintained in accordance with Presidential Decision Directive through a combined experimental and test readiness program. (NS3-5)* (MET GOAL)
• *Maintain robust emergency response assets in accordance with Presidential Decision Directive 39 and Executive Order 12656, and federal Emergency Plans. (NS3-5)* (MET GOAL)	

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented hers. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. NS3-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Ensure the physical infrastructure and facilities are operational, safe, secure, compliant and that a defined state of readiness is sustained at all needed facilities. (NS3-1)* • *Complete the milestones listed in the corrective action plan for the Departmental challenge of managing physical assets. (NS3-1/FMFIA)*	• *Meet established facility operating plans and construction schedules to ensure the physical infrastructure and facilities are operational, safe, secure, compliant and that a defined state of readiness is sustained at all needed facilities. (NS3-1)*

Note: Three other FY 2001 measures were dropped because they were activities and not measurable. The additional measure (in shaded text) was developed through the FMFIA process.

Means and Strategies:

In FY 2002, DOE will continue to oversee and maintain the infrastructure and plant at government-owned, contractor operated weapons laboratories and plants according to applicable statutes, laws, agreements and standards. DP is developing detailed facility operation plans to assure that specific requirements for readiness are maintained. DOE will also maintain appropriate infrastructure, personnel knowledge and exercised skills necessary to conduct an underground nuclear test within 2-3 years. DOE will provide for enhancements to the DOE Secure Transportation Asset to address vulnerability issues raised in reviews in FY 1999 and will maintain nuclear emergency response assets. DOE will identify the workforce skills necessary to meet long-term stockpile stewardship requirements and will develop staffing plans to attract and keep staff to meet requirements.

Collaboration Activities:

There are a small number of collaborations with universities and colleges, mainly associated with the education program. Also, a limited number of technology partnership efforts with industry may be continued from FY 2002.

External Factors Affecting Performance:

The DOE weapons complex is a government owned-contractor operated enterprise. DP 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.

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 2002 and beyond.

Validation and Verification:

Data Sources:	RTBF Implementation Plans
Baselines:	Established in the plans.
Frequency:	Quarterly review by DP program managers

Planned Program Evaluation:

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.

GPRA Program Activity: Nonproliferation and Verification R&D

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activity**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
050 Atomic Energy Defense Activities					
Defense Nuclear Nonproliferation	Nonproliferation and Verification R&D	NN	213	245	206

Description of the Program:

The Department of Energy (DOE) Nonproliferation and Verification Research and Development (R&D) Program is devoted to conducting applied research, development, testing, and evaluation of science and technology for strengthening the U.S. response to National Security threats and threats to world peace posed by the proliferation of nuclear, chemical, and biological weapons and special nuclear material diversion. Activities are focused on the development, design, prototype construction and production of operational sensor systems needed for proliferation detection, deterrence, nuclear test monitoring, and chemical and biological nonproliferation. NN activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goal:

NS4-1 CONDUCTING NONPROLIFERATION AND VERIFICATION R&D
Develop and demonstrate technologies needed to remotely detect the early stages of a proliferate nation's nuclear weapons program; **i**mprove capabilities to locate, identify, and characterize nuclear explosions; produce operational satellite-based nuclear explosion monitoring sensor systems; and improve the U.S. capability to detect the proliferation of chemical and biological agents at an early stage and to minimize the consequences if chemical or biological agents are used.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
Deterring Proliferation ● *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. (NS5-1)*[2] (MET GOAL)	● *Develop improved technologies and systems for early detection, identification, and response to weapons of mass destruction proliferation and illicit materials trafficking. (NS5-3)* (MET GOAL)
Proliferation Detection ● *Demonstrate, through airborne field tests, two new technologies that use chemical detection methods to remotely characterize weapons of mass destruction proliferation activities. (NS5-3)* (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. (NS5-3)* (MET GOAL)
Nuclear Explosion Monitoring ● *Deliver to the U.S. National Data Center for the Comprehensive Nuclear-Test-Ban Treaty the first half (Release 3) of an operational knowledge base that can be accessed by automated processing systems and human analysts to provide monitoring and verification confidence. (NS5-3)* (MET GOAL)	● *Deliver three improved sensor systems for treaty monitoring to the U.S. Air Force. (NS5-3)* (MET GOAL) ● *Deliver to the U.S. National Data Center 60 percent of an operational knowledge base that can be accessed by automated processing systems and human analysts to provide monitoring and verification confidence. (NS5-3)* (MET GOAL)
Chemical and Biological National Security	● *Test first generation prototype hand-held detector for enhanced detection of chemical agents. (NS5-3)* (MET GOAL) ● *Complete architecture development to protect a "special event" from biological attacks. (NS5-3)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 are listed here that provide context for measures for FY 2001 or FY 2002. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. (NS5-1) for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Test and evaluate a real-time field analytical sampling system; complete a joint plan on technology development for domestic defense. (NS4-1)*	• *Complete the selection of candidate technologies to detect fissile material at distances greater than ten meters. (NS4-1)*
• *Demonstrate and evaluate the proliferation detection capabilities of the Multispectral Thermal Imager (MTI) small satellite launched in FY 2000. (NS4-1)*	• *Conduct one flight test of a new airborne radar and two flight tests of LIDAR technology for measuring obscured or concealed nonproliferation activities. (NS4-1)*
• *Begin physical construction of the Nonproliferation and International Security Center (NISC) at LANL. (NS4-1).*	• *Complete physical construction for the NISC at LANL. (NS4-1)*
• *Conduct Critical Design Reviews for three new-generation nuclear explosion monitoring sensors that are proposed for future satellite deployment. (NS4-1)*	• *Deliver to the U.S. National Data Center an operational database to improve ground-based nuclear explosion monitoring, with calibration data sets for Asia, the Middle East, North Africa and the Former Soviet Union. (NS4-1)*
• *Demonstrate systems to protect key infrastructure and special events from chemical and biological attacks. (NS4-1)*	• *Deploy prototype biological agent detection system, currently under development, for enhanced public health response at special events (event to be determined). (NS4-1)*

Note: For the FY 2001 revised set of measures, four measures were deleted, two measures were added, and two measures were modified to be more specific and to conform with the resources available.

Means and Strategies:

The program goal is to enhance U.S. National Security through needs-driven research and development. The emphasis is on developing the requisite fundamental science and technology to detect and prevent nuclear proliferation, to meet U.S. treaty monitoring goals, and to develop and demonstrate chemical and biological detection and related technologies to enable us to better prepare for and respond to chemical and biological attacks.

Collaboration Activities:

The DOE will continue to leverage its considerable nuclear nonproliferation R&D base to address important objectives including: nuclear warhead dismantlement initiatives; countering nuclear smuggling and terrorism; and applying DOE's resident chemical and biological science expertise to support U.S. preparation for and response to the use of chemical and biological agents. All activities also support the timely transfer of tested prototype systems to other U.S. Government agency users.

External Factors Affecting Performance:

The pace and nature of treaties and agreements related to the proliferation of weapons of mass destruction will influence level and kinds of technologies that DOE will develop for national security.

Validation and Verification:

Data Sources:	Internal and external program reviews, national laboratories reviews, interagency liaison reviews and government direction.
Baselines:	Stated in program plans and project life cycle plans.
Frequency:	Immediate headquarters response to unexpected events, otherwise in quarterly reports or as specified in program plans.
Data Storage:	NN-20 maintains an automated Project Information Management System (PMIS) which contains full life cycle plans including statements of work, milestones, deliverables and quarterly reports. NN-20's automated financial plan is extracted from the PMIS.
Verification:	Office program and project plans provide direction for reporting. Broader reviews are instituted by Departmental or government mandate.

Planned Program Evaluation:

Office management, program managers, and laboratory counterparts continually review project activities. This, along with Departmental and peer reviews ensure that appropriate performance measures and applied and carried out.

GPRA Program Activity: International Nuclear Safety and Cooperation

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
050 Atomic Energy Defense Activities					
Defense Nuclear Nonproliferation	International Nuclear Safety	NN	14	19	14

Description of Program:

The mission of the International Nuclear Safety and Cooperation program is to promote nuclear nonproliferation and national security by providing for international nuclear safety. The goal is to reduce the national security and nonproliferation risks associated with foreign nuclear power plants and nuclear facilities, especially those in the former Soviet-Union. The program improves the safety of Soviet-designed nuclear power plants and facilitates shutting down the most hazardous of these facilities; and assists host countries to develop and implement self-sustaining nuclear safety infrastructure and improvement programs capable of implementing internationally accepted safety practices. Project activities address significant nuclear safety issues primarily in Ukraine, Russia, Armenia, and Kazakhstan and encourage cooperation among these and other participating countries. NN activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goal:

NS4-2 IMPROVING INTERNATIONAL NUCLEAR SAFETY
Assist countries to reduce the risks from Soviet-designed nuclear power plants and implement self-sustaining nuclear safety improvement programs capable of reaching internationally accepted safety practices; implement projects in the areas of operational safety, training and simulators, safety assessments, and fire safety, and other hardware upgrades; promote nuclear safety culture improvements internationally by providing strong leadership in international nuclear safety organizations and centers; and work with other G-7 countries to assist in the safe decommissioning of the Chornobyl plant, and to stabilize the unit 4 shelter at Chornobyl.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *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. (NS7-1)*[2] (MET GOAL) • *Complete the installation of Safety Parameter Display Systems to improve operator response to emergencies at Leningrad Unit 4 and Novororonezh Unit 4. (NS7-1)* (MET GOAL) • *Provide preliminary safety assessment results to determine near-term safety improvements. (NS7-1)* (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. (NS7-1)* (BELOW EXPECTATION: This was an unfunded mandate but significant progress was made.) • *Promote U.S. positions and practices in international forums that advocate safe reactor operations.(NS7-1)* (MET GOAL) • *Complete a comprehensive decommissioning engineering survey of Chornobyl Unit 1. (NS7-3)* (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. (NS7-1)* (MET GOAL) • *Complete the installation of Safety Parameter Display Systems to improve operator response to emergencies in Russia and at South Ukraine Unit 2, Rivne Unit 3, and Zaporizhzhya in Ukraine. (NS7-1)* (MET GOAL) • *Complete a probabilistic risk assessment for Kola Unit 4 in Russia and for South Ukraine and Rivne plants in Ukraine. (NS7-1)* (NEARLY MET GOAL) • *Establish a Ukrainian Center for Nuclear Fuel and Reactor Core Design and collect information that will be used to design and test nuclear fuel. (NS7-1)* (MET GOAL) • *Obtain final design approval for the Chornobyl Heat Plant and complete delivery of major equipment to the construction site.(NS7-1)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are provided here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).
2. The performance goal linkages as noted at the end of each measure, e.g. ER2-3 for FY 1999 and FY 2000 refer to the 1997 strategic plan..

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Complete full-scope simulator for Ukraine's Rivne nuclear plant unit 3 and South Ukraine nuclear plant unit 1~~, and for Russia's Kalinin nuclear plant unit 1~~. (NS4-2)*	• *Complete two full-scope simulators for nuclear power plants in Russia and Ukraine (Kalinin unit 2 and Zaporizhzhya unit 1), and 1 full-scope simulator upgrade in Slovakia (for Bohunice). (NS4-2)*
• *Complete safety parameter display systems for Ukraine's South Ukraine nuclear plant unit 3, and Zaporizhzhya nuclear plant units 2 and 4. (NS4-2)*	• *Complete two safety parameter display systems for nuclear power plants in Ukraine (Zaporizhzhya units 1 and 6), one in Russia (Novovoronezh unit 5) and one in Lithuania (Ignalina Unit 2). (NS4-2)*
• *Complete ~~in-depth safety~~ probabilistic risk assessment at Ukraine's South Ukraine unit 1 and Rivne unit 1 nuclear plants, and at Russia's ~~Kola,~~ Novovoronezh unit 3, and Leningrad unit 2 nuclear plants. (NS4-2)*	• *Complete in-depth safety assessment at three plants in Ukraine (South Ukraine, Rivne, and Zaporizhzhya) and at one plant in Russia (Leningrad Unit 2). (NS4-2)*
• *Complete implementation of symptom-based emergency operating instructions at the ~~Kozloduy~~ Ignalina plant in Lithuania~~ and at Novovoronezh plant unit 4~~. (NS4-2)*	• *Complete configuration management project at one pilot plant in Russia (Novovoronezh NPP). This project coordinates plant drawings with operational procedures and safety analyses to eliminate safety problems related to less rigorous controls. (NS4-2)*
• *Complete fire protection system upgrades at the Kazakhstan BN-350 nuclear plant. (NS4-2)*	• *Complete three joint projects between the U.S. and Russia International Nuclear Safety Centers related to: (1) the application of the RELAP 5 safety analysis computer code to Soviet-designed reactors; (2) the use of severe accident management guidelines; and (3) the sharing of Soviet-designed reactor safety analysis results with safety centers in Russia, Ukraine, Lithuania and Armenia. (NS4-2)*
• *Complete projects at the International Chornobyl Center to characterize the condition of spent nuclear fuel at Ukrainian power plants and to evaluate safe options for spent fuel management. Complete plans and safety analyses for the shutdown and deactivation of Chornobyl units 1, 2 and 3. (NS4-2)*	• *Complete decontamination of in-plant sodium at Kazakhstan's BN-350 reactor in preparation for final draining and decommissioning. (NS4-2)*
• *Complete nuclear service water spray pond cooling system at Armenia nuclear plant. This system cools safety-related components and resolves seismic concerns. (NS4-2)*	
• *Complete construction of heat plant to support long-term decommissioning of the Chornobyl reactors. (NS4-2)*	
• ~~*For the Ukraine nuclear fuel qualification program, complete basic technology transfer activities, and deliver the lead test assemblies.* (NS4-2)~~	

Note: For the FY 2001 revised set of measures, one measure was deleted and three measures modified (shaded text) to be more specific and within the resources available.

Means and Strategies:

In FY 2002, the Department will call upon its existing scientific and engineering expertise and its laboratory facilities. Because of the nature of the many international nuclear safety projects, the human and technological resources employed are by necessity multi-disciplinary, requiring a diverse technology base. The emphasis throughout the international nuclear safety program is close coordination with internal and external customers, to ensure responsiveness to their actual needs. The laboratory facilities will contract with U.S. companies and host-country organizations to carry out a set of individual projects.

Collaboration Activities:

DOE coordinates its activities with the Departments of State and Defense, the U.S. Agency for International Development, as well as many other international organizations that are working to improve the safety of Soviet-designed reactors.

External Factors Affecting Performance:

Extremely poor economic conditions in host countries impact ability to come up with their portion of work on projects. Customs issues arise periodically impacting schedules.

Validation and Verification:

Data Sources:	Project management reviews and reports.
Baselines:	Technical baselines are specified in a project work plan.
Frequency:	Quarterly technical and financial reports, and annual project life cycle plans submitted.
Data Storage:	The headquarters, field, and laboratory/contractor activity managing the project maintain data on technical progress.
Verification:	Use of fixed price contracts with payments made only after receipt of acceptable deliverables. Also, analytical, and technical activities have specific reporting periods. DOE supplements these with broader program reviews.

Planned Program Evaluation:

DOE uses a process of extensive internal and external reviews to evaluate progress against established plans. These reviews provide an opportunity to verify and validate the performance data that the implementing organizations have provided. Detailed, quarterly progress reports are received for this program to ensure technical progress costs and schedules are being met. The Government Accounting Office recently completed reviews of the program in 1996 and 2000.

GPRA Program Activity: Arms Control and Nonproliferation

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activity	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
050 Atomic Energy Defense Activities					
Defense Nuclear Nonproliferation	Arms Control	NN	109	149	102

Description of the Program:

The mission of the Office of Arms Control and Nonproliferation is to detect, prevent, and reverse the proliferation of weapons of mass destruction (WMD) materials, technology and expertise. It is the focal point within the National Nuclear Security Administration (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 NNSA and the Department in interagency, bilateral and multilateral fora involved in nonproliferation and international security matters. The major functional areas of the program include: Policy and Analysis; Reduced Enrichment Research and Test Reactor (RERTR); International Safeguards; Export Control Operations; and Treaties and Agreements; and International Security.

General Performance Goal:

NS4-3 SUPPORTING ARMS CONTROL AND NONPROLIFERATION POLICIES

The program's goal is to detect, prevent and reverse the threat posed by the proliferation of weapons of mass destruction (WMD) by integrating NNSA and Departmental assets, including those of the National Laboratories, and bring them to bear on nonproliferation and related international security issues. Part of the mission of the Office of Arms Control and Nonproliferation is to engage weapons scientists, engineers, and technicians in peaceful projects to prevent "brain drain" and foster economic diversification; complete ratification and implementation of U.S. protocol for IAEA "Strengthened Safeguards System" and support U.S. responsibilities for declarations and on-site inspection at DOE facilities. Conduct analyses and technology development efforts for transparency activities (focusing on verified warhead dismantlement) to help ensure that nuclear reductions are transparent and irreversible; work with Russian Customs through the Second Line of Defense program to combat trafficking of illicit nuclear material across border and control points; and maintain core competency as technical experts to U.S. Government agencies on nuclear export control initiatives. Support negotiations on the Fissile Material Cut-off Treaty and for the Biological Weapons Convention negotiations. Provide analytical and technical support in preparation for implementation of agreement and treaties. Lead, via the Joint Chairmanship, the interagency task force on warhead and fissile material to implement concepts for warhead elimination. Provide equipment, technologies and expertise to the IAEA to continue implementation of nuclear verification and monitoring in Iraq. Provide long-term canister monitoring and maintenance and support IAEA activities at DPRK facility; conduct long-term maintenance training sessions, and conduct health physics tests. Continue export control initiatives to develop the necessary infrastructure to ensure control over nuclear and nuclear-related dual-use equipment, material, and technology in Russia and the New Independent States.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
	• *Equip 2-3 Russian sites and conduct 2 joint training sessions under a Second Line of Defense Initiative.(NS5-2)* (MET GOAL) • *Cooperate with Russian Federation Customs to block nuclear smuggling at Russian border posts with nuclear detection equipment. (NS5-2)* (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. (NS5-2)*[2] (EXCEEDED 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. (NS5-2)* (MET GOAL) • *Complete the milestones listed in the FMFIA corrective action plan for the Departmental Challenge of Mission Critical Staffing. (NS5-2/FMFIA)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are provided here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. NS5-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan. The Materials Protection, Control, and Accountability work has been separated into its own program activity and its measures are presented there.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
	• *Sign second line of defense agreement between NNSA and Russian customs on combating illicit trafficking in nuclear materials. (NS4-4)* • *Equip port and airport of St. Petersburg with radiation detection equipment to combat illicit trafficking in nuclear materials. (NS4-4)*
• *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 over 40 projects to provide long-term commercial employment. (NS4-1)* • *Complete canning of BN 350 fast reactor spent fuel. (NS4-1)* • *Complete the milestones listed in the FMFIA corrective action plan for the Departmental Challenge of Mission Critical Staffing. (NS5-2/FMFIA)*	• *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 over 40 projects to provide long-term commercial employment. (NS4-1)*

Note: For the FY 2001 revised set of measures, eight measures were deleted because they were either activities or not measurable. An other measure was revised to be measurable. One measure was added (in shaded text) based on the FMFIA process. Finally, the Materials Protection, Control, and Accountability work has now been separated into its own decision unit.

Means and Strategies:

In FY 2002 the Department will conduct eight weeks of negotiations, consultation anticipated to last several weeks, and maintain technical experts to support deliberations, studies, and domestic and international exercises and/or conduct multilateral verification workshops. Conduct three site visits to assess monitoring impacts and requirements under a Fissile Material Cut-off Treaty, continue international consultations on verification of former military plants in the nuclear weapons states, and conduct mock inspection. Conduct multi-agency cooperative assessment, on-site inspection simulations, and complex data surveys to support the compilation of treaty and agreement-mandated declaration submissions.

In FY 2002, the Department will work with the Russian Federation to negotiate legally binding agreements which allow confirmation that Russian nuclear weapons are being dismantled and that excess fissile materials removed from dismantled Russian nuclear weapons are not reused in the production of new nuclear weapons. Through WDT efforts, maintain a technical dialog with Russian scientific and technical organizations.

Develop and implement an initiative to ensure that the DOE complex meets all export control statutory requirements. Provide a leadership role in the multilateral arena and plan and host the 2001 NSG Plenary.

DOE will focus on cost-share projects involving U.S. industry, in order to sharpen its focus on facilitating commercial outcomes in Initiatives for Proliferation Prevention. The Nuclear Cities Initiative will continue to create jobs based on new opportunities and sectors (e.g., environmental projects), viability evaluations, and business potential.

Collaboration Activities:

DOE coordinates its negotiation and other activities with the Departments of State and Defense, and the National Security Council. In the export control area, DOE participates in all interagency fora in support of mandated licensing policy responsibilities.

External Factors Affecting Performance:

Unwillingness of threshold states to engage in negotiations; therefore, the lack of negotiated mandates for the Conference on Disarmament. Political and economic uncertainties in the former Soviet Union. Political uncertainties in the former Soviet Union and the possible ratification of the Russian Duma may also affect performance.

Validation and Verification:

Data Sources:	Project management reviews and reports.
Baselines:	Technical baselines are specified in a project plan.
Frequency:	Quarterly technical and financial reports, and annual project life cycle plans submitted.
Data Storage:	The headquarters, field, and laboratory/contractor activity managing the project maintain data on technical progress. DOE's International Policy and Analysis Division maintains a project life cycle summary updated annually, and detailed quarterly technical and financial progress reports.
Verification:	Analytical and technical activities have specific reporting periods. DOE supplements these with broader program reviews.

Planned Program Evaluation:

DOE uses a process of extensive internal and external reviews to evaluate progress against established plans. These reviews verify and validate the performance data that the implementing organizations have provided. Detailed quarterly progress reports are received from the U.S. laboratories for this program to ensure technical progress, costs and schedules are being met.

GPRA Program Activity: International Materials Protection, Control and Accounting

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activity	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
050 Atomic Energy Defense Activities					
Defense Nuclear Nonproliferation	International Materials Protection, Control and Accounting	NN	139	170	139

Description of the Program:

The mission of the International Materials Protection Control and Accounting (MPC&A) program is to secure Russian weapons and weapons-usable nuclear material by upgrading security where the material is currently located or by consolidating material at Russian sites where installation of enhanced security systems have already been completed. 'Rapid' and 'comprehensive' upgrades significantly improve the security of Russian weapons-usable nuclear material. Rapid upgrades include measures establishing controlled areas and limits on personnel access to nuclear material; implementing a "two-person" rule; conducting baseline inventories; bricking up windows; hardening doors; installing locks, delay blocks and steel cages; implementing random guard patrols; and improving alarm communications. Comprehensive upgrades include rapid upgrades plus hardening of facilities to allow relocation of guard forces closer to the target; installing interior and exterior detection systems, closed-circuit television (CCTV) monitoring and assessment systems; implementing electronic access control systems, central alarm monitoring stations, and radio communications enhancements; and conducting material inventories using advanced measurement equipment and computerized accounting systems.

General Performance Goal:

NS4-4 STRENGTHENING RUSSIA'S MATERIALS PROTECTION, CONTROL, AND ACCOUNTING
Help Russia to install security upgrades and consolidate currently unsecured nuclear weapons and weapons-usable material into fewer buildings and sites; convert excess HEU to LEU making it less proliferation attractive; help foster Russian commitment to the operational sustainability of installed material protection, control, and accounting (MPC&A) upgrades so that they provide long-term, continuing enhanced security; and track and assess nuclear smuggling and threat cases. Continue to install MPC&A upgrades for approximately 850 MTs of nuclear material located at 95 sites in Russia, including Navy, MinAtom Weapons Complex, and Civilian sites. Continue MPC&A upgrades on approximately 67% of the weapons-usable nuclear material in Russia. Continue sustainability initiative to ensure continued security of weapons usable material at sites where comprehensive MPC&A upgrades are complete. This effort shall include the establishment/continuation of training procedures and full operational testing.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Continue to improve and integrate technology practices, facilities and training for material protection, control, and accounting for 650 metric tons of weapons-useable material at 53 locations. (NS5-2)* [2] (EXCEEDED GOAL)	• *Continue to install MPC&A upgrades in Russia, for defense-related sites, civilian sites, Russian Navy projects, and the transportation sector. (NS5-2)* (MET GOAL) • *Begin consolidation of weapons-usable material into fewer buildings and fewer sites, and eliminate 200 kilograms of weapons-grade nuclear material by converting it to non-weapons grade form thereby improving security and reducing overall cost. (NS5-2)* (EXCEEDED GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are provided here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. NS5-2 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Complete comprehensive upgrades on an additional 8% of 850 MTs of weapons-usable nuclear material raising the total to almost 21% secured at 95 sites in Russia. (NS4-4)*	• *Complete comprehensive upgrades on an additional 8% of 850 MTs of weapons-usable nuclear material raising the total to almost 29% secured at 95 sites in Russia. (NS4-4)*
• *Complete comprehensive upgrades at an additional 8 of 95 sites, raising the total to 37 sites. (NS4-4)*	• *Complete comprehensive upgrades at an additional 13 of 95 sites, raising the total to 50 sites. (NS4-4)*
• *Convert an additional 1.2 MTs of highly enriched uranium (HEU) to low enriched uranium (LEU), increasing the total amount converted to 2.2 MTs of weapons-grade nuclear material by converting it to non-weapons grade, thereby improving security and reducing overall cost. (NS4-4)*	• *Convert an additional 1.8 MTs of highly enriched uranium (HEU) to low enriched uranium (LEU), increasing the total amount converted to 4.0 MTs of weapons-grade nuclear material by converting it to non-weapons grade, thereby improving security and reducing overall cost. (NS4-4)*

Note: For FY 2001, all three of the measures were added (in shaded text).

Means and Strategies:

In FY 2002, program will be carried out through an interlocking set of activities including securing at-risk material, reducing stocks of material by consolidating it into fewer buildings and converting excess HEU into less proliferation attractive LEU. The installation of security upgrades will occur in a phased approach. Rapid upgrades include items such as baseline item inventories, locks, delay blocks, 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.

In FY 2002, the program will also continue implementing an exit strategy whose purpose is to foster Russian development of indigenous capabilities and commitments to protect its own sensitive material in the long term.

In FY 2002, the program will provide assessment and tracking of nuclear smuggling and nuclear threat cases and enhances international nuclear emergency early warning, preparation and response capabilities. U.S. emergency cooperation programs are designed to improve international nuclear crisis management efforts. DOE has increased the effectiveness of international emergency early warning and notification systems by enhancing voice and video communication connections between DOE Headquarters and MinAtom's Situation and Crisis Center. Efforts have also focused on developing emergency procedures, plans and training programs with Russia's MinAtom, the government of Ukraine, other foreign governments, and international organizations (such as the IAEA, NEA, EU and the Arctic Council).

Collaboration Activities:

DOE coordinates its negotiation and other activities with the Departments of State and Defense, and the National Security Council. In the export control area, DOE participates in all interagency fora in support of mandated licensing policy responsibilities.

External Factors Affecting Performance:

Unwillingness of threshold states to engage in negotiations; therefore, the lack of negotiated mandates for the Conference on Disarmament. Political and economic uncertainties in the former Soviet Union.

Validation and Verification:

Data Sources:	Project management reviews and reports.
Baselines:	Technical baselines are specified in a project plan.
Frequency:	Quarterly technical and financial reports, and annual project life cycle plans submitted.
Data Storage:	The headquarters, field, and laboratory/contractor activity managing the project maintain data on technical progress. DOE's International Policy and Analysis Division maintains a project life cycle summary updated annually, and detailed quarterly technical and financial progress reports.
Verification:	Analytical and technical activities have specific reporting periods. DOE supplements these with broader program reviews.

Planned Program Evaluation:

DOE uses a process of extensive internal and external reviews to evaluate progress against established plans. These reviews provide an opportunity to verify and validate the performance data that the implementing organizations have provided. Detailed, quarterly progress reports are received from the U.S. Laboratories for this program to ensure technical progress, costs and schedules are being met.

GPRA Program Activity: Highly Enriched Uranium Transparency Implementation

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
050 Atomic Energy Defense Activities					
Defense Nuclear Nonproliferation	HEU Transparency Implementation	NN	14	14	14

Description of the Program:

The Highly Enriched Uranium (HEU) Transparency Implementation program is responsible for ensuring that the nonproliferation objectives of the February 1993 HEU Purchase Agreement between the United States and the Russian Federation are met. This Agreement covers the purchase over 20 years of low enriched uranium (LEU) derived from at least 500 metric tons of HEU removed from dismantled Russian nuclear weapons. Under the Agreement, conversion of the HEU components into LEU is performed in Russian facilities. The purpose of the program is to put into place and implement those goals agreed to by both sides, that permit the United States to have confidence that the Russian side is abiding by the Agreement. The program also requires the United States to support comparable monitoring activities by the Russian Federation representatives at U.S. facilities subject to the Agreement. NN activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goal:

NS4-5 ASSURING TRANSPARENCY IN THE CONVERSION OF RUSSIAN HIGHLY ENRICHED URANIUM (HEU)

Monitor the contracted quantity of HEU converted from dismantled Russian nuclear weapons into LEU delivered to USEC, Inc., which is purchasing the material pursuant to the February 1993 Agreement between the United States and the Russian Federation. Conduct special monitoring inspections in Russian uranium processing facilities and maintain permanent presence office in Russia to be assured that the LEU being purchased by USEC, Inc. is derived from HEU removed from dismantled nuclear weapons. Maintain, monitor and retrieve technical data generated by the UF_6 flow and enrichment measurement equipment installed at the blend points at Russian HEU dilution facilities. Compile and analyze collected data and information to support an interagency review and assessment of confidence with the nonproliferation objectives of the HEU Agreement. Conduct an annual inventory of natural uranium feed material returned to Russia for storage per the March, 1999 Feed Agreement.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Monitor the dilution of 30 metric tons of highly enriched uranium (HEU) to low enriched uranium (LEU) from dismantled Russian nuclear weapons for purchase by the United States Enrichment Corporation (USEC). (NS4-2)*[2] (MET GOAL)	• *Monitor the conversion of 30 metric tons of HEU from dismantled Russian nuclear weapons into LEU for purchase by USEC. (NS4-2)* (MET GOAL) • *Conduct up to 24 special monitoring visits to four Russian facilities. (NS4-2)* (NEARLY MET GOAL) • *Install permanent monitoring equipment at the Zelenogorsk blending facility. (NS4-2)* (BELOW EXPECTATION: Minatom approval still pending.) • *Maintain and monitor the UF_6 flow and enrichment measurement equipment installed at the blend points at a Russian HEU dilution facility.(NS4-2)* (BELOW EXPECTATION: Minatom's approval of the work was obtained in October 2000. Work continued into FY 2001.) • *Compile and analyze collected data and information into an assessment of confidence with the nonproliferation objectives of the HEU Agreement. (NS4-2)* (MET GOAL) • *Conduct Russian technology demonstrations to further warhead dismantlement or transparency measures. (NS4-2)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ER2-3 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Monitor the conversion of 30 metric tons of HEU from dismantled Russian nuclear weapons into LEU for purchase by USEC. (NS4-5)*	• *Monitor the conversion of 30 metric tons of HEU from dismantled Russian nuclear weapons into LEU for purchase by USEC. (NS4-5)*
• *Conduct up to 24 special monitoring visits to the four Russian nuclear processing facilities. (NS4-5)*	• *Conduct up to 18 of 24 allowed special monitoring visits to the four Russian nuclear processing facilities. (NS4-5)*
• *Install permanent monitoring equipment at the Zelenogorsk blending facility. (NS4-5)*	
• *Complete negotiations to open Permanent Presence Office at Seversk processing facility. (NS4-5)*	• *Initiate technical discussions with Seversk on Blend-Down Monitoring System (BDMS) modifications leading to equipment installation in 2003. (NS4-5)*
• ~~*Maintain and monitor the UF_6 flow and enrichment measurement equipment installed at the blend points at Russian HEU dilution facilities. (NS4-5)*~~	
• ~~*Compile and analyze collected data and information into an assessment of confidence with the nonproliferation objectives of the HEU Agreement. (NS4-5)*~~	
• *Conduct annual inventory of natural uranium feed returned to Russia. (NS4-5)*	• *Conduct annual inventory of natural uranium feed returned to Russia. (NS4-5)*

Note: In the revised FY 2001 measures, two measures were deleted because they were activities and not measurable, two measures were added, and one clarified.

Means and Strategies:

In FY 2001 and FY 2002, the Department will conduct up to 24, and 18 of 24, respectively, allowed special monitoring visits to the four Russian nuclear processing facilities in the program. Permanent presence monitors will conduct transparency operations at a 40 percent reduced staffing level in 2002 at the Ural Electrochemical Integrated Plant. Discussions with Minatom should be initiated to open and staff a permanent presence office in Seversk. Assuming Minatom approval, DOE will work with technical experts from Seversk to consider, agree upon, and implement modifications to the Blend-Down Monitoring System (BDMS) equipment and plant facilities prior to installing it in the Seversk blending facility by 2003 pending funding. DOE will maintain and collect transparency data from permanently installed monitoring equipment at 2 of 3 blending facilities. We will conduct the first annual inventory in 2001 of natural uranium returned to and stored in Russia, per the March, 1999 Feed Agreement, and conduct annual inventories thereafter. Technical analyses of collected transparency data will be conducted and results reported to interagency working groups.

Collaboration Activities:

DOE coordinates its HEU Transparency Implementation operations with the Department of State. We also provide information to DOD, other DOE programs, and other agencies conducting operations at the four Russian facilities in the HEU Transparency program.

External Factors Affecting Performance:

Contract negotiations between the U.S. Enrichment Corporation and Techsnabexport (Tenex) of Russia will affect the quantity of HEU converted and resultant LEU delivered per year within the overall contract. New contract negotiations are expected to be completed in 2001 for deliveries in 2002 and beyond. The effectiveness of the HEU Transparency program could facilitate U.S. national security and nonproliferation programs and policy implementation.

Validation and Verification:

Data Sources:	Project management reviews and reports. Foreign travel trip reports and technical debriefings by monitoring teams.
Baselines:	30MT/year of HEU conversion established by contract between Tenex (Russia) and USEC (US). Monitoring trips established by bilateral negotiations are currently set at 6 per site per year.
Frequency:	Technical debriefings conducted for each monitor team visit via interagency coordinating group. Technical analysis of transparency data continuously updated and reported at least semi-annually.
Data Storage:	Automated Data Analysis, Retrieval and Transfer system is operational and is used for transparency data and related documents. An automated information management system will be available and routinely updated. Access to both systems is closely managed.
Verification:	Program management reviews confirm progress and modifications to operations. Special and permanent monitoring teams provide a report of activities and technical debriefings to management and interagency representatives.

Planned Program Evaluation:

DOE uses a process of extensive program reviews to evaluate progress against established plans and milestones. The program also conducts an extensive data analysis program and reports results to DOE management and an interagency working group. We also use a bilateral Transparency Review Committee process between U.S. and Russian representatives to modify transparency operations and responsibilities to match current and planned operations. Cost, schedules, and program operations are reviewed semi-annually in addition to monthly status reporting and technical reviews.

GPRA Program Activity: Fissile Materials Disposition

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activity	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
050 Atomic Energy Defense Activities					
Fissile Materials Disposition		NN	190	226	290

Description of the Program:

The Fissile Materials Disposition Program is responsible for implementing a path forward for disposing of surplus U.S. weapons-usable fissile materials, including highly enriched uranium and plutonium, providing key negotiation and technical support for efforts to attain reciprocal actions for disposing of surplus Russian plutonium, and storing surplus U.S. fissile materials pending disposition. These efforts contribute to the Administration's goal to reduce the nuclear danger and the threat of proliferation by disposing of U.S. surplus plutonium and highly enriched uranium, and helping Russia dispose of their surplus plutonium. NN activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goals:

NS4-6 REDUCING INVENTORIES OF SURPLUS WEAPONS-USABLE FISSILE MATERIALS WORLDWIDE IN A SAFE, SECURE, TRANSPARENT AND IRREVERSIBLE MANNER

For U.S. HEU disposition, transfer quantities of surplus U.S. HEU to USEC, Inc. and the Tennessee Valley Authority to make LEU fuel for commercial reactors and, over time, arrange for disposition of additional lots of surplus HEU through down-blending and commercial use. For U.S. plutonium, disposition: implement the U.S. hybrid strategy for plutonium disposition in rough parallel with plutonium disposition in Russia, which includes design, construction, and operation of U.S. plutonium disposition facilities. However, the design of the Pit Disassembly and Conversion Facility will continue at a reduced rate and the work on immobilization will be suspended and results documented. For Russian plutonium disposition, work with Russia in conducting tests and demonstrations of plutonium disposition technologies; participate in U.S. government efforts to implement the provisions of the bilateral agreement with Russia for the disposition of Russian weapons-grade plutonium; assist in U.S. efforts to secure international financing to support plutonium disposition in Russia; and develop advanced reactor technology. A study will be conducted to examine alternatives aimed at reducing costs n the U.S. and Russia and making greater se of existing facilities and equipment.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Complete the final Environmental Impact Statement and issue a Record of Decision on siting plutonium disposition facilities. (NS4-2)*[2] (NEARLY MET GOAL)	• *Issue the Record of Decision on a site(s) for three plutonium disposition facilities. (NS4-2/FMFIA)* (MET GOAL: delays in the siting decision will continue this work into FY 2001.)
• *Initiate design for Pit Disassembly and Conversion Facility, and the Mixed Oxide (MOX) Fuel Fabrication facility. (NS4-2)* (MET GOAL)	• *Complete Title I design of the MOX Fuel Fabrication Facility required for submittal of licence application to the Nuclear Regulatory Commission. (NS4-2)* (NEARLY MET GOAL)
	• *Complete Title I design of the Pit Disassembly and Conversion Facility. (NS4-2/FMFIA)* (BELOW EXPECTATION: unexpected delays in deciding the site caused this work to continue into FY 2001.)
• *Initiate, by the end of FY 1999, negotiations with Russia on a bilateral agreement for the disposition of surplus weapons plutonium. (NS4-2)* (EXCEEDED GOAL)	• *Begin to implement a bilateral agreement with Russia for plutonium disposition. (NS4-2/FMFIA)* (MET GOAL)
• *Continue transfer of U.S. surplus HEU to the United States Enrichment Corporation for dilution and subsequent sale. (NS4-2)* (MET GOAL)	• *Ship 4MT (8% of 50MT) of surplus HEU to U.S. Enrichment Corporation (USEC). (NS4-2)* (NEARLY MET GOAL: intend to catch up in FY 2001.)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. NS4-2 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Initiate Title II design of ~~the Pit Disassembly and Conversion Facility and~~ the MOX Fuel Fabrication Facility. (NS4-6/FMFIA-surplus fissile materials)* • *~~Initiate the design of the Immobilization Facility. (NS4-6)~~*	• *Complete Title II (detailed) design of the MOX Fuel Fabrication Facility (MOX FFF). (NS4-6/FMFIA-surplus fissile materials)*
• *~~Support international financing arrangements for Russian plutonium disposition activities. (NS4-6)~~* • *~~Begin facility upgrades for a demonstration-scale plutonium conversion system in Russia. (NS4-6)~~*	• *Initiate designs of industrial-scale plutonium conversion and MOX fabrication facilities in Russia. (NS4-6)*
• *Ship 9 MT (18% of 50MT) of surplus HEU to USEC. (NS4-6)*	• *Ship 9 MT (18% of 50MT) of surplus HEU to USEC. (NS4-6)*

Note: For FY 2001, one measure was modified (in shaded text) and three other measures were deleted because they were activities or because they were inconsistent with new directions.

Means and Strategies:

The Fissile Materials Disposition Program continues the necessary research and development, facility design, and site support activities necessary to implement the Administration's hybrid strategy for U.S. plutonium disposition (involving both immobilization and irradiation of MOX fuel in reactors). However, the immobilization effort will be suspended and the design of the Pit Disassembly and Conversion Facility will continue at a reduced rate. The U.S. and Russia are proceeding to implement roughly parallel programs with comparable, although not necessarily identical, rates of plutonium disposition. The Fissile Materials Disposition Program continues to dispose of surplus highly enriched uranium by down-blending the material to low-enriched uranium for peaceful use in commercial reactors.

Collaboration Activities:

The United States Enrichment Corporation and the Tennessee Valley Authority are key players in the success of the highly enriched uranium disposition effort. The Department provides support to the U.S. Department of State as the lead for negotiating with Russia, and for negotiating with the international community to provide financial support and multilateral arrangements for plutonium disposition in Russia.

External Factors Affecting Performance:

The Nuclear Regulatory Commission is responsible for licensing the MOX fuel fabrication facility and the commercial reactors that will irradiate MOX fuel.

The Fissile Materials Disposition Program also relies on other Department of Energy elements (Defense Programs and Environmental Management) to use existing facilities, personnel, and processes to store and dispose of surplus fissile materials and to minimize overall Department costs, to shorten the time to complete projects, and to provide mutually-beneficial performance results. Uncoordinated changes in those baseline programs could impact performance of the Fissile Materials Disposition program.

Validation and Verification:

Data Sources:	Technical objectives and progress specified in research and development reports and international agreements; cost performance data generated by DOE and contractor financial systems; program/project specified schedule tracking systems; project management reviews.
Baselines:	Long-term baselines established by MD Level 1 Master Schedule; annual scope, cost, and schedule baselines established via MD Annual Operating Plan; project design and construction baselines established in Project Execution Plans and contract requirements.
Frequency:	MD required cost and schedule performance reports reviewed monthly; technical evaluations conducted at specified review points; facility design reviews conducted at established increments of design efforts.
Data Storage:	Project management data on MD network server; technical and design data on contractor project-specific computer systems.
Verification:	Cost data verified by DOE and MD financial systems. Schedule data verified by project work scope managers through receipt and review of technical products and reports and accomplishment of technical milestones.

Planned Program Evaluation:

MD conducts weekly, monthly, and quarterly reviews at varying levels to monitor progress in implementing the Administration's hybrid strategy for plutonium disposition and for highly enriched uranium disposition. Reviews will occur more frequently as the disposition program moves further into the implementation phases.

GPRA Program Activity: Naval Reactors

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
050 Atomic Energy Defense Activities					
Naval Reactors	-	NR	670	688	688

Description of the Program:

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's efforts have ensured, and continue to ensure, the safe operation of the many reactor plants in operating nuclear powered submarines and aircraft carriers, and have fulfilled the Navy's requirements for new reactors to meet evolving national defense demands. NR activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goal:

NS5-1 PROVIDING SPECIAL NUCLEAR POWER SYSTEMS FOR NATIONAL SECURITY

This goal encompasses all Naval nuclear propulsion work, beginning with technology development, continuing through reactor operation and, ultimately, reactor plant disposal. Through Naval Reactors, a joint DOE/Navy program, the Department ensures the safe operation of the reactor plants in operating nuclear powered submarines and aircraft carriers comprising 40 percent of the Navy's major combatants, and is fulfilling the Navy's requirements for new reactors to meet evolving national defense demands. Ensure the safety, performance, reliability, and service-life of operating reactors. Maintain outstanding environmental performance-- ensure no personnel exceed Federal limits for radiation exposure and no significant findings result from environmental inspections by State and Federal regulators.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
	• *Ensure the safety, performance reliability, and service-life of operating reactors. (NS6-1)* (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. (NS6-1)*[2] (EXCEEDED 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. (NS6-1)* (MET GOAL)
• *Ensure radiation exposures to workers or the public from Naval Reactors' activities are within Federal limits and no significant findings result from environmental inspections by State and Federal regulators. (NS6-2)* (MET GOAL)	• *Ensure radiation exposures to workers or the public from Naval Reactors activities are within Federal limits and no significant findings result from environmental inspections by State and Federal regulators. (NS6-1)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. NS6-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	**FY 2002 Proposed Target**
• *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% for test reactor plants, and 121 million miles steamed for nuclear-powered ships.(NS5-1)*	• *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% for test reactor plants, and 124 million miles steamed for nuclear-powered ships.(NS5-1)*
• *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. (NS5-1)*	• *Develop new technologies, methods and materials to support reactor plant design, including the next generation submarine reactor, which will be 96 percent complete by the end of FY 2002, and conduct detailed design efforts on a reactor plant for the next generation aircraft carrier. (NS5-1)*
• *Maintain outstanding environmental performance--ensure no personnel exceed Federal limits for radiation exposure and no significant findings result from environmental inspections by State and Federal regulators. (NS5-1)*	• *Maintain outstanding environmental performance--ensure no personnel exceed Federal limits for radiation exposure and no significant findings result from environmental inspections by State and Federal regulators. (NS5-1)*

Note: For the FY 2001, shaded text indicates revisions to improve the measure.

Means and Strategies:

The Department uses two government-owned, contractor-operated laboratories, the Bettis and Knolls Atomic Power Laboratories (approx. 5,500 people), which are solely dedicated to Naval nuclear propulsion work. Through these laboratories and 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 and 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 clean-up goals. Finally, the Department will carry out the radiological, environmental and safety monitoring and ongoing clean-up 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 of 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.

Validation and Verification:

Data Sources:	The DOE's Office of Naval Reactors (NR) maintains an integrated business and financial management information system used by headquarters, field offices and M&O contractors. This system incorporates program performance measure data. Work outcomes are tracked and reported at appropriate levels. Both financial and technical performance measure accomplishments are reported and reviewed semi-annually.
Baselines:	The baselines are established based on technical scopes of work and the associated costs approved by the Department.
Frequency:	Financial performance is updated monthly. Status of technical performance is tracked through various methods, including ongoing oversight by field offices; periodic, in depth program reviews; ongoing audit programs; and formal reports. Performance measure status is reviewed semi-annually.
Data Storage:	Source documentation is held by the Office of Naval Reactors.
Verification:	Department approval of all work done at laboratories, close oversight of M&O contractors, periodic program reviews, formal audits and appraisals, and frequent reporting.

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.

GPRA Program Activity: Intelligence and Counterintelligence

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Activity	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
Other Defense Activities					
Intelligence	Intelligence	IN	39	36	41
Counterintelligence	Counterintelligence	CN	37	45	46

Description of the Program:

The Intelligence Program provides the Department, other U.S. government policymakers, and the Intelligence Community with timely, accurate, high impact foreign intelligence analyses in the following core areas: nuclear proliferation and weapons; nuclear energy, safety, and waste; science and technology; and energy security. In addition, this program provides support to the Department's counterintelligence objectives. The Intelligence Program also provides quick turnaround, specialized technology applications and operational support to the intelligence, special operations, and law enforcement communities.

The Counterintelligence program provides the Department, other U.S. Government policymakers, and the Intelligence Community with the capability to successfully identify, neutralize, and deter intelligence threats directed at the Department's facilities, personnel, information, and technologies. IN and CN activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goal:

NS6-1 PROVIDING INTELLIGENCE AND COUNTERINTELLIGENCE

The Intelligence program provides timely, high impact foreign intelligence analyses and inform U.S. nonproliferation and arms control policy formulation and execution with all-source evaluations of foreign nuclear weapons programs. The Counterintelligence (CI) program will: (1) administer investigations that support migration of the CI threat and that identify matters that require further investigation by the FBI; (2) develop threat assessments that identify targeting of DOE personnel and assets; (3) develop a multi-channel communications program that enhances employee awareness of CI issues with measurable employee feedback; (4) develop and deploy an enhanced intrusion detection capability for DOE to address cyber threats; (5) conduct inspections of CI programs that ensure comprehensive and quality effort at DOE sights; and (6) evaluate employees assigned to high-risk positions.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2001 are listed in the table that follows. For FY 2002, we will be reporting against the general performance goal.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
Counterintelligence: ● *Implement the DOE Counterintelligence Action Plan pursuant to Presidential Decision Directive-61 to strengthen controls and protections of sensitive information, especially at the nuclear weapons laboratories. (NS3-3)*[2] (NEARLY MET GOAL) **Intelligence:**	● *Complete the Counterintelligence Implementation Plan's recommendations. (FMFIA) (NS3-3)* (NEARLY MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. NS3-3 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Complete the Counterintelligence Implementation Plan's recommendations. (NS6-1/(FMFIA)*	
• ~~*Inform U.S. nonproliferation and arms control policy formulation and execution with all-source evaluations of foreign nuclear weapons programs. (NS6-2)*~~	

Note: For FY 2001, a performance measure (in shaded text) for Counterintelligence was a result of the FMFIA process and a measure was deleted because it was an activity and not measurable.

Means and Strategies:

The Department will produce and disseminate intelligence analyses assessing the efforts of key countries, organizations, or individuals to acquire, develop, or sell nuclear weapons or related materials, technologies, and expertise. DOE also will produce and disseminate intelligence analyses evaluating Russian activities, strategies, intentions, and requirements with respect to various bilateral and multilateral nuclear weapons-related treaties and agreements.

Collaboration Activities:

In addition to those analyses reflecting the Department's particular technical expertise and viewpoints on foreign nuclear weapons programs, DOE will work with its counterparts in intelligence analysis of foreign nuclear programs to produce analyses reflecting common Intelligence Community positions as well as areas of disagreement on issues of key policy interest.

External Factors Affecting Performance:

The availability of credible, high-quality data from multiple sources will have a direct impact on DOE's ability to produce solid intelligence analysis on any given national security issue. In addition, analytic work on specific countries and topics frequently is driven by high-profile international developments, which may influence the mix of coverage in any given fiscal year.

Validation and Verification:

Data Sources:	Quarterly reports and program review briefings.
Baselines:	Established annually in approved program plans.
Frequency:	Quarterly financial progress reports and annual program reviews.
Data Storage:	N/A
Verification:	Analytic activities have quarterly reporting periods, which are supplemented by and expanded upon in annual program reviews.

Planned Program Evaluation:

Intelligence analytical activities undergo an annual program review each spring that both reviews progress and accomplishments in the year to date and previews key issues for the upcoming fiscal year.

GPRA Program Activity: Worker and Community Transition

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activity**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
050 Other Defense Activities					
Worker and Community Transition	-	WT	24	24	24

Description of the Program:

The mission of the Office of Worker and Community Transition is to minimize the social and economic impacts of changes in the Department's activities and encourage disposition of the Department's unneeded assets.

The principle 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; (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.

General Performance Goal:

NS3-2 MANAGING CONTRACTOR WORK FORCE RESTRUCTURING
Minimize the social and economic impacts to individuals and communities caused by changes in the Department's work force and encourage orderly disposition of the Department's unneeded assets. Develop strategies to limit increases in unplanned employee attrition at early closure sites to no more than 30 percent, in order to maintain essential work skills.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Keep involuntary separations between 30 and 60 percent of positions eliminated while assuring maintenance of essential work force skills mix and productivity. (NS3-6)* [2] (NEARLY MET GOAL)	• *Limit involuntary termination of employment at Department of Energy defense nuclear facilities between 30 and 60 percent of positions eliminated. (NS3-6)* (MET GOAL)
• *Achieve annual recurring costs savings from separated workers that is at least three times the one time cost of separation. (NS3-6)* (EXCEEDED GOAL)	• *Achieve annual recurring costs savings from separated workers that is at least three times the one time cost of separation. (NS3-6)* (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. (NS3-6)* (EXCEEDED 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. (NS3-6)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. (NS3-6) for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• ~~*Develop strategies to limit increases in unplanned employee attrition at early closure sites to no more than 30 percent, in order to maintain essential work skills. (NS3-2)*~~	
• *Achieve annual recurring costs savings from separated workers that are at least three times the one time cost of separation. (NS3-2)*	• *Achieve annual recurring cost savings from separated workers that are at least three times the one time cost of separation. (NS3-2)*
• *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. (NS3-2)*	• *Support local community transition activities that will create or retain, cumulatively, between 27,500 and 29,000 private sector jobs by the end of FY 2002. (NS3-2)*

Note: For FY 2001, one performance measure was deleted because it was an unmeasurable activity.

Means and Strategies:

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 internal placement. The community transition goal will be achieved through financial and technical assistance provided to community reuse organizations at the affected sites. The economic conversion goal will be achieved through headquarters technical assistance and oversight to field organizations designed to encourage the leveraging of underutilized assets to achieve cost savings.

Collaboration Activities:

The Office of Worker and Community Transition works through Lead Program Offices at Field activities 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.

Validation and Verification:

Data Sources:	Annual Report on Contractor Work Force Restructuring, Field manager certifications, Community Transition Semi-Annual Report (Reports available on web site in "Data Storage")
Baselines:	Same as above.
Frequency:	Annually and semi-annually
Data Storage:	Electronic files, WT's office library, WT's web page http://www.wct.doe.gov/
Verification:	Field and CRO representatives and

Planned Program Evaluation:

The Annual Report on Contractor Work Force Restructuring and independent reviews and audits have been performed by the GAO and Booz-Allen & Hamilton, Inc. with anticipated continued external review and evaluation. Revised community transition criteria were developed in 1999 in response to GAO recommendations.

GPRA Program Activity: Security and Emergency Operations

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
050 - Other Defense Activities					
Nuclear Safeguards and Security		SO	95	117	121
Security Investigations		SO	33	33	45
Program Direction		SO	83	80	82
Undistributed		SO	-	-	20
Total			210	231	269

Description of the Program:

The Office of Security and Emergency Operations consolidates functions and budgets from several DOE offices to develop and promulgate safeguards and security policy, oversee all security-related functions in the Department, and centralize cyber-security and emergency operations throughout the DOE complex. In FY 2001, safeguards and security activities are direct funded for the first time in the Department's history. Funding for the field security activities is identified as a separate decision units for safeguards and security, but remain in the accounts where those sites are funded by the landlord program offices.

General Performance Goals:

NS6-2 PROVIDING SECURITY AND EMERGENCY OPERATIONS
Develop and implement policy and guidelines for the protection of the Department's critical assets. Provide the capability to successfully address the areas of personnel security, physical countermeasures, cyber security including forensics analysis capability, nuclear material control and accountability, and policy for hosting foreign visitors. Continue to improve and enhance the control and accountability of nuclear materials in the DOE complex through the development of state-of-the-art technologies, including measurement equipment and core nuclear material accounting software.

Direct Department-wide energy sector critical infrastructure protection activities and lead and coordinate Departmental efforts to work with industry, state, and local governments, and national and international entities. Work with the national energy sector toward developing the capability required for assuring the Nation's energy infrastructures, including the physical and cyber components of the electric power, oil, and gas infrastructures, the interdependencies among those components, and the interdependencies with the other critical national infrastructures. Identify DOE technologies that can help assure our Nation's critical energy infrastructures and facilitate their use by the private sector and other Federal agencies.

Modernize information security program to analyze and deter major incidents involving the compromise of classified information. This includes: expansion of information assurance forensics analysis capabilities to support investigations and prosecutions of unauthorized disclosures of classified information; training for response personnel on preservation of evidence including electronic media; expansion of the Department's technical surveillance countermeasures program; and supporting the development and approval of a comprehensive Cyber Security Program Plan that describes the implementation of cyber security protection for every DOE site.

Address enhanced protection measures for the most critical nuclear weapon design information as outlined by the DOD/DOE Joint Policy Group for the Protection of Nuclear Weapons Design and Use Control Information. Provide an effective system for the tracking and management of foreign visits by the Department of Energy that is supportive of rapidly changing and growing national security needs.

CM4-1 PROMOTING EFFECTIVE MANAGEMENT OF INFORMATION TECHNOLOGY RESOURCES IN THE DEPARTMENT

Ensure economical and effective management of information resources to support DOE missions and objectives. Make effective use of commercial applications and solutions for DOE's enterprise-wide IT infrastructure; link IT investments to DOE strategic goals and the needs of business operations; minimize the number of redundant and duplicative systems; and improve enterprise-wide data sharing.

Performance Indicators: Performance indicators for these goals are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

The following facing pages show four years of performance measures for Security and Emergency Operations.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
	• *Complete the milestones listed in the FMFIA corrective action plan for the Departmental Challenge of Security. (CM5-1/FMFIA)* (MET GOAL) • *Complete the milestones listed in the FMFIA corrective action plan for the Departmental Challenge of Mission Critical Staffing. (CM5-1/FMFIA)* (MET GOAL) • *Initiate the correction of DOE infrastructure vulnerabilities identified by the President's Commission on Critical Infrastructure Protection. (NS3-3)* (MET GOAL) • *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. (CM2-3)* (BELOW EXPECTATION: Additional reviewers were obtained but the five fold increase in priority reviews prevented reaching goal this year.)
• *Accomplish the milestones of the FMFIA corrective action plan for the Departmental challenge of unclassified computer security. (formerly MA) (CM5-1)*[2] (MET GOAL)	

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. CM5-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of security. (NS6-2/FMFIA)* • *Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of mission critical staffing. (NS6-2/FMFIA)* • *Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of information technology management. (CM4-1/FMFIA)* • ~~*Demonstrate improvement of a comprehensive emergency management system to ensure effective Departmental response to all DOE emergencies. (NS6-2)*~~ • ~~*Maintain robust emergency response assets in accordance with Presidential Decision Directives 39, 41, 62, 63, and 67 and the Atomic Energy Act, Executive Order 12656, and Federal Emergency Plans. (NS6-2)*~~	• *Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of security. (NS6-2/FMFIA)*

Note: The FY 2001 performance plan included several additional measures which do not meet our criteria for inclusion here, and therefore have been removed in this revision. Strikeouts and shaded text in the measures indicate revisions

Means and Strategies:

- Work with the private sector and State and local governments to develop and implement regional critical infrastructure protection initiatives.
- Refine energy infrastructure vulnerability assessment methods through conduct of assessments at 8-10 entities in the natural gas and nuclear sectors.
- Continue/implement critical infrastructure protection (CIP) research and development, with a focus on producing CIP vulnerability assessment methodology and infrastructure interdependency analysis capability.

Collaboration Activities:

In the area of critical infrastructure protection, the Department participates in a number of interagency groups and public-private forums, including:

- The Partnership for Critical Infrastructure Security (public-private)
- Office of Science and Technology Policy (OSTP) CIP Research and Development Working Group (interagency)
- Communications and Information Sector Working Group (public-private, led by the Department of Commerce)
- Energy Infrastructure Assurance Coordination Group (interagency, DOE-led)
- National Petroleum Council/DOE CIP Subcommittee (public-private)
- North American Electric Reliability Council CIP Forum (public-private)
- Critical Infrastructure Coordination Group (interagency)
- Technical Support Working Group (interagency)

External Factors Affecting Performance:

The CIP program's indicated performance goals and associated schedules depend heavily on funding continuity and sufficiency.

Planned Program Evaluation:

The Office of Critical Infrastructure Protection conducts monthly, detailed reviews of program activities, schedules, and expenditures. The Director and all program managers participate to ensure that activities are on schedule and within budget.

GPRA Program Activity: Independent Oversight and Performance Assurance

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
Other Defense Activities					
Oversight Activities	-	OA	12	15	15

Description of the Program:

The Office of Independent Oversight and Performance Assurance (OA) is a corporate resource that performs independent oversight to verify that DOE security interests are protected and that DOE can respond to emergencies. The Office is committed to excellence and continuously strives for improvement by conducting independent oversight of safeguards and security performance. The hallmark and highest priority of all Independent Oversight and Performance Assurance activities is daily excellence in the protection of the workers and the Nation. The Office of Independent Oversight and Performance Assurance activities are concentrated within one GPRA Program Activity: Independent Oversight and Performance Assurance. OA activities under this program support the following general performance goal that flows from the Department's Strategic Plan.

General Performance Goal:

NS6-3 CONDUCTING INDEPENDENT OVERSIGHT AND PERFORMANCE ASSURANCE
Conduct safeguards and security evaluations and continuous cyber security inspections at major Departmental sites to provide an independent assessment of the status of safeguards and security programs and establish a baseline of findings. Perform regular assessments of emergency management programs at DOE sites.

Performance Indicators: Performance indicators for this goal are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Conduct oversight special reviews, assessments, evaluations, and inspections of such topics as emergency management, and safeguards and security. (CM1-1)*[2] (MET GOAL)	• *Conduct oversight special reviews, assessments, evaluations, and inspections addressing emergency management, safety management, and accidents. (CM1-1)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. CM1-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Conduct safeguards and security evaluations at 20 major sites per year to provide an independent assessment of the status of safeguards and security programs for the Secretary and to establish a baseline of findings in a database designed to track and measure improvement in these areas at sites throughout the Department. (NS6-3)*	• *Conduct safeguards and security evaluations at 20 major sites per year to provide an independent assessment of the status of safeguards and security programs for the Secretary and continue to report the baseline of findings in a database designed to track and measure improvement in these areas at sites throughout the Department. (NS6-3)*
• *Perform continuous cyber security inspections and no-notice reviews at 14 major Departmental sites per year to improve oversight of cyber security and establish a baseline of issues through a new function dedicated solely to cyber security reviews, offsite monitoring of Internet security, and controlled attempts to penetrate security firewalls. This new function represents a substantial increase over previous efforts to evaluate cyber security within the Department. (NS6-3)*	• *Perform continuous cyber security inspections and no-notice reviews at 14 major Departmental sites per year to improve oversight of cyber security. These inspections results are measures against the baseline of issues to determine the improvement of cyber security, offsite monitoring of Internet security, and controlled attempts to penetrate security firewalls. This function represents an increase over previous efforts to evaluate cyber security within the Department. (NS6-3)*
• *Provide for the dedicated oversight of emergency management issues at Department Headquarters and 15 major Departmental sites. This function focuses solely on the effectiveness of the Department's emergency management programs and establish a performance baseline of the status of these programs throughout the Department. (NS6-3)*	• *Provide for the dedicated oversight of emergency management issues at Department Headquarters and 15 major Departmental sites. This function focuses solely on the effectiveness of the Department's emergency management programs. This oversight is measured against the baseline of these programs throughout the Department and provides information for Department-wide improvement. (NS6-3)*
• *Conduct 3 special complex-wide reviews of topics such as Wildland Fire Safety and National Emergency Response Assets to determine their effectiveness across the complex. Findings and issues associated with these programs will be maintained in a database to track corrective actions and assist in measuring improvement in these critical areas throughout the Department. (NS6-3)*	• *Conduct 3 special complex-wide reviews of topics such as Wildland Fire Safety and National Emergency Response Assets to determine their effectiveness across the complex. Findings and issues associated with these programs are maintained in a database to track corrective actions. These reviews provide information Department-wide for critical area improvements. (NS6-3)*

Means and Strategies:

In order for the Office of Independent Oversight and Performance Assurance (OA) to achieve its mission, it requires the technical support of national-level experts that are at least comparable to Federal personnel at the excepted service level. While Independent Oversight and Performance Assurance has some unique, national-level experts, these are insufficient to perform all necessary oversight activities. Further, because of the nature of the activities, contract support continues to be more practical and cost-effective to provide a surge pool of technical experts than expanding the Federal oversight staff for a number of reasons:

- Peak loads associated with onsite inspections make it more effective and efficient to use contractor personnel who are tasked only when needed.
- The need for evaluators with national-level expertise in different technical disciplines (ranging from cyber-security to nuclear material control and accountability) is more efficiently provided by contractors. The needs for various technical expertise are continually evolving and frequently change as new needs are identified. Such evolving needs can best be met through use of contractors as the Federal staff and personnel systems are unable to rapidly respond to the continually changing skills mix.

Similarly, because of the nature of Independent Oversight and Performance Assurance activities and the intense scrutiny that Independent Oversight and Performance Assurance is under, Independent Oversight and Performance Assurance reviews must be performed in a manner that is demonstrably unbiased.

Collaboration Activities:

No collaboration activities are anticipated.

External Factors Affecting Performance:

No external factors are envisioned that would affect OA performance.

Validation and Verification:

Data Sources:	Information is collected and validated at the field sites during the inspection reviews etc.
Baselines:	Technical baselines have been developed for the new program and are utilized during inspections.
Frequency:	Reviews occur as appropriate with approximately 20 major sites being reviewed annually.
Data Storage:	The Office of Independent Oversight and Performance Assurance maintains copies of all reports. All unclassified reports are available through the INTERNET.
Verification:	All findings during reviews are validated with the site. The site also reviews the report before publication.

Planned Program Evaluation:

OA is the highest level of oversight in the Department for these activities. An extensive peer and program review process is followed to assure that reports reflect the highest quality achievable.

ENVIRONMENTAL QUALITY

The Department of Energy is committed to honoring the government's obligation to clean up its sites across the country that supported the Nation's production and testing of nuclear weapons; to dispose of spent nuclear fuel from civilian nuclear power plants; to dispose of Department-owned spent nuclear fuel and high-level radioactive wastes; and to protect human health and the environment. During the Cold War, the nuclear weapons complex generated large amounts of waste, which pose unique problems. There exist vast volumes of contaminated soil and water, radiological hazards from special nuclear material, and a large number of contaminated buildings and structures. Much of this massive infrastructure, waste, and contamination still exists.

Despite the complexity and size of the challenge, DOE has made substantial progress over the past decade in cleaning up the nuclear weapons complex. At the beginning of FY 2001, the Department had finished active cleanup at 71 of the 113 geographic sites, leaving 42 to be completed.

DOE's goal is to complete cleanup at as many additional sites as possible by 2006. At the sites remaining after 2006, which include our largest sites, DOE will continue treatment for the remaining"legacy"waste streams, and manage legacy nuclear materials (including nuclear material stabilization and disposition). To protect human health and the environment, the Department will implement long-term stewardship activities after active cleanup is completed at the sites.

In addition to the environmental legacy of nuclear weapons production, the United States has growing inventories of commercial spent nuclear fuel currently stored at reactor sites in 33 States, and spent fuel from nuclear-powered naval vessels. Geologic disposal is the national strategy for the ultimate disposition of this spent fuel and of defense high-level radioactive waste. It is also the technical foundation for our international stance on nuclear nonproliferation, as well as the likely path forward for other materials such as excess fissile materials. The Department's Office of Civilian Radioactive Waste Management has made substantial progress in characterizing Yucca Mountain, Nevada, to determine its suitability as a geologic repository site for these wastes. Based on the viability assessment completed in 1998, the Department believes that Yucca Mountain remains a promising site for a geologic repository and that work should proceed toward a decision on whether to recommend the site to the President. If the site is recommended for development as the repository site, a final environmental impact statement will accompany the site recommendation. If Yucca Mountain is designated as the repository site, a license application for construction authorization by the Nuclear Regulatory Commission will be developed. Under current plans, waste acceptance at the repository would begin in 2010.

ENVIRONMENTAL QUALITY GOAL

Aggressively clean up the environmental legacy of nuclear weapons and civilian nuclear research and development programs at the Department's remaining sites, safely manage nuclear materials and spent nuclear fuel, and permanently dispose of the Nation's radioactive wastes.

The Environmental Quality goal is supported by the following three strategic objectives.

EQ1: ***Safely and expeditiously cleanup sites across the country that supported nuclear weapons research, production, and testing and conducted DOE-funded nuclear energy and basic science research in the United States. After completion of cleanup, continue stewardship activities to ensure that human health and the environment are protected.***

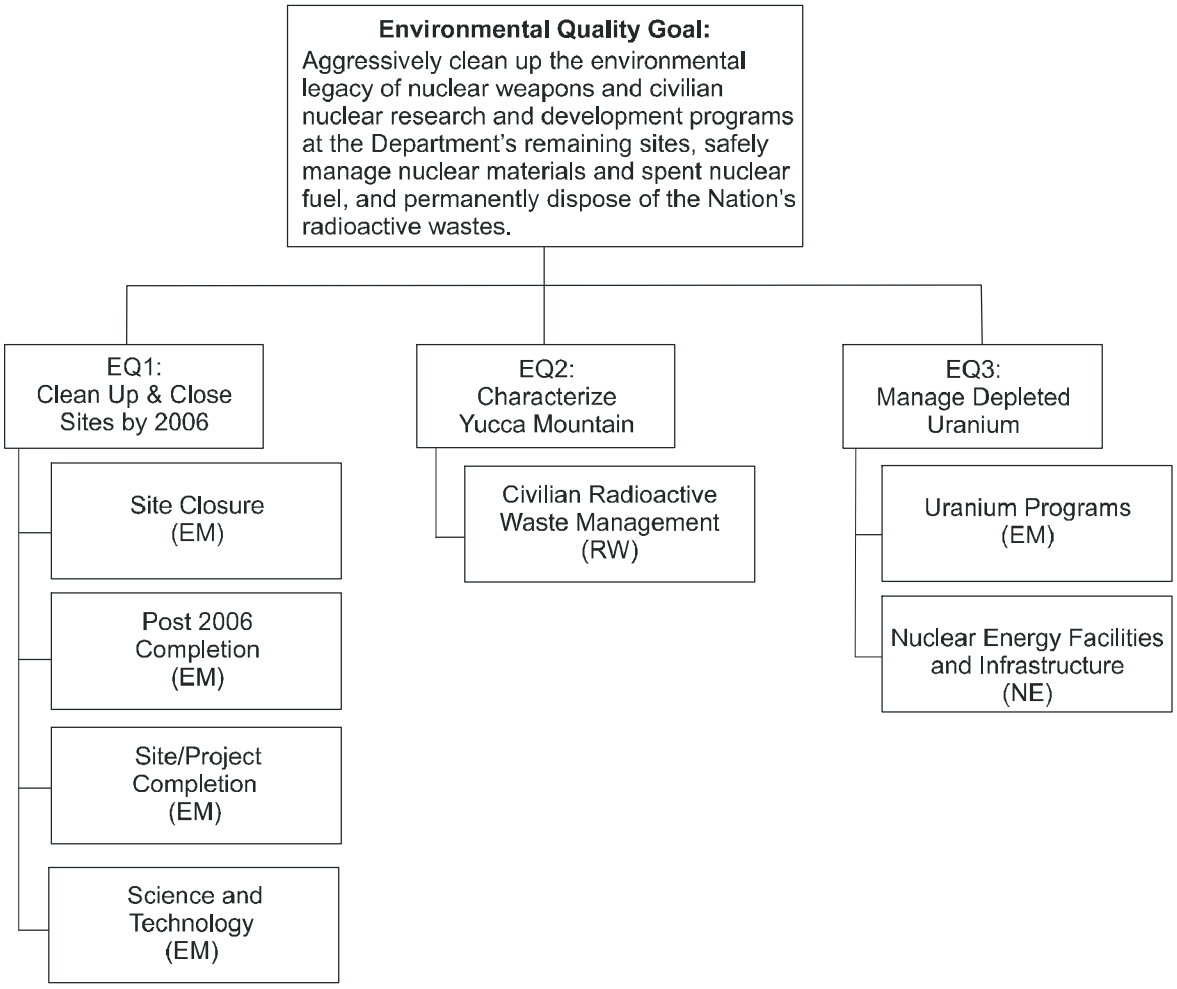
EQ2: ***Complete the characterization of the Yucca Mountain site and, assuming it is determined suitable as a repository and the President and Congress approve, obtain requisite licenses, construct and, in FY 2010, begin acceptance of spent nuclear fuel and high-level radioactive wastes at the repository.***

EQ3: ***Manage the material and facility legacies associated with the Department's uranium enrichment and civilian nuclear power development activities.***

The following table maps the Presidential Budget's Program and Financing (P&F) accounts and program activities to the Department of Energy's offices and GPRA Program Activities. The alignment includes aggregation, disaggregation, and consolidation of budget decision units. The chart that follows this table shows how the decision units support the Department's Strategic Plan objectives for this business line.

President's Budget Program and Financing (P&F) Accounts and Program Activities		FY 2002 Request ($M)	DOE Office	GPRA Program Activity
050 Atomic Energy Defense Activities				
Defense Environmental Restoration and Waste Management (ERWM)				
	Site/Project Completion	912	EM	Environmental Management
	Post 2006 Completion	2,108	EM	
	Program Direction	356	EM	
	EM Science & Technology	196	EM	
	Excess Facilities	1	EM	
	Post 2006 Completion - ORP	812	EM	
	Safeguards and Security	206	EM	
Subtotal (ERWM)		4,591		
Adjustments		(42)	EM	
Defense Facilities Closure Projects		1,050	EM	
Defense Environmental Management Privatization		142	EM	
Uranium Enrichment D&D Fund		(420)	EM	
Defense Nuclear Waste Disposal		310	RW	Civilian Radioactive Waste Management
270 Energy Supply				
Non-Defense Environmental Management		229	EM	Environmental Management
Uranium Enrichment D&D Fund		252	EM	
Uranium Programs		111	EM	
Nuclear Waste Disposal Fund		135	RW	Civilian Radioactive Waste Management
TOTAL Environmental Quality		**6,358**		

The Environmental Quality goal is supported by three strategic objectives. Each strategic objective is being pursued through long-term strategies. In this annual performance plan these long term strategies have been stated in terms of General Performance Goals against which outcome performance indicators and annual (output) performance measures have been established. To make the linkage of these outcomes and outputs to the budget resources we have organized the plan by GPRA Program Activities which are aligned with the budget decision units through aggregation, disaggregation, and consolidation. The general performance goals and indicators and annual measures and targets are discussed with the GPRA Program Activities on the following pages. This approach allows us to clearly link annual performance with annual budget resources and the strategic plan objectives. The chart below gives an overview of the linkage of budget decision units and strategic objectives for Environmental Quality.



President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
Defense Environmental Restoration and Waste Management	- Site/Project Completion - Post 2006 Completion - Program Direction - EM Science & Technology	EM	4,604	5,063	4,591
Defense Facilities Closure Projects	- Site Closure	EM	1,062	1,080	1,050
Defense Environmental Management Privatization	- Defense EM Privatization	EM	127	90	142
Non-Defense Environmental Management	- Site Closure - Site/Project Completion - Post 2006 Completion	EM	309	279	229
Uranium Facility Maintenance & Remediation	Uranium Enrichment D&D Fund	EM	336	393	363
Adjustments	Uranium Enrichment D&D Fund General Reduction for S&S Prior Year Balances		(420)	(419)	(462)
Total			5,949	6,266	5,913

Description of the Program

The Environmental Management (EM) program budget structure categorizes projects according to their specific appropriation – Defense Environmental Restoration and Waste Management, Defense Facilities Closure, Defense Environmental Management Privatization, Non-Defense Environmental Management, and the Uranium Facilities Maintenance and Remediation Account. The structure of the EM budget continues to be based on the grouping of activities into projects at the various Departmental sites, a crucial step in accelerating work and lowering the cost of carrying out the EM mission. EM's budget program accounts reflect near-term goals and emphasis on completion:

- **Site Closure** provides funding for completing cleanup and closing down facilities with no enduring Federal presence on-site, except for stewardship activities. The Department has established a goal of completing cleanup at the sites in this account by the end of 2006.

- **Site/Project Completion** funds those projects for which EM has established a goal of completion by 2006 at 1) EM sites where overall site cleanup will not be fully accomplished by 2006; and 2) DOE sites where EM has set a goal of completion of all EM projects by 2006 (except for long-term stewardship activities), but where there will be a continuing Federal workforce at the site to carry out enduring non-EM missions.

- **Post 2006 Completion** funds projects that are expected to require work beyond 2006 and includes efforts at the Department's largest sites, where operations have been carried out over a long period of time and associated cleanup will take longer to complete. It includes Multi-Site activities, such as Pollution Prevention, Environmental and Regulatory Activities, Transportation and Packaging, Emergency Preparedness, and National Analytical Management Program activities.

- **Science and Technology** manages and directs investments in research, development, implementation, and deployment of new technologies.

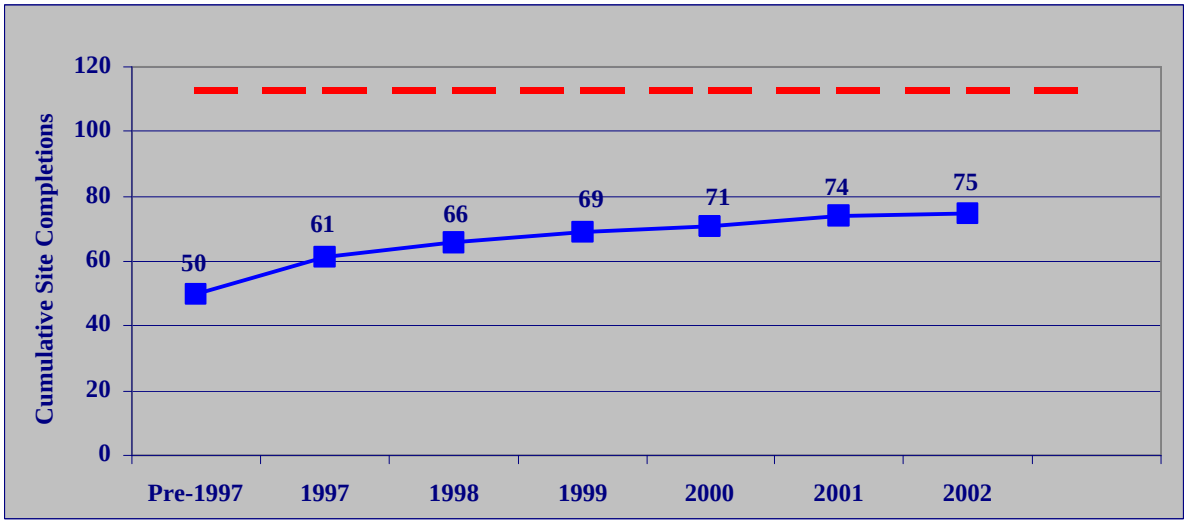
The EM budget structure includes an account for **Program Direction** which provides the critical oversight and management functions for the EM program including federal salaries, travel and other costs**.**

General Performance Goals:

EQ1-1 COMPLETING GEOGRAPHIC SITE CLEANUP
Complete cleanup at as many of the Department's 42 remaining sites as possible by 2006. Continue cleanup at the remaining sites, including the 5 largest sites, scheduled for completion in the post 2006 time-frame.

Performance Indicators:

a.) Number of geographic sites completed – This indicator tracks geographic site completion progress and supports strategic objective EQ1. A geographic site is an area of land (or series of buildings) where EM has or is conducting cleanup work. Sites range in size from as small as a football field to larger than the state of Rhode Island. If EM performance goals are met, 75 of the 113 sites will be completed by FY 2002.



b.) Number of release site cleanups completed – This indicator tracks release site cleanup progress and supports strategic objective EQ1. Remedial action/release site cleanups are conducted at inactive waste sites or facilities where releases or spills have occurred and contamination has been released into the environment. If EM performance goals are met, approximately 5,161 (52 percent) release site cleanups will be completed out of a total inventory of approximately 9,995 release sites by the end of FY 2002.

c.) Number of facilities decommissioned – This indicator tracks facility decommissioning progress and supports strategic objective EQ1. Decommissioning involves the decontamination and dismantlement and removal of nuclear facilities that are no longer active and pose a risk to public health and the environment. Decommissioning operations range from small cleanup activities involving portions of buildings to complete structural dismantlement. If EM performance goals are met, more than 673 (20 percent) facilities will be decommissioned by the end of FY 2002 out of a total inventory of approximately 3,391 facilities that require decommissioning.

d.) Number of facilities deactivated - This indicator encompasses activities where the intent is to minimize the risks, hazards, and associated costs at facilities and to make those facilities available for potential re-use or eventual decontamination and decommissioning. While these activities can include material handling and movement activities, the intent of such activity is to remove the material with the goal of readying the

facility/system for the preferred end state. Deactivation includes removal of fuel, draining, reconfiguring and/or de-energizing of nonessential systems such as HVAC, electrical, monitoring, water, heating, and steam, removal of surplus supplies, chemicals, classified equipment and documents, limited decontamination, and removal of hazardous, mixed, and radioactive wastes. If EM performance goals are met, 424 (18 percent) facilities will be deactivated by the end of FY 2002 out of a total inventory of approximately 2,311 facilities that require deactivation.

EQ1-2 DISPOSE OF WASTE GENERATED DURING PAST AND CURRENT DOE ACTIVITIES
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).

Performance Indicator:

Volume of waste disposed or treated by waste type – These indicators track waste (i.e., high-level waste, transuranic waste, mixed low-level waste, and low-level waste) disposal progress and support strategic objective EQ1. Waste disposal is defined as waste emplacement designed to ensure isolation of the waste from the biosphere with no intention of retrieval for the foreseeable future, and requiring a deliberate action to regain access to the waste. Waste management disposal activities support completion of the geographic sites and will ultimately enable many of the EM sites to be made available for other beneficial uses.

a.) High-Level Waste – High-level waste is highly radioactive waste material resulting from the reprocessing of spent nuclear fuel, including the liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations, and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation. The long-term objective for high-level waste management is disposal in a licensed geologic repository. High-level waste is made disposal-ready through treatment to produce canisters of vitrified waste. By the end of FY 2001, vitrification at the West Valley Demonstration Project in New York is planned to be completed. During FY 2002, the Defense Waste Processing Facility at the Savannah River Site in South Carolina plans to produce another 150 canisters of vitrified high level waste, bringing the total of number of canisters of high-level waste produced to 1,576. This will complete about 8 percent of the approximately 19,179 canisters of high-level waste that is currently scheduled to be produced between FY 1996 and life-cycle completion.

b.) Transuranic Waste – Transuranic waste is radioactive waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for, a) high-level radioactive waste; b) waste that the Secretary of Energy has determined, with the concurrence of the Administrator of the Environmental Protection Agency, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations; or c) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61. The long-term objective is to dispose of all defense related transuranic waste at the Waste Isolation Pilot Plant (WIPP) in New Mexico. The Department initiated disposal operations at WIPP on March 26, 1999. Approximately 98 percent of DOE's transuranic waste is stored at six major sites: Los Alamos National Laboratory, Rocky Flats Environmental Technology Site, Oak Ridge National Laboratory, Hanford Site, Idaho National Engineering and Environmental Laboratory, and the Savannah River Site. If EM performance goals are met, by the end of FY 2002 more than 8,404 cubic meters of transuranic waste will be shipped to WIPP for disposal. This will complete about 5 percent of the total volume of transuranic waste (175,600 cubic meters) that requires disposal between FY 1998 and 2034. (The WIPP legal limit of 175,600 cubic meters is provided as the life-cycle estimate since the expectation is that the full capacity at WIPP will be needed to dispose of EM's transuranic waste).

c.) Mixed Low-Level Waste – The long-term goal for mixed low-level waste disposal is to develop the capacity needed to dispose of the existing inventory as well as any newly generated waste. The near-term goal for mixed waste disposal is to complete site selection for facilities. If EM performance goals are met, by the end of FY 2002 approximately 48,284 cubic meters of mixed low-level waste will be disposed. This

will complete about 36 percent of the total volume of mixed low-level waste (134,472 cubic meters) that requires disposal between FY 1998 and life-cycle completion.

d.) Mixed Low-Level Waste – Mixed low-level waste consists of both hazardous (as defined by the Resource Conservation and Recovery Act) and radioactive (as defined by the Atomic Energy Act) components and is not high-level or transuranic waste. The long-term goal for mixed low-level waste is to develop the necessary treatment of the existing inventory as well as any newly generated waste. The near-term goal for mixed waste treatment is to optimize the configuration outlined in the site treatment plans. If EM performance goals are met, by the end of FY 2002 approximately 32,465 cubic meters of mixed low-level waste will be treated. This will complete about 42 percent of the total volume of mixed low-level waste (77,997 cubic meters) that requires treatment between FY 1998 and life-cycle completion.

e.) Low-Level Waste – Low-level waste is radioactive waste that is not high-level radioactive waste, transuranic waste, spent nuclear fuel, byproduct material (as defined under the Atomic Energy Act of 1954) or naturally occurring radioactive material. The near-term and long-term goals of low-level waste management are to continue to dispose of low-level waste at a pace to eliminate currently stored low-level waste and match generation of new waste. If EM performance goals are met, by the end of FY 2002, a total of 255,534 cubic meters of low-level waste will be disposed. This will complete about 13 percent of the total volume of low-level waste (1,940,746 cubic meters) that requires disposal between FY 1998 and life-cycle completion.

EQ1-3 STABILIZE NUCLEAR MATERIAL AND SPENT NUCLEAR FUEL

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

Performance Indicators:

a.) Quantity of nuclear material stabilized – This indicator tracks progress on the stabilization of nuclear material and supports strategic objective EQ1. The Department must stabilize these materials (i.e., produce a safer chemical and/or physical form of the material) to reduce the level of potential risk such as exposure to radiation, contamination of people and the environment, and critical events. Stabilization means that something (i.e., processing from a liquid to a solid form, processing to remove activated waste streams, repackaging, etc.) must be done to the nuclear material so that they pose significantly less risk to workers, the public, and/or environment. The following types of nuclear material are reported in this plan: kilograms bulk of plutonium residue and containers of plutonium metals/oxides. If EM performance goals are met, by the end of FY 2002 the Department will stabilize 101,887 kilograms bulk of plutonium residue and 2,947 containers of plutonium metals/oxides. This will complete approximately 89 percent of the kilograms bulk of plutonium residue and 39 percent of the plutonium metals/oxides that require stabilization between FY 1998 and life-cycle completion.

b.) Quantity of spent nuclear fuel moved to dry storage - Similar to nuclear materials, spent nuclear fuel must also be stabilized. The number of metric tons of heavy metal of spent nuclear fuel that is moved to dry storage is an indicator of stabilization progress. If EM performance goals are met by the end of FY 2002, a total of approximately 860 metric tons of heavy metal of spent nuclear fuel will be moved to dry storage. This will complete 35 percent of the total amount of spent nuclear fuel (approximately 2,484 metric tons of heavy metal) that will be moved to dry storage between FY 1998 and life-cycle completion.

EQ1-4 DEPLOYING INNOVATIVE CLEANUP TECHNOLOGIES

Deploy innovative environmental cleanup, nuclear waste, and spent fuel treatment technologies that reduce cost, resolve currently intractable problems, and/or are more protective of workers and the environment.

Performance Indicator:

Number of New Technologies Deployed: This indicator tracks progress on technology development and deployment and supports strategic objective EQ1. Deployment is the use of a technology or technology system toward accomplishment of one or more site-specific DOE EM program cleanup objectives as applied to the actual waste requiring management at the site. The intent of this indicator is to encourage sites to deploy innovative technologies to solve cleanup problems and reduce cost. If EM performance goals are met, 250 innovative technology deployments will be accomplished in FY 2002.

EQ3-1 DISPOSING OF THE DEPARTMENT'S DEPLETED URANIUM HEXAFLORIDE AND EXCESS NATURAL URANIUM INVENTORIES

Work with State, local, and Federal regulators to ensure that the Department's inventories of depleted uranium hexafluoride are stored and maintained in a safe and efficient manner. Manage the development and implementation of a long-term strategy for the conversion and disposition of depleted uranium hexafluoride in a manner that makes useful and safe conversion products and cost-effectively disposes of the remainder. Effectively manage arrangements with the United States Enrichment Corporation (USEC, Inc.) on the lease of facilities and electric power supplies, and reimbursable services.

Performance Indicator:

Performance indicator for this goal is in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

The following facing pages show four years of performance measures for Environmental Management.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
1a. Geographic Site Cleanup *(EQ2-1)*[2] EM completed three sites in FY 1999: Ames Laboratory in Iowa, Sandia National Laboratory in California, and Princeton Plasma Physics Laboratory in New Jersey. (MET GOAL)	• *Complete remediation at 2 geographic sites, increasing the total completed to 71 of the 113 geographic sites. (EQ2-1/FMFIA)* (MET GOAL) Monticello Remedial Action Project in Utah, and Columbus Environmental Project-King Avenue in Ohio. • *Monitor field activities and participate in reviews at Savannah River Operations Office to ensure adherence to project costs and schedules. This is an FY 2000 FMFIA milestone. (EQ2-1/FMFIA)* (MET GOAL)
1b. Release Site Cleanup Progress *(EQ2-1)* EM completed 161 of the planned 165 release site cleanups. (NEARLY MET GOAL)	• *Complete 252 release site cleanups. This will bring the total number of completed release site cleanups to 4,730 out of a total inventory of approximately 9,700 release sites. (EQ2-1)* (NEARLY MET GOAL) 207** release site cleanups completed Total revised to 4919** and inventory revised to 9995**.
1c. Facility Decommissioning Progress *(EQ2-1)* EM decommissioned 92 facilities exceeding the goal of 80. (EXCEEDED GOAL)	• *Complete 82 facility decommissionings. This will bring the total number of completed decommissionings to 640 out of a total inventory of approximately 3,300 facilities. (EQ2-1)* (NEARLY MET GOAL) completed 77 of the 82.
1d. Facility Deactivation Progress	Deactivated 30 facilities.
2a. High Level Waste (HLW) Progress – Canisters Produced *(EQ3-1)* The DWPF produced 236 canisters of HLW and West Valley produced 12 canisters of HLW, exceeding the goal of 215 canisters. (EXCEEDED GOAL)	• *Produce 200 canisters of HLW at the Defense Waste Processing Facility (DWPF) at Savannah River Site, and 5 canisters of HLW at the West Valley Demonstration Project. This will complete about 4 percent of the total canisters that will be produced from FY 1998 to life-cycle completion. (EQ3-1)* (EXCEEDED GOAL) EM produced 241 canisters
2b. Transuranic (TRU) Waste Progress – Shipments to WIPP *(EQ3-1)* Approximately 282** cubic meters of TRU waste were shipped to WIPP for disposal. The plan was to prepare 700 cubic meters and and ship 100 to 200 cubic meters. Delayed opening of WIPP postponed the preparation of additional waste for disposal. (NEARLY MET GOAL)	• *Ship 1,200 cubic meters of TRU waste to WIPP for disposal. This will bring the total TRU waste shipped to 1,550 cubic meters, which is about 1 percent of the total TRU waste that requires disposal between FY 1998 and FY 2034. (EQ3-1)* (BELOW EXPECTATION) Shipped 371** cubic meters of TRU waste to WIPP for disposal. • *Implement the permit requirements in parallel with the court challenge and begin Mixed TRU waste disposal operations at WIPP in FY 2000.* (MET GOAL) *(EQ3-1/FMFIA)*

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).
2. The performance goal linkages as noted at the end of each measure, e.g. EQ2-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.
3. We also have had to revise some of the results since the Performance and Accountability Report was published due to change control actions and as such these numbers differ slightly from the numbers in that Report. These are noted with **.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Complete remediation at the following 3 geographic sites increasing the total completed to 74 of the 113 geographic sites:* *- Argonne National Laboratory-West in Idaho,* *- Grand Junction Office Site in Colorado, and* *- General Atomics Site in California. (EQ1-1)*	• *Complete remediation at one additional geographic site, Weldon Spring Site in Missouri increasing the total completed to 75 of the 113 geographic sites. (EQ1-1)*
• *Complete actions addressing safety and health issues at Paducah from 1990 forward. (Phase I) (EQ1-1/FMFIA-safety and health)*	
• *Complete ~~166~~ 183 release site cleanups. This will bring the total number of completed release site cleanups to 5,102 out of a total inventory of approximately 9,995 release sites. (EQ1-1)*	• *Complete 59 release site cleanups bringing the total number of completed release site cleanups to 5,161 out of a total inventory of approximately 9,995 release sites. (EQ1-1)*
• *Complete ~~46~~ 28 facility decommissionings. This will bring the total number of completed decommissionings to 667 out of a total inventory of approximately 3,391 facilities. (EQ1-1)*	• *Complete 6 facility decommissionings. This will bring the total number of completed decommissionings to 673 out of a total inventory of approximately 3,391 facilities. (EQ1-1)*
• *Deactivate 8 facilities bringing the total number of completed deactivations to 417 out of a total of approximately 2,311 facilities. (EQ1-1)*	• *Deactivate 7 facilities bringing the total number of completed deactivations to 424 out of a total of approximately 2,311 facilities. (EQ1-1)*
• *Produce ~~205~~ 225 canisters of HLW . This will complete about 7.4 percent of the total canisters that will be produced from FY 1998 to life-cycle completion. (EQ1-2)*	• *Produce 150 canisters of HLW. This will complete about 8 .2 percent of the total canisters that will be produced over the program life-cycle. (EQ1-2)*
• *Ship ~~3,400~~ 2,425 cubic meters of TRU waste to WIPP for disposal. This will bring the total TRU waste shipped to 3,078 cubic meters, which is about 1.8 percent of the total TRU waste that requires disposal between FY 1998 and FY 2034. (EQ1-2)*	• *Ship 5,326 cubic meters of TRU waste to WIPP. This will bring the total TRU waste shipped to 8,404 cubic meters, which is about 5 percent of the total TRU waste that requires disposal between FY 1998 and FY 2034. (EQ1-2)*

Note: For the FY 2001, strikeout and shaded text in the measures indicates revisions.

Annual Performance Measures[1] (Continued):

FY 1999 Results	FY 2000 Results
2c. Mixed Low-Level Waste (MLLW) Disposal Progress *(EQ3-1)*[2] (MET GOAL)	• *Dispose of 10,000 cubic meters of MLLW. This will bring the total MLLW disposed to 35,500 cubic meters which is about 15 percent of the total MLLW that requires disposal between FY 1998 and FY 2070.* (EXCEEDED GOAL) *(EQ3-1)* Disposed 10,933** . Total revised to 32,474.
2d. Mixed Low-Level Waste (MLLW) Treatment Progress	Treated 6,473 cubic meters of MLLW of the planned 6,973 cubic meters.
2e. Low-Level Waste (LLW) Disposal Progress (BELOW EXPECTATION) *(EQ3-1)* Disposed of more than 49,400 cubic meters of LLW of the 73,000 planned. Contributing factors were: Lack of agreement with the State of Nevada on cleanup standards; and lack of NEPA authority to ship stored waste at Oak Ridge.	• *Dispose of 40,000 cubic meters of LLW. This will bring the total LLW disposed to 116,000 cubic meters which is about 7 percent of the total LLW that requires disposal between FY 1998 and FY 2070. (EQ3-1)* (EXCEEDED GOAL) Disposed 50,340** . Total revised to 126,201.
3a. Nuclear Material Stabilization (Plutonium) Progress *(EQ1-1)* (NEARLY MET GOAL) EM stabilized 31,033 kilograms bulk of plutonium residues, 16 liters of plutonium solution and 275 containers of plutonium metals/oxides. Seismic issue and equipment malfunctions of the stabilization system at Richland contributed to the shortfall.	• *Stabilize 400 containers of plutonium metals/oxides, 41,000 kilograms bulk of plutonium residues, and 130 handling units of other nuclear material in other forms. This will complete stabilization of about 10 percent of the containers of plutonium metals/oxides, 70 percent of the kilograms bulk of plutonium residues, and 3 percent of the handling units of other nuclear material in other forms that will require disposal between FY 1998 and life-cycle completion. (EQ1-1)* (NEARLY MET GOAL) Stabilized 29,460 kg bulk of plutonium residues and 574 containers of plutonium metals/oxides, and 224 handling units of other nuclear materials.
3b. Spent Nuclear Fuel (SNF) Stabilization Progress *(EQ1-1)* (BELOW EXPECTATION) In FY 1999, 0.34 MTHM of SNF was stabilized. This was a result of a criticality issue discovered in the de-watering system operation that precluded processing Three Mile Island spent nuclear fuel canisters.	• *Move to dry storage 35.1 metric tons of heavy metal (MTHM) of spent nuclear fuel (SNF) to dry storage. This will complete transfer of 2 percent of MTHM of SNF that will be moved to dry storage between FY 1998 and life-cycle completion. (EQ1-1)* (BELOW EXPECTATION) Moved approximately 3 tons of MTHM to dry storage.
4a. Technology Deployment Progress: (*EQ2-4)* (EXCEEDED GOAL) 125 innovative technology deployments were achieved exceeding the goal of 60.	• *Accomplish 60 innovative technology deployments.* (EXCEEDED GOAL) *(EQ2-4)* 210 innovative technology deployments were achieved exceeding the goal of 60.
Disposal of Depleted Uranium Hexafloride: • *Met all commitments made to the Ohio Environmental Protection Agency and the Defense Nuclear Facilities Safety Board to ensure the safety of the Department's inventory of depleted uranium hexafluoride. (EQ6)* (MET GOAL)	• *Meet commitments to the Ohio Environmental Protection Agency, the Tennessee Department of Environment and Conservation, and the Defense Nuclear Facilities Safety Board to ensure the safety of the Department's inventory of depleted UF_6. (EQ2-4)* (EXCEEDED GOAL)

Notes: see page 158

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Dispose of approximately ~~7,500~~ 8,271 cubic meters of MLLW. This will bring the total MLLW disposed to 40,745 cubic meters which is about 30 percent of the total MLLW that requires disposal between FY 1998 and FY 2070. (EQ1-2)*	• *Dispose of approximately 7,539 cubic meters of MLLW. This will bring the total MLLW disposed to 48,284 cubic meters which is about 36 percent of the total MLLW that requires disposal between FY 1998 and FY 2070. (EQ1-2)*
• *Treat approximately 4,814 cubic meters of MLLW in FY 2001 . This will bring the total MLLW treated to 29,385 cubic meters which is about 38 percent of the total MLLW that requires disposal between FY 1998 and FY 2070. (EQ1-2)*	• *Treat approximately 3,080 cubic meters of MLLW. This will bring the total MLLW treated to 32,465 cubic meters which is about 42 percent of the total MLLW that requires disposal between FY 1998 and FY 2070. (EQ1-2)*
• *Dispose of approximately ~~27,000~~ 47,908 cubic meters of LLW. This will bring the total LLW disposed to more than174,109 cubic meters which is about 9 percent of the total LLW that requires disposal between FY 1998 and FY 2070. (EQ1-2)*	• *Dispose of approximately 81,425 cubic meters of LLW. This will bring the total LLW disposed to 255,534 cubic meters which is about 13 percent of the total LLW that requires disposal between FY 1998 and FY 2070. (EQ1-2)*
• *Stabilize ~~500~~ 510 containers of plutonium metals/oxides and ~~16,000~~ 29,456 kilograms bulk of plutonium residues. This will complete stabilization of about 19 percent of the containers of plutonium metals/oxides, and 83 percent of the kilograms bulk of plutonium residues that require stabilization between FY 1998 and life-cycle completion. (EQ1-3)*	• *In FY 2002, stabilize 1,508 containers of plutonium metals/oxides and 6934 kilograms bulk of plutonium residues. This will complete stabilization of about 39 percent of the containers of plutonium metals/oxides and 89 percent of the kilograms bulk of plutonium residues that require stabilization between FY 1998 and life-cycle completion. (EQ1-3)*
• *Move to dry storage ~~279.57~~ 195 metric tons of heavy metal (MTHM) of spent nuclear fuel (SNF) to dry storage. This will complete transfer of 8 percent of MTHM of SNF that will be moved to dry storage between FY 1998 and life-cycle completion. (EQ1-3)*	• *Move to dry storage 662 metric tons of heavy metal (MTHM) of spent nuclear fuel (SNF). This will complete transfer of 35 percent of MTHM of SNF that will be moved to dry storage between FY 1998 and life-cycle completion. (EQ1-3)*
• *Accomplish ~~60~~ 200 innovative technology deployments. (EQ1-4)*	• *Accomplish 250 innovative technology deployments. (EQ1-4)*
• *Publish the depleted Uranium Hexafluoride Conversion Services Request for Proposals in October 2000. (EQ3-1)* • *Award the depleted Uranium Hexafluoride Conversion Services contract. (EQ3-1)*	• *Complete conceptual designs and begin preliminary designs for two depleted Uranium Hexafluoride Conversion facilities and issue a draft Environmental Impact Statement. (EQ3-1)*

Note: For FY 2001, eight measures, three related to studies and reports, two related to assessments, two related to technology deployments, and one related to pollution prevention, have been deleted from the revised set of measures because they were deemed to be interim activities, and/or did not meet the significance criteria.

Means and Strategies

Geographic Site Completion: The Department is implementing strategies to accomplish the EM program vision of completing cleanup at as many sites or projects as possible by 2006. A geographic site is considered "complete" (or at its end state) when:

- 'Legacy' waste (i.e., waste produced by past nuclear weapons production activities, with the exception of high-level waste) has been disposed of in an approved manner;
- Deactivation or decommissioning of all facilities currently in the EM program has been completed, excluding any long-term surveillance and monitoring;
- All releases to the environment have been cleaned up in accordance with agreed-upon cleanup standards;
- Groundwater contamination has been contained, or long-term treatment or monitoring is in place; and
- Nuclear material and spent fuel have been stabilized and/or placed in safe long-term storage.

The Department will first focus on reducing any worker or public safety and health risks; then on off-site contamination; prevention of contamination migration; reduction of on-site contamination; allocation of resources to effectively maintain essential infrastructure support; funding for other essential prudent business management activities; release of facilities and land to the public for beneficial reuse where this is deemed appropriate; and finally, additional characterization efforts to reduce uncertainty at the various sites in regard to eventual cleanup approaches.

Cleanup progress is measured by completion of geographic sites or projects where EM is responsible for remediation of contaminants and other material. Interim progress is demonstrated by cleaning up portions of the EM geographic sites, referred to as "Release Sites" and "Facilities". Cleaning up these areas ultimately leads to the completion of the entire geographic site.

The Department will continue to conduct facility surveillance and maintenance activities to ensure there is: (1) no degradation of key plant systems; (2) retention of authorized basis and configuration control; (3) maintenance of key staffing, qualifications, and training; and (4) compliance with Federal and State safety and environmental regulations.

Waste Management: Waste management programs will continue to dispose of DOE low-level and mixed radioactive waste primarily at its current disposal facilities although the Department, with stakeholder participation, will consider alternative disposition paths that are more cost-effective while still protective of the public and the environment. The Department will continue to ship transuranic waste to the Waste Isolation Pilot Plant for disposal, and continue vitrification operations to produce disposal ready high-level waste canisters. Operations will minimize generation of new waste, re-use, and recycle where possible to accomplish pollution prevention goals.

In addition, the Department will continue to re-engineer waste management practices and strive to have newly generated wastes disposed as generated. Waste management activities will ensure safe handling and storage of waste in addition to maximizing isolation to reduce risks. The Department will integrate waste management programs across the DOE complex by consolidating waste storage, treatment and disposal facilities to maximize efficiency, reduce environmental risks and costs of operations. Efforts will continue to improve the quality and value of information on the generation, inventory, management, and transportation of DOE waste.

Nuclear Material and SNF Stabilization: The Department will work closely with regulators, the Defense Nuclear Facilities Safety Board (DNFSB) and others to achieve the objective of reducing worker, public, and environmental risks. Progress is measured by the amount of nuclear material stabilized and made disposition ready. Nuclear material will be stabilized at the F- and H-Areas at Savannah River, at the Plutonium Finishing Plant at Richland, and in several facilities at
the Rocky Flats Environmental Technology Site. Spent nuclear fuel from the West Valley Demonstration Project and Three Mile Island will be placed in dry storage at the Idaho National Engineering and Environmental Laboratory. These activities have been prioritized so that the most serious risks are addressed first.

Technology Development and Deployment: Science and Technology provides environmental cleanup technologies and technical solutions on a schedule that enables achieving cleanup and bringing into compliance the majority of the DOE complex by 2006. Investments in science and technology will continue to be planned and managed in an interactive, coordinated, participatory relationship with EM

cleanup project managers and stakeholders. The Science and Technology work scope priorities will be established through a multi-attribute decision model that prioritizes EM's technology needs and drives investments for science and technology. No activity will be funded unless it: addresses one of EM's highest priority needs; reduces the cost of EM's costliest cleanup projects; reduces EM's technological risk; accelerates and increases technology deployment by bridging the gap between development and use; or contributes to a targeted scientific research agenda. EM's technology development efforts will continue to concentrate on five major Focus Areas: (1) Mixed Waste; (2) Radioactive Tank Waste; (3) Subsurface Contaminants; (4) Deactivation and Decommissioning and (5) Nuclear Materials (formerly Plutonium Stabilization).

Disposal of the Department's depleted UF_6 and Excess Natural Uranium Inventories: The Department will continue its efforts to safely maintain its inventory of depleted uranium hexafluoride and prepare to convert this material to a more stable form. This includes maintaining depleted UF_6 storage cylinders in an environmentally responsible manner by conducting annual storage cylinder inspections and developing and implementing options to repair cylinders exhibiting accelerated corrosion. In addition, the Department will begin procurement activities for the design of conversion facilities.

Collaboration Activities

- Regulatory Compliance: DOE negotiates and signs environmental compliance and cleanup agreements with the Environmental Protection Agency (EPA) and or the state regulatory agencies, as appropriate. Key parameters such as required cleanup levels 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.

- Long-Term Stewardship: The Department will maintain a presence at most sites to ensure that the reduction in risk to human health and the environment is maintained. The extent of long-term stewardship required at a site will reflect the end state developed in consultation among DOE, Congress, Tribal Nations, representatives of regulatory agencies, state and local authorities and other stakeholders.

- Defense Nuclear Facilities Safety Board (DNFSB): EM works with the DNFSB to implement recommendations relating to activities at the Department's defense 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. The EMAB's membership consists of state and local government representatives, technical experts, and stakeholders.

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 development and deployment of innovative technologies will help meet national needs for regulatory compliance, lower life-cycle costs, and reduce risk to the environment and public health.

- Uranium Programs: The Department assists the Nuclear Regulatory Commission in preparing annual reports on the safety status of the diffusion plants. The Department also performs analysis in consultation with the uranium industry in support of the Secretary of Energy's determination with regard to the impact of the sale of excess Departmental uranium on the uranium industries.

Validation and Verification:

Data Sources:	Data are based on an aggregation of Field-generated "actual" and planned performance results for EM's projects. Performance targets are established based on the current year appropriations and the plan year budget request.
Baselines:	The Operations/Field Offices' baselines are reported during the annual update of the Corporate Database. Planning baselines reflect cost, schedule, and scope from FY 1997 through life-cycle completion. (Life-cycle quantities by PBS are available from either FY 1997 (i.e., release sites, facilities, and canisters of high-level waste produced) or FY 1998 (i.e., waste, nuclear material, and spent nuclear fuel) through 2070. Because FY 1997 was the year that EM transitioned to Project Baseline Summaries (PBSs), quantity information by *project* for FY 1997 is not available for each corporate performance measure. Where reliable historical information is available, pre-FY 1997 performance measure quantity data are provided at a summary level only (i.e., not at the project detail level).
Frequency:	EM collects mid-year and year-end actual results by PBS for the majority of the corporate performance measures. Milestone data are tracked on a quarterly basis.
Data Storage:	Data are entered into the EM Integrated Planning, Accountability and Budgeting System-Information System (IPABS-IS) and are maintained in the EM Corporate Database.
Verification:	The Operations/Field Office project managers and the EM Headquarters Site Leads verify and formally approve the Project Baseline Summary (PBS) data. Discussions between Headquarters and the Field occur on a continuing basis to ensure the data reported for both internal management reviews and to meet external requirements are accurate and complete. There are also a limited number of built-in, automated checks in IPABS-IS that flag input errors. EM Headquarters distributes data quality reports to the Field and to technical and programmatic experts within Headquarters who are responsible for reviewing and verifying the data submittal. EM also analyzes and verifies performance results as part of the Headquarters/ Field Management Review process.

Planned Program Evaluation

The Department evaluates progress and results against the EM program's performance during monthly Headquarters/ Field Management Reviews. The EM corporate performance measures data are aggregated by Project Baseline Summary (PBS) to the site level, to the Operations/Field Office level, and to a total EM level, as applicable, to provide a complex-wide assessment of program results. At each level of the organization, performance goals are tracked, evaluated, and interpreted to determine corrective actions and to assess areas requiring improvement.

GPRA Program Activity: Civilian Radioactive Waste Management

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
050 Atomic Energy Defense Activities					
Defense Nuclear Waste Disposal	Defense Nuclear Waste Disposal	RW	112	200	310
270 Energy Supply					
Nuclear Waste Fund	Nuclear Waste Fund	RW	240	190	135
Total			352	390	445

Description of the Program:

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. The Department has made substantial progress in characterizing Yucca Mountain, Nevada, to determine its suitability as a geologic repository site for these wastes. Based on the viability assessment completed in 1998, the Department believes that Yucca Mountain remains a promising site for a geologic repository and that work should proceed toward a decision on whether to recommend the site to the President. This decision will consider the views of the State of Nevada, affected Indian tribes, and the Nuclear Regulatory Commission, as required by the Nuclear Waste Policy Act. In turn, the President will decide whether to recommend the site to Congress. If the site is recommended for development as the repository site, a final environmental impact statement will accompany the site recommendation.

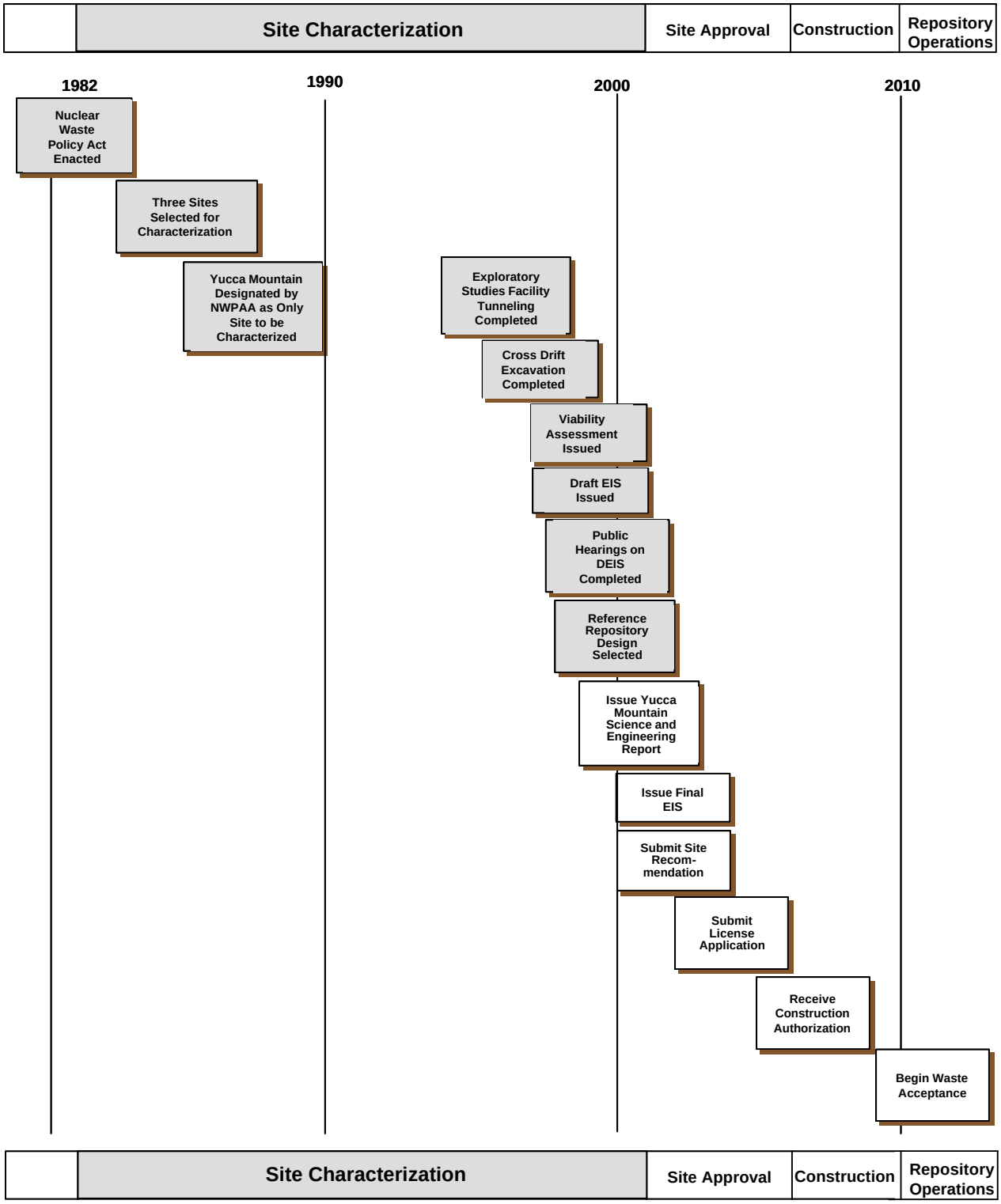
If Yucca Mountain is designated as the repository site, a license application for construction authorization by the Nuclear Regulatory Commission will be developed. Under current plans, waste acceptance at the repository would commence in 2010. However, the Department's schedule remains critically dependent on adequate program funding. Any additional reductions will impact selected critical near-term milestones for the Yucca Mountain Site Characterization Project, and possibly the planned 2010 waste acceptance date. In addition to budgetary constraints, the Department continues to face substantial political opposition and legal challenges in implementing its waste disposal mandate under the Nuclear Waste Policy Act, as amended.

Performance Goal:

EQ2-1 CONTINUING WITH YUCCA MOUNTAIN SITE CHARACTERIZATION
Complete the scientific and technical analyses of the Yucca Mountain site, and if it is determined to be suitable for a geologic repository, obtain a license from the Nuclear Regulatory Commission. Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Performance Indicator: Program Milestones (see next page).

Progress of the Civilian Radioactive Waste Management Program



The following facing pages show four years of performance measures for RW.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Publish a draft Environmental Impact Statement (EIS). The Nuclear Waste Policy Act requires a Final EIS to accompany the site recommendation. (EQ5-1)*[2] (MET GOAL)	• *Complete public hearings on the Draft Environmental Impact Statement which was published in August 1999. (EQ5-1)* (MET GOAL)
• *Complete repository and waste package design inputs for use in total system performance assessment for the repository license application. (EQ5-1)* (MET GOAL)	• *Select the reference design for site recommendation and license application. (EQ5-1)* (NEARLY MET GOAL)[3]
• *Complete peer review of the total system performance assessment to provide formal, independent evaluation and critique. (EQ5-1)* (MET GOAL)	• *Select the reference natural systems models for site recommendation and license application. (EQ5-1)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. EQ5-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

3. The reference design for site recommendation was selected for the preliminary site suitability evaluation, which will be used for the statutory hearings on site recommendation. The license application design will be selected after finalization of the EPA radiation protection standard for Yucca Mountain and consideration of comments from stakeholders, including oversight bodies, such as the Nuclear Waste Technical Review Board.

FY 2001 Target (Revised Final)[1]	FY 2002 Proposed Target
~~*Issue a Final Environmental Impact Statement as required by the Nuclear Waste Policy Act. (EQ2-1)*~~	*Issue a Final Environmental Impact Statement as required by the Nuclear Waste Policy Act. (EQ2-1/FMFIA-nuclear waste management)*
Complete ~~a Yucca Mountain Site Recommendation Consideration Report~~ the scientific and technical documents that will provide the technical basis for a possible Site Recommendation. (EQ2-1)	*Complete safety analyses to support the repository license application regarding Department-owned spent nuclear fuel and high-level radioactive waste; naval spent nuclear fuel; and plutonium waste forms. (EQ2-1)*
Conduct ~~public~~ statutory hearings ~~on~~ 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 ~~Consideration Report~~. (EQ2-1)	
Update all process models and conduct a total system performance assessment for use in the Site Recommendation. (EQ2-1)	
~~*Finalize a Site Recommendation Statement for the Secretary of Energy to submit to the President, and then to the Congress. (EQ2-1)*~~	*Finalize a Site Recommendation Report for the Secretary of Energy to submit to the President, and then to the Congress. (EQ2-1/FMFIA-nuclear waste management)*
Complete and issue Total System Life Cycle Cost and Fee Adequacy reports. (EQ2-1)	*Update and issue Total System Life Cycle Cost and Fee Adequacy reports for the Site Recommendation. (EQ2-1)* *Issue Nuclear Waste Policy Act Section 180© Notice of Revised Proposed Policy and Procedures for public comment.[2] (EQ2-1)* *Issue draft request for proposals for waste acceptance and transportation services.[2] (EQ2-1)*

Notes:

1. Schedule delays have resulted due to a combination of 3 factors: (1) RW's lower-than-expected appropriations over the past four fiscal years, including FY 2001, contributed to a cumulative funding shortfall of approximately $144 million. (2) Additional work required to respond to technical issues raised by the Nuclear Waste Technical Review Board, and (3) Release of the Site Recommendation Consideration Report was delayed to accommodate completion of a pending inquiry by the Department's Inspector General.

2. Contingent on site recommendation and approval in 2001.

Means and Strategies:

Assuming that Yucca Mountain is recommended and approved as the repository site, the Department will focus the Civilian Radioactive Waste Management Program on the activities necessary to proceed with the Yucca Mountain Site Characterization Project, complete the safety analyses to support the repository license application regarding Department-owned spent nuclear fuel and high-level radioactive waste, naval spent nuclear fuel, and plutonium waste forms, and conduct other activities associated with the Federal government's waste acceptance obligation.

Collaboration Activities:

The Department is engaged in continued formal and informal 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 indicated performance goals and associated schedules are contingent on site recommendation and approval and depend heavily on funding continuity and sufficiency.

Validation and Verification:

Data Sources:	Internal management reviews and external peer reviews supplement technical reports.
Baselines:	Program technical, cost and schedule baselines have been established and are maintained thru a formal change control process.
Frequency:	Program milestones are tracked on a continuous basis and formal reviews of Program activities are held bimonthly.
Data Storage:	Data are maintained in published technical reports, on CD-ROM, and on publicly-accessible Internet web sites.
Verification:	Internal reviews and external oversight activities and audits provide thorough verification of Program accomplishments and technical findings.

Planned Program Evaluations:

Complementing external reviews, the Office of Civilian Radioactive Waste Management conducts bimonthly, 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.

SCIENCE

The Department of Energy's Science Business Line is the third-largest government sponsor of basic research in the United States. These programs fulfill the Department's science mission, while providing an essential foundation for DOE's applied missions in energy resources, environmental quality, and national security. With a focus on exploring mysteries of the natural world, the Science Business Line leads the nation in its support for the physical sciences and is a significant contributor in the fields of computation, biology, and environmental sciences through research efforts supportive of DOE's missions. The Department's accomplishments in science, along with those of its predecessor agencies, are partially reflected through its support to 68 Nobel Laureates from 1934 through 1998.

DOE's science programs extend the frontiers of basic knowledge. The Office of Science (SC) conducts research at universities, national laboratories, and private research facilities in the areas of materials and chemical sciences, engineering and geosciences, energy biosciences, magnetic fusion energy, health and environmental research, high energy and nuclear physics, and computational sciences. The Department's cadre of large-scale scientific facilities support the United States' position as the worldwide leader in science. The broad variety of world-class facilities such as our large accelerators, experimental reactors and detectors, high-precision instruments, synchrotron light sources, supercomputers, high-capacity networks, and high resolution microscopes provide the scientific base to support the Nation's national security and energy security interests.

The research is performed at national laboratories, universities, non-profit research centers, and private-sector research institutions.

SCIENCE GOAL

Advance the basic research and instruments of science that are the foundations for DOE's applied missions, a base for U.S. technology innovation, and a source of remarkable insights into our physical and biological world and the nature of matter and energy.

The Science goal is supported by the following four strategic objectives:

SC1: ***Provide the leadership, foundations, and breakthroughs in the physical sciences that will sustain advancements in our Nation's quest for clean, affordable and abundant energy.***

SC2: ***Develop the scientific foundations to understand and protect our living planet from the adverse impacts of energy supply and use, support long-term environmental cleanup and management at DOE sites, and contribute core competencies to interagency research and national challenges in the biological and environmental sciences.***

SC3: ***Explore matter and energy as elementary building blocks from atoms to life, expanding our knowledge of the most fundamental laws of nature spanning scales from the infinitesimally small to the infinitely large.***

SC4: ***Provide the extraordinary tools, scientific workforce, and multidisciplinary research infrastructure that ensures success of DOE's science mission and supports our Nation's leadership in the physical, biological, environmental and computational sciences.***

The following table maps the Presidential Budget's Program and Financing (P&F) accounts and program activities to the Department of Energy's offices and GPRA Program Activities. The alignment includes aggregation, disaggregation, and consolidation of budget decision units. The chart that follows this table shows how the decision units support the Department's Strategic Plan objectives for this business line.

Presidential Budget Program and Financing (P&F) Accounts and Program Activities		**Budget Request ($M)**	**DOE Office**	**GPRA Program Activity**
250 Energy Programs				
Science				
	High energy physics	716*	SC	High Energy Physics
	Nuclear physics	361	SC	Nuclear Physics
	Biological and environmental research	443	SC	Biological & Environmental Research
	Basic energy sciences	1,005	SC	Basic Energy Sciences
	Office of Advanced Scientific Computing Research	163*	SC	Advanced Scientific Computing Research
	Energy research analyses	1	SC	
	Multiprogram energy labs--facility support	30	SC	
	Fusion energy sciences	248*	SC	Fusion Energy Sciences
	Safeguards and Security	55	SC	
	Less security charge for reimbursable work	(5)	SC	
	Program direction	142*	SC	
270 Energy Supply				
	Technical Information Management	9	SC	Technical Information Management
TOTAL - Science		**3,169**		

Note:

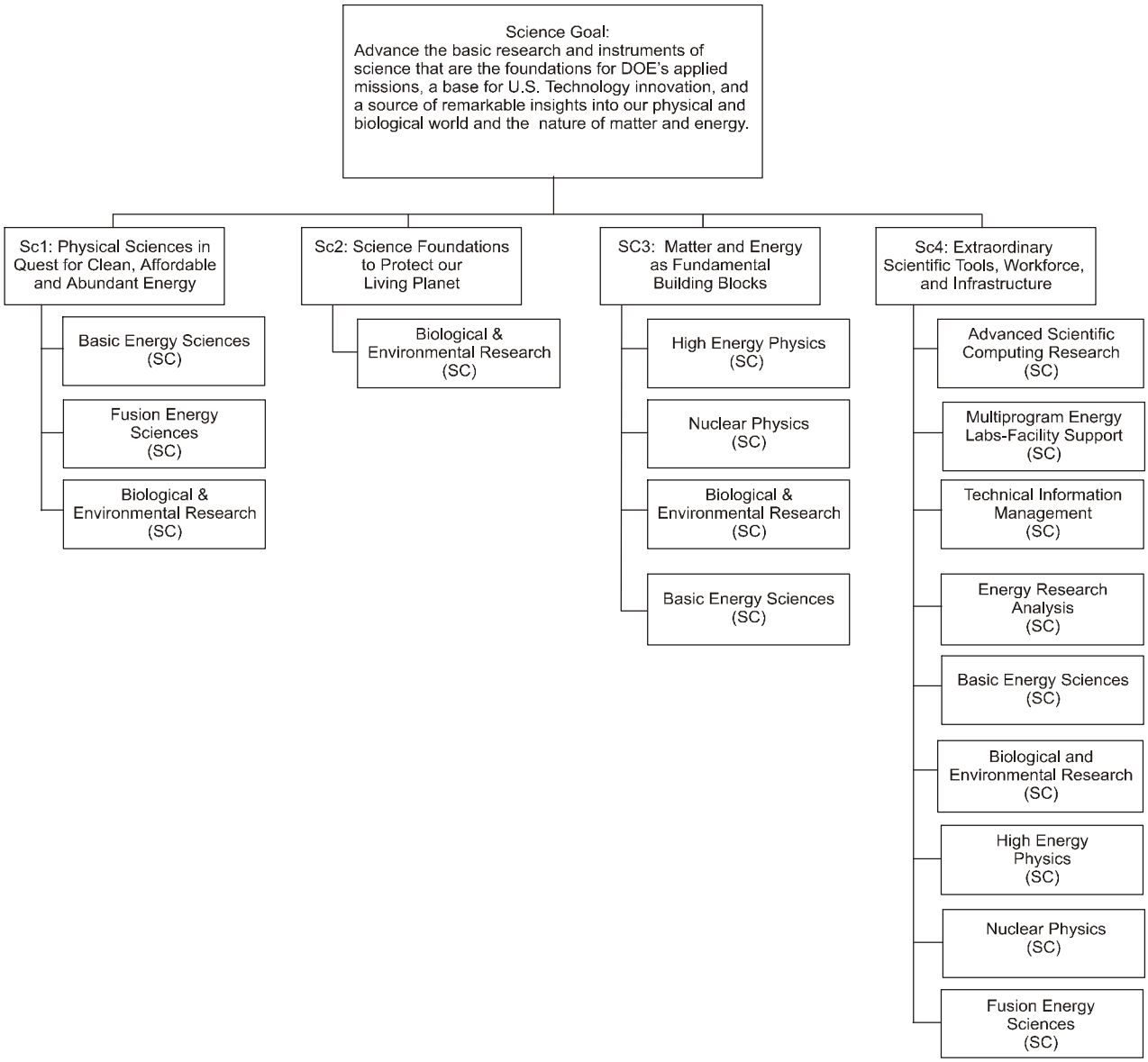
* This reflects the amended FY 2002 budget request.

The Science goal is supported by four strategic objectives. Performance measurement for the Office of Science is being implemented through a set of common performance indicators: Excellence and Relevance, Leadership, Quality and Safety and Health. In addition we have established annual (output) performance measures for each GPRA Program Activity. To make the linkage of these outcome indicators and outputs to the budget resources we have organized the plan by GPRA Program Activities which are aligned with the budget decision units. The performance indicators and annual performance measures are discussed with the GPRA Program Activities on the following pages. This approach allows us to clearly link annual performance with annual budget resources and the strategic plan objectives. The chart below gives an overview of the linkage of budget decision units and strategic objectives for Science. General performance goals for Science as presented do not provide the next level of specificity in direction as for other business line goals. We have included them so that: (1) the same definitions and systems are applicable for tracking and reporting at the Departmental level; and (2) we pursue the development of more specific general performance goals in future.

Common Performance Indicators

In addition to specific annual output measures for each GPRA program activity (same as the Budget Decision Unit for SC) the Office of Science is implementing a common set of performance indicators across all SC program activities and will begin comprehensive reporting on them in FY 2002. These common indicators will ensure DOE science is results oriented and maintains focus. Specifically these indicators address excellence and relevance, leadership, quality, and safety and health.

Excellence and Relevance: The overall quality of the research funded by the Office of Science (SC) will be judged excellent and relevant by external evaluation by peers, and through various forms of external recognition



Leadership: SC will maintain leadership positions in key disciplines that are critical to DOE's mission and the Nation.

Quality:
(1) Research Projects: At least 80% of all new research projects supported by SC will be peer reviewed and competitively selected, and will undergo regular peer review merit evaluation. In FY 2000, 96% of new research projects supported by SC were peer reviewed and competitively selected.

(2) Facility Upgrades and Construction: The Office of Science will keep within 10 percent, on average, of cost and schedule milestones for upgrades and construction of scientific user facilities. In FY 2000, construction of scientific facilities were kept within 10%, on average, of cost and schedule milestones.

(3) Operation of User Facilities: The SC scientific user facilities will be operated and maintained so that unscheduled operational downtime will be kept to less than 10%, on average, of total scheduled operating time. In FY 2000, SC scientific user facilities operated, on average, 96% of the scheduled time.

Safety and Health: The Office of Science will ensure the safety and health of the workforce and members of the public and the protection of the environment in all SC program activities.

Meeting Departmental Challenges (FMFIA)

The Office of Science will also report results for FY 2001, on the following performance measure related to Departmental challenge of Managing Physical Assets.

- *Complete the milestones listed in the corrective action plan for the Departmental challenge of managing physical assets. (SC4-1/FMFIA)*

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GPRA Program Activity: High Energy Physics & Nuclear Physics

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
250 Energy Programs					
High Energy Physics	High Energy Physics	SC	683	712	716*
Nuclear Physics	Nuclear Physics	SC	341	361	361
Total			1,024	1,073	1,077*

* This reflects the amended FY 2002 budget request.

Description of the Program:

High Energy Physics (HEP) and Nuclear Physics (NP) programs support basic research that provides new insights into the nature of energy and matter and operates large world-class scientific facilities for the Nation. High Energy and Nuclear Physics research is conducted by over 3,000 researchers and over 1,000 graduate students from over 100 universities and the National Laboratories. The research programs supported by the HEP and NP are kept relevant and outstanding through: independent technical peer evaluations; the High Energy Physics Advisory Panel and the Nuclear Science Advisory Committee (NSAC); program evaluations; and research needs of the universities, National Laboratories and international collaborators.

General Performance Goals:

SC3-1 ADVANCING OUR UNDERSTANDING OF THE NATURE OF MATTER AND ENERGY

HEP In the area of theoretical research, subject new experimental findings to thorough analysis and interpretation. Synthesize new and existing results into an overall coherent view of nature, developing new analytical structures as necessary. Identify key questions to be resolved by experiment; and in the area of experimental research, put our theoretical understanding of elementary particles and forces to rigorous experimental tests. Search for any new particles or interactions that may exist. Investigate astrophysical phenomena, using the knowledge and techniques of high-energy physics.

NP Conduct a research program of maximum effectiveness at the cutting edge of all major scientific areas in nuclear physics that will lead to new knowledge and insights on the nature of energy and subatomic matter. The Office of Science plans to initiate a scientific program using polarized protons within the Relativistic Heavy Ion Collider (RHIC) and a research program using the BLAST detector at the MIT/Bates Laboratory.

SC4-1 PROVIDING EXTRAORDINARY SCIENTIFIC TOOLS, WORKFORCE, AND INFRASTRUCTURE:

HEP Build new and/or modernize existing accelerator facilities as needed in the United States to advance physics and take a substantial role in building facilities if the scope demands an international effort. Progress in high-energy physics will require an ever-increasing experimental capability. Accelerator beams must increase in energy, intensity, and quality; detectors must improve in scope, resolution, and data recording rates, and in the ability to selectively identify events of interest. These preparations include modifications to existing accelerators and detectors, R&D aimed at possible new technologies, and the application of existing technologies to improve beams and detectors. Improvements are needed in the ability to store, transfer, and analyze increasing amounts of data. International collaborations must share access to these huge data sets.

NP Conceive, develop, construct, and operate the scientific accelerator, detector and computing facilities that are needed to address forefront science in a timely and effective manner. In the execution of this responsibility, together with other Office of Science organizations, act as the Nation's leader in developing management techniques to optimize construction and operation of facilities in a cost effective, safe, and environmentally responsible manner. Continue the advanced education and training activities of young scientists to develop the new skills and concepts that will become the underpinnings of the Nation's broad array of nuclear related sciences and technologies in the future. Manage the operations of the Nuclear Physics program to high standards, by ensuring that the processes of planning, reviewing, selecting and managing science projects and programs are sound and based on peer review and merit evaluation, and reflect input from the NSAC advisory group in coordinating DOE and NSF activities.

Performance Indicators: High Energy Physics and Nuclear Physics programs will measure the success of their activities by tracking the following common performance indicators (defined on page 170):

- Excellence and Relevance
- Leadership
- Quality
- Safety and Health

In addition to these performance indicators, specific measures and targets for the HEP and NP programs for FY 1999 - FY 2002 are listed in the table that follows.

The following facing pages have four years of performance measures
for High Energy Physics and Nuclear Physics.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Deliver on the 1999 US/DOE commitments to the international Large Hadron Collider project. (ST1-2)*[2] (MET GOAL)	• *Operate the B-factory at the Stanford Linear Accelerator Center, the Main Injector for the Tevatron at Fermilab, the Thomas Jefferson National Accelerator Facility, and the Relativistic Heavy Ion Collider at Brookhaven National Laboratory, and deliver on the FY 2000 U.S./DOE commitments to the international Large Hadron Collider project. (SC1-2)* (MET GOAL)
	• *Move the newly upgraded D-Zero and CDF detectors at Fermilab into position in the Main Injector tunnel and begin commissioning in the third quarter of the fiscal year. (SC1-2)* (NEARLY MET GOAL)
	• *Further the progress on achieving luminosity and operational efficiency for the Tevtron at Fermilab in its new mode of operation with the recently completed Main Injector. (SC1-2)* (MET GOAL)
• *Continue collaborative efforts with NASA on space science and exploration. (ST1-4)* (MET GOAL)	• *Continue collaborative efforts with NASA on space science and exploration. (SC1-4)* (MET GOAL)
• *Complete construction and begin operation of the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory. (ST1-2)* (MET GOAL)	• *Advance knowledge from experiments at the Relativistic Heavy Ion Collider to see possible evidence of the predicted quark-gluon plasma; a high temperature, high density state of nuclear matter that may have existed a millionth of a second after the "Big Bang". (SC1-2)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ST1-2 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Meet on time and within budget the scheduled U. S. DOE commitments to the international Large Hadron Collider project as reflected in the latest international agreement and corresponding plan. (SC4-1)* • *Continue construction of the Neutrinos at the Main Injector project meeting milestones as detailed in the benchmark plan. (SC4-1)* • *Complete fabrication of the BLAST detector at MIT/Bates in accordance with the project milestones. (SC4-1)*	• *Confirm (or refute) controversial evidence of neutrino oscillations using the new MiniBOONE detector and beam line at Fermilab. This experiment will conclusively decide if earlier reports of neutrino oscillations from an experiment at Los Alamos are correct, and thereby provide crucial input to understanding neutrino properties and whether they can be accommodated in the Standard Model.* • *Complete a preliminary analysis of the first data from neutral current interactions from the Sudbury Neutrino Observatory. These data will provide the first information regarding possible neutrino appearance due to neutrino oscillations. All previous measurements have measured neutrino deficits. (SC3-1)*
• *Respond to the priorities and recommendations contained in the long range plan of the DOE/NSF Nuclear Science Advisory Committee (NSAC) on the Departments's Nuclear Physics program. (SC3-1)*	• *Complete first round of experiments at the Relativistic Heavy Ion Collider to see possible evidence of the predicted quark-gluon plasma: a high temperature, high density state of nuclear matter that may have existed a millionth of a second after the "Big Bang". (SC3-1)*

Means and Strategies:

The High Energy and Nuclear Physics programs will support innovative, peer-reviewed scientific research to advance knowledge and provide insights into the nature of energy and matter. These programs research the fundamental forces of the natural world that hold the nucleus of the atom together, and determine the detailed structure and behavior of atomic nuclei. The programs also build and support 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 modified process for the laboratory programs and scientific user facilities, and all new projects will be selected by peer review and merit evaluation.

The High Energy and Nuclear Physics programs will manage its national scientific user facilities to serve and collaborate with researchers from universities, national laboratories, Federal agencies, industrial laboratories, and foreign institutions thus enabling the acquisition of new scientific knowledge. The programs also support work at a number of foreign accelerator facilities. The national scientific user facilities include the Tevatron at Fermilab, the B-factory at SLAC, the new Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory, and the Thomas Jefferson National Accelerator Facility (Jefferson Lab), and four accelerator laboratories. The programs also support other non-accelerator facilities such as the new Sudbury Neutrino Observatory (SNO), a large neutrino detector located 7000 feet below the surface of the earth in Sudbury, Ontario, Canada. The programs formally peer review its scientific user facilities to assess the scientific output, user satisfaction, and the overall cost-effectiveness of each facility's operations and ability to deliver the most advanced scientific capability to its user community.

Collaboration Activities:

The High Energy and Nuclear Physics programs are closely coordinated with the research activities of the National Science Foundation. The major scientific facilities required by NSF scientists are usually the DOE facilities. NSF often supports the fabrication of major research equipment at DOE user facilities.

The HEP and NP programs collaborate with researchers from many countries. Large numbers of foreign scientists, who also provide monetary and equipment support, heavily utilize High Energy and Nuclear user facilities, including CDF and D-Zero at Fermilab, the B-factory at SLAC and RHIC at BNL. The 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. High Energy and Nuclear Physics 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. The involved industry or Federal agency supports such studies. Hence, High Energy and Nuclear Physics have extensive spin-off activities with other organizations.

External Factors Affecting Performance:

External factors in addition to budgetary constraints that affect the level of performance on these goals include (1) changing mission needs as described by the DOE and the Office of Science (SC) mission statements and strategic plans; (2) scientific opportunities as determined, in part, by proposal pressure, scientific workshops, and Long Range Plans; (3) the results of external program reviews and international benchmarking activities of entire fields or subfields such as those performed by the National Academy of Sciences; (4) program balance and relevance, including considerations of activities funded by non-High Energy and Nuclear Physics Program sources; and (5) strategic and programmatic decisions made by non-DOE funded domestic research activities and by major international research centers.

Validation and Verification:

Data Sources:	Planning and operations documents and agreements such as MOUs and research facility Program Advisory Committee reports. Annual reports of facility performance, experimental and research proposals, and laboratory Program Advisory committee reports are reported to headquarters. Project Management Plans, external peer reviewer comments, published scientific papers and Cost, Scope and Schedule reviews
Baselines:	Baselines and timelines that contain the milestones, rate of activity, schedules, etc. of facility upgrades and projects identified in the FY 2001 budget request and project planning documents.
Frequency:	The High Energy and Nuclear Physics Programs conduct a formalized peer review process for activities at the DOE laboratories and peer reviews grant applications on a regular basis. The major laboratories (Fermilab, SLAC, BNL. ANL, TJNAF and LBNL) are reviewed on an annual basis. Projects are reviewed annually; university grants are reviewed upon inception and periodically thereafter, and High Energy Physics Advisory Panel and NSAC subpanels are convened on a 2-4 year basis to examine progress and direction of the field.
Data Storage:	These documents reside at headquarters, operations offices, and at each facility.
Verification:	Broad program reviews are conducted by the High Energy Physics program and the DOE/NSF High Energy Physics Advisory Panel as well as the Nuclear Physics Program and the DOE/NSF Nuclear Science Advisory Committee on an ongoing basis.

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GPRA Program Activity: Biological and Environmental Research

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
250 Energy Programs					
Biological and Environmental Research	-	SC	416	483	443

Description of the Program:

The mission of the Biological and Environmental (BER) program is to develop the information, scientific "know-how," and technology for identification, characterization, prediction, and mitigation of adverse health and environmental consequences of energy production, development, and use. The research programs supported by the BER program are be kept relevant and outstanding through: independent technical peer evaluations; Advisory Committee reviews; program evaluations; and research needs of DOE programs and the scientific community.

General Performance Goals:

SC1-1 MAKING ADVANCES IN PHYSICAL SCIENCES IN QUEST FOR CLEAN, AFFORDABLE AND ABUNDANT ENERGY
Utilize the capabilities of the U.S. research community in universities and the DOE national laboratories to provide the basic research foundation for DOE's mission in energy through targeted investments in life, environmental and medical sciences, and related disciplines. Provide new knowledge on microbes that will expand DOE's options for clean and affordable energy through research in microbial genomics and bioinformatics. Advance our understanding of key uncertainties and find solutions for the effects of energy production and use on the environment through research in carbon cycle and carbon sequestration.

SC2-1 DEVELOPING SCIENCE FOUNDATIONS TO PROTECT OUR LIVING PLANET
Utilize the capabilities of the U.S. research community in universities and the DOE national laboratories to provide the basic research foundation for DOE's mission in the environment through targeted investments in life, environmental and medical sciences, and related disciplines. Advance our understanding of key uncertainties and find solutions for the effects of energy production and use on the environment through research in global climate modeling and simulation, the role of clouds in climate change, carbon cycle and carbon sequestration, atmospheric chemistry, and ecological science. Help protect the health of DOE workers and the public by advancing our understanding of the health effects of energy production and use through basic research in key areas of the life sciences including functional genomics and structural biology as well as low dose radiation research. Contribute to the environmental remediation and restoration of contaminated environments at DOE sites through basic research in bioremediation, microbial genomics, and ecological science.

SC3-1 ADVANCING OUR UNDERSTANDING OF THE NATURE OF MATTER AND ENERGY
Advance our understanding of the key building blocks of life through basic research in functional genomics and structural biology.

SC4-1 PROVIDING EXTRAORDINARY SCIENTIFIC TOOLS, WORKFORCE, AND INFRASTRUCTURE:
Ensure the greatest return on public investments by utilizing the unique capabilities of the DOE laboratories to advance the life and environmental sciences, advanced imaging, and medical applications of basic research and through stewardship of these capabilities to ensure that DOE has the scientific base to meet its technologically challenging missions.

Performance Indicators: BER program will measure the success of its activities by tracking the following common performance indicators (defined on page 170):

- Excellence and Relevance
- Leadership
- Quality
- Safety and Health

In addition to these performance indicators, specific measures and targets for the BER program for FY 1999 - FY 2002 are listed in the table that follows.

The following facing pages have four years of performance measures for Biological and Environmental Research.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Complete sequencing of 30 million subunits and draft sequence of 30 million additional subunits of human DNA for submission to publicly accessible databases. (ST1-1)* [2] (NEARLY MET GOAL)	• *Complete the sequencing of 50 million subunits of human DNA to submit to publicly accessible databases in FY 2000. (SC1-1)* (EXCEEDED GOAL)
• *Determine 70 percent of the DNA sequence of 10 additional microbes with potential use in waste cleanup or energy production. (ST1-4)* (EXCEEDED GOAL)	• *Complete the genetic sequencing of over 10 additional microbes with significant potential for waste cleanup and energy production. (SC1-4)* (MET GOAL)
• *Complete the initial SC/EM Pilot Collaborative Research Program and, in cooperation with EM, initiate development of the most promising cleanup technologies arising from these projects.(ST2-2)* (BELOW EXPECTATION)	• *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. (SC3-1)* (MET GOAL) • *Proceed on 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. (SC1-4)* (MET GOAL)
• *Initiate a new joint Biological and Environmental Research-Basic Energy Sciences program in fundamental science that will underpin new opportunities and technologies in carbon capture. (ST1-4)* (EXCEEDED GOAL)	• *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. (SC1-6)* (MET GOAL)
• *Conduct, with at least 75 patients, Boron Neutron Capture Therapy (BNCT) Research Phase I/II clinical trials at reactor sources with neutrons. (ST1-5)* (MET GOAL)	• *Complete site characterization of the first Natural and Accelerated Bioremediation Research (NABIR) Field Research Center, and commence activities necessary to enable sample collection and distribution to investigators.* (SC2-1*)* (NEARLY MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ST1-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *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 mouse. (SC3-1)*	• *By the end of FY 2002, the DOE Joint Genome Institute will complete the high quality DNA sequence of human chromosomes 5 and 19 and produce 6 million base pairs of DNA sequence from model organisms to help understand the human sequence. (SC3-1)* • *In close partnership with NIH, develop novel technology and instrumentation to image single molecules, genes, cells, organs, and whole organisms in real time under natural physiological conditions with a high degree of precision, including Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET), and Single Photon Emission Computing Tomography(SPECT) Technology and detector systems will be developed to capitalize on recent findings of the Human Genome Project that will enable imaging of gene expression in real time which will have a critical impact on biomedical research and medial diagnosis. (SC3-1)*
• *Conduct five Intensive Operations Periods (IOPs) on schedule at the Atmospheric Radiation Measurement (ARM) Southern Plains site. Obtain data from second station on the North Slope of Alaska, and make operational the third station in the Tropical Western Pacific on Christmas Island on schedule and within budget in accordance with program plan. (SC3-1)* • *Complete the genetic sequencing of at least two additional microbes that produce methane or hydrogen from carbonaceous sources or that could be used to sequester carbon. (SC2-1)*	• *Develop and test a fully-coupled atmosphere-ocean-land-sea ice climate model that is twice the spatial resolution of presently available coupled climate models. Support multi-disciplinary teams of scientists at multiple institutions using DOE supercomputers to perform model simulations, diagnostics, and testing. These efforts will include producing ensembles of long-term (decade to century) coupled model simulations that will be made available to the broader climate research and assessment communities to enable probability-based assessments of climate change and variability at regional resolution. (SC2-1)*
• *Complete field site characterization and start the subsurface research at the Field Research Center (FRC), established at Oak Ridge National Laboratory for the Natural and Accelerated Bioremediation Research (NABIR), to provide the fundamental knowledge for development of bioremediation methodologies for containment and clean up of hazardous materials. (SC2-1)* • *Complete phase 1 clinical trials of Boron Neutron Capture Therapy (BNCT) at reactor sources of neutrons and begin research on accelerator-based BNCT. This research will provide the basis for evaluating the efficacy of BNCT and for designing phase II clinical trials that include reactor and accelerator-based sources of neutrons. (SC3-1)*	• *Obtain samples of groundwater and sediments in support of 20 basic research projects and conduct 2 field-scale experiments in biological immobilization of uranium in the subsurface at the new NABIR Field Research Center (FRC) in Oak Ridge. This initial result will determine the efficacy of injecting electron donors to remove nitrate (via denitrification) and to precipitate and, therefore, immobilize uranium from contaminated soil water and groundwater. (SC2-1)*

Note: For the FY 2001, one new measure (in shaded text) was added.

Means and Strategies:

The Biological and Environmental Research (BER) program will conduct a peer reviewed, fundamental research program through the Department's National Laboratories, leading academic institutions, and private-sector research institutions. Scientific personnel include biologists, microbiologists, engineers, and atmospheric and environmental scientists, as well as the scientific and technical program managers.

The DOE Production Sequencing Facility currently has a DNA sequencing capacity of 2 million lanes of DNA sequencing per month or about 920 million bases of DNA sequence per year. "Difficult to Sequence" regions are being sequenced at Brookhaven National Laboratory and "finishing" of the high quality human DNA sequence is being done at Stanford University.

The "Bringing Genomics to Life" is based on results of BER genomics and structural biology research. BER will initiate the "Bringing Genomics to Life " research program. We will implement this new research as recommended by BERAC, incorporating and expanding the Microbial Cell Project.

The three ARM sites are operational and the research personnel, technical support staff, and equipment are sufficient to conduct the IOPs.

The new NABIR Field Research Center (FRC) in Oak Ridge is operational. Site characterization methodologies are well developed and research has been initiated.

Collaboration Activities:

The 1998 DOE/NIH 5-year plan for the U.S. Human Genome Project was published in the October 26, 1998 issue of *Science* magazine. It committed to completing a working draft of the gene rich regions of the human genome by 2001 and a highly accurate sequence of the human genome by 2003. Currently 16 centers, representing the United States, the United Kingdom, France, Germany, Japan, and China are participating in the International Sequencing Consortium. Five of the centers [the JGI/ PSF (DOE), the Sanger Centre (Wellcome Trust), Washington University (NIH), the Whitehead Institute at MIT (NIH), and Baylor University (NIH)] are currently taking responsibility for more than 80% of the sequencing production.

Microbial genomics activities are coordinated within the Department and other Federal agencies. The ARM IOPs include collaborations with NASA, NOAA, USDA, and NSF supported scientists on aircraft operations, ground-based instrumentation, and data acquisition, distribution, and analysis.

The FRC will provide a unique research field site for collaboration within the Department and with other federal agencies (e.g., NFS supported scientists and EPA).

External Factors Affecting Performance:

Achieving the sequencing objectives is predicated on the continued high quality performance of DNA sequencing machines and on the retention of key personnel at the DOE Joint Genome Institute. There is continued pressure on key personnel to join biotechnology companies for increased financial compensation, responsibility, and scientific resources.

The individual research projects at the FRC will be evaluated for potential environmental concerns. Some projects may not be initiated pending environmental review.

Validation and Verification:

Data Sources:	MOU between National Institutes of Health National Human Genome Research Institute and DOE and planning and proposal documents for each project
Baselines:	Baseline measures are contained in Environmental Assessment and on the websites for the projects referred to below
Frequency:	The Joint Genome Institute will conduct periodic progress review and field research center management will report to NABIR quarterly with yearly on site reviews
Data Storage:	Data stored at websites: JGI web-site (http://www.jgi.doe.gov/); TIGR website (http://www.tigr.org/); and genome database website (http://gdbwww.gdb.org/gdb/gdbtop.html) Additionally, FRC data will be managed by a consortia led by Argonne National Laboratory (ANL) and Lawrence Berkeley National Laboratory (LBNL) making geochemical, microbiological, geophysical, and GIS data accessible. ARM data are available at the website (http://www.archive.arm.gov/data/ordering.html).
Verification:	Data availability and publication of scientific progress will be monitored. The sequencing data will be entered in GenBank and can be verified independently. The ARM data are being used by the global climate modeling and atmospheric research community and can be verified by peer review. Program peer review by Office of Biological and Environmental Research, evaluation by scientific community and publication of the sequence summaries in journals. Oversight of the BER programs will be conducted by the BER advisory committee.

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GPRA Program Activity: Basic Energy Sciences

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
250 Energy Programs					
Basic Energy Sciences	-	SC	752	992	1,005

Description of the Program:

The Basic Energy Sciences (BES) program fosters and supports fundamental research in the natural sciences and engineering to provide a basis for new and improved energy technologies and for understanding and mitigating the environmental impacts of energy use. As part of its activities, BES plans, constructs, and operates major scientific user facilities to serve researchers at universities, national laboratories, and industrial laboratories. The research programs supported by the BES program are kept relevant and outstanding through: independent technical peer evaluations; Advisory Committee reviews; program evaluations; and research needs of DOE programs and the scientific community.

General Performance Goals:

SC1-1 MAKING ADVANCES IN PHYSICAL SCIENCES IN QUEST FOR CLEAN, AFFORDABLE AND ABUNDANT ENERGY
Foster and support world-class, peer-reviewed research in the scientific disciplines encompassed by the BES mission areas, cognizant of DOE needs as well as the needs of the broad national science agenda. Provide national and international leadership in select areas of materials sciences and engineering, chemical sciences, biosciences, and geosciences.

SC3-1 ADVANCING OUR UNDERSTANDING OF THE NATURE OF MATTER AND ENERGY
Establish and steward stable, essential research communities and institutions, particularly those for which BES is the Nation's primary or sole support.

SC4-1 PROVIDING EXTRAORDINARY SCIENTIFIC TOOLS, WORKFORCE, AND INFRASTRUCTURE
Plan, construct, and operate premier national scientific user facilities for materials research and related disciplines to serve researchers at universities, national laboratories, and industrial laboratories. Operate facilities to the highest standards for scientific productivity, efficiency, user needs, and safety. Continue the advanced education and training activities of young scientists to maintain and renew research communities and institutions. Manage the operations of the BES program to high standards by ensuring that the processes for planning, reviewing, selecting, and managing science projects and programs are sound and based on peer review and merit evaluation. As part of this goal Office of Science is improving U.S. research in neutron science in preparation for the commissioning of the Spallation Neutron Science by ensuring that BES neutron science facilities are optimally available to the scientific community and by investing in instrumentation for the future. SC is also continuing the new directions in the areas of nanoscale science, engineering, and technology research, and is exploring concepts and designs for Nanoscale Science Research Centers.

Performance Indicators: BES program will measure the success of its activities by tracking the following common performance indicators (defined on page 170):

- Excellence and Relevance
- Leadership
- Quality
- Safety and Health

In addition to these performance indicators, specific measures and targets for the BES program for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Begin Title I design activities, initiate subcontracts and long-lead procurements, and continue R&D work necessary to begin construction activities of the Spallation Neutron Source. (ST3-1)* [2] (MET GOAL)	• *Maintain the high quality and relevance of DOE's science as evaluated by annual peer reviews and advisory committees. (SC1-1)* (MET GOAL) • *Maintain and operate scientific user facilities to serve thousands of researchers from universities, national laboratories, and industry such that the unscheduled downtime is less than 10 percent of the total scheduled possible operating time, on average. (SC1-1)* (MET GOAL) • *Continue construction of the Spallation Neutron Source, meeting cost and timetables as contained in the Critical Decision II agreement, to provide beams of neutrons used to probe and understand the physical, chemical, and biological properties of materials at an atomic level leading to better fibers, plastics, catalysts, and magnets and improvements in pharmaceuticals, computing equipment, and electric motors. (SC3-1)* (MET GOAL) • *Meet the cost and schedule milestones for upgrade and construction of scientific facilities. (SC1-1)* (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. (SC1-3)* (MET GOAL) • *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. (SC3-1)* (MET GOAL) [3]

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).
2. The performance goal linkages as noted at the end of each measure, e.g. ST3-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.
3. Fabrication of two instruments in FY 2000 was successfully completed on-track for the short-pulse spallation source at LANSCE. This instrumentation enhancement project was undertaken concurrently with an accelerator enhancement project funded by the Department's Office of Defense Programs. Together, these enhancements result in a world-class short-pulse spallation neutron source facility. As a result of a BESAC review, LANSCE management improvements in the future will be focused on establishing a truly world-class user program for this facility that meets the requirements set by BESAC for an interim facility to the SNS at least as good as the ISIS facility.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *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. (SC4-1)* • *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. (SC4-1)*	
• *Meet the cost and schedule milestones for upgrade and construction of scientific user facilities, including the construction of the Spallation Neutron Source. (SC4-1)*	• *Continue construction of the Spallation Neutron Source (SNS), meeting the cost and timetables within 10 percent of the baselines in the construction project data sheet, project number 99-E-334. Once completed in mid-2006, the SNS will to provide beams of neutrons used to probe and understand the physical, chemical, and biological properties of materials at an atomic level leading to improvements in high technology industries. (SC4-1)* • *Continue upgrades on the major components of the SPEAR 3 storage ring at the Stanford Synchrotron Radiation Laboratory (SSRL), maintaining cost and schedule within 10 percent of baselines. The increased brightness for all experimental stations at SSRL will greatly improve performance in a variety of applications and scientific studies. (SC4-1)*

Means and Strategies:

To achieve outstanding recognition, BES 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. All research projects will 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, and all new projects will be selected by peer review and merit evaluation.

To achieve reliability of facility operating schedules, BES will manage premier national scientific user facilities for materials research and related disciplines to serve researchers at universities, national laboratories, and industrial laboratories, thus enabling the acquisition of new scientific knowledge. These scientific facilities include synchrotron radiation light sources, high-flux neutron sources, electron-beam microcharacterization centers, and specialized facilities such as the Combustion Research Facility. In managing these facilities BES established baselines for all performance indicators for each scientific user facility using an annual survey tool developed in collaboration with the facility directors and the facility user coordinators. An integral part of the survey tool is an assessment of user satisfaction. BES also began formal peer reviews of its major scientific user facilities to assess, in the aggregate, the scientific output and, to the extent possible, the outcomes of facilities.

To keep within 10 percent of cost and schedule baselines on the development and upgrade of scientific user facilities, including the construction of the Spallation Neutron Source, BES will conduct rigorous independent reviews using external experts of project management cost and schedule.

Collaboration Activities:

The BES program in fundamental science is closely coordinated with, and synergistic to, the activities of other federal agencies (e.g., NASA, NSF, USDA, DOI, and 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, science-based stockpile stewardship, and future energy sources. Hence, BES has extensive collaboration activities with other DOE programs, and collocates many of its research performers in national laboratories with the applied researchers of the DOE technology programs.

External Factors Affecting Performance:

External factors in addition to budgetary constraints that affect the level of performance on these goals include changing mission needs as described by the DOE and the Office of Science (SC) mission statements and strategic plans, and scientific opportunities as determined, in part, by proposal pressure and by scientific workshops. Additionally, the results of external program reviews and international benchmarking activities of entire fields or subfields such as those performed by the National Academy of Sciences and program balance and relevance, including considerations of activities funded by non-BES sources affect the performance level of the program office.

Validation and Verification:

Data Sources:	The planning and operations documents and agreements, MOUs, etc., of BES facilities operations. Annual reports of facility performance.
Baselines:	Baselines and timelines that contain the milestones, rate of activity, schedules, etc. of the BES facility upgrades and construction activities identified in the FY 2002 budget request
Frequency:	BES conducts a formalized peer review process for activities at the DOE laboratories and peer reviews grant applications as described in 10 CFR 605 on a regular basis at least once every 3-4 years.
Data Storage:	All of these documents reside at headquarters, operations offices and at each facility.
Verification:	Broad program reviews are conducted by the Basic Energy Sciences Advisory Committee on an ongoing basis.

GPRA Program Activity: Advanced Scientific Computing Research

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
250 Energy Programs					
Advanced Scientific Computing Research	-	SC	122	166	163*

* This reflects the amended FY 2002 budget request.

Description of the Program:

Advanced Scientific Computing Research (ASCR) program supports research in forefront and diverse applied mathematical sciences, high performance computing, communications, and information infrastructure which spans the spectrum of activities from strategic, longer-term, fundamental research to technology research, development, and demonstration. It links SC's science programs and laboratories to national economic competitiveness by conducting long-term, high-risk industry relevant research and development projects in critical technology areas.

General Performance Goals:

SC1-1 MAKING ADVANCES IN PHYSICAL SCIENCES IN QUEST FOR CLEAN, AFFORDABLE AND ABUNDANT ENERGY
Promote the transfer of results of advanced scientific computing research to DOE missions in areas such as the improved use of fossil fuels, including understanding the combustion process; the atmospheric and environmental impacts of energy production and use, including global climate modeling and subsurface transport; and future energy sources.

SC4-1 PROVIDING EXTRAORDINARY SCIENTIFIC TOOLS, WORKFORCE, AND INFRASTRUCTURE
Foster research to create new fundamental knowledge in areas of advanced computing research important to the Department, e.g., high performance computing, high speed networks, and software to enable scientists to make effective use of the highest performance computers available and to support National Collaboratories. Network enhancements are being made at NERSC and ESnet to improve researchers' access to high performance computing and software support, and enhancing scientific opportunities by enabling scientists to access and understand greater amounts of scientific data. SC is also serving researchers at national laboratories, universities, and industry, by enabling new understanding through analysis, modeling, and simulation of complex natural and engineered systems and effective integration of geographically distributed teams through National Collaboratories.

Performance Indicators: ASCR program will measure the success of its activities by tracking the following common performance indicators (defined on page 170):

- Excellence and Relevance
- Leadership
- Quality
- Safety and Health

In addition to these performance indicators, specific measures and targets for ASCR program for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Provide fundamental research in environmental sciences, biology, molecular sciences, and computational modeling that will underpin the cleanup of contaminated sites. (ST2-2)* [2] (MET GOAL)	• *Develop advanced computing capabilities, computational algorithms, models, methods, and libraries, and advanced visualization and data management systems to enable new computing applications to science. (SC2-1)* (MET GOAL) • *Continue to fabricate, assemble, and operate premier supercomputer and networking facilities that serve researchers at national laboratories, universities and industry enabling understanding of complex problems and effective integration of geographically distributed teams in national collaborations. (SC2-1)* (MET GOAL) • *Review and select for Phase II funding approximately 80 Small Business Innovation Research (SBIR) proposals that satisfy proof of concept under Phase I funding. In a separate competition, select about 200 SBIR proposals for Phase I funding. (SC2-2)* (MET GOAL) • *Initiate about 7 Laboratory Technology Research projects that address the Department's top priorities for science and technology, through cost-shared research partnerships with industry. (SC2-2)* (NEARLY MET GOAL) • *Meet 75 percent of the requirements of computer facilities and networks users. (SC3-3)* (NEARLY 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. (SC3-3)* (EXCEEDED GOAL) • *Increase visibility and use of energy-related scientific and technical information by government, academia, industry, and the public through electronic Web-based products that promise scientific advancement, resulting in 15 percent more customer usage over FY 1999. (SC3-3)* (EXCEEDED GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ST2-2 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Conduct regular peer review and merit evaluation based on the principles set down in 10 CFR Part 605 for grants and cooperative agreements, with all research projects reviewed at least once and no project extending more than four years without review. (SC4-1)*	• *Continue to provide support for the competitively selected Integrated Software Infrastructure Centers to address critical computer science and systems software issues for terascale computers. The teams in these Centers focus on critical issues including: tools for analyzing and debugging scientific simulation software that uses thousands of processors; and the development of data management and visualization software capable of handling terabyte scale data sets extracted from petabyte scale data archives. By the end of FY 2002 the initial releases of software from the Centers initiated in FY 2001 will be released to SciDAC application teams. (SC4-1)*
• *Review and select through rigorous peer review for Phase II funding, 80 Small Business Innovation Research (SBIR) projects that were determined to be of the highest quality and to satisfy proof of concept under Phase I funding. In a separate competition, select 200 new SBIR proposals for Phase I funding. (SC4-1)*	• *Support the operation of the IBM-SP computer at about 3.5teraflops "peak" performance. These computational resources will be integrated by a common high performance file storage system that facilitates interdisciplinary collaborations. By the end of FY 2002 the users with the largest allocations will have shifted their computations to this computer from the previous generation Cray T3E. (SC4-1)*
• *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 where, specifically, NERSC will deliver 3.6 Teraflop capability by the end of FY 2001 to support DOE's science mission. (SC4-1)*	• *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. (SC4-1)*
• *Expand and increase access to published and pre-printed scientific and technical information via cost-effective, specialized information retrieval systems resulting in a 25% increase in users served. (SC4-1)*	
• *Support the Computational Science Graduate Fellowship Program with the successful appointment of 10 new students to support the next generation of leaders in computational science for DOE and the Nation. (SC4-1)*	

Means and Strategies:
The Office of Advanced Scientific Computing Research (ASCR) will support fundamental, peer-reviewed research to create new fundamental knowledge in areas of advanced computing research important to the Department of Energy. To plan, fabricate, assemble, and operate premier supercomputer and networking facilities, the program will 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 collaboratories. All research projects will 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, and all new projects will be selected by peer review and merit evaluation.

To continue to develop future generations of scientists with the breadth of skills required to be effective both in advanced computing research and in interacting with disciplinary sciences, the ASCR program supports the Computational Science Graduate Fellowship program. The Technical Information Management (TIM) program will increase the number of researchers and citizens served with scientific and technical information at a lower cost per person served; lead/advance the institutionalization of an electronic, decentralized technical information collection that contributes to the development of a Virtual Library of Energy Science and Technology; expand agreements for DOE's widespread, electronic access to U.S. science journals; provide more effective mechanisms for public access to global information; and provide secure exchange and preservation of 50 years of the Department's classified R&D information managed by the TIM program, such as PubSCIENCE, PrePrint Networks, and enhance delivery of DOE scientific and technical report literature through an information infrastructure that uses tools such as EnergyLink, the DOE Information Bridge, and the Energy Science and Technology Database.

Collaboration Activities:
The ASCR research program and facilities have been 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 in the future 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. In addition to this interagency coordination ASCR has a number of partnerships with other programs in the Office of Science and other parts of the Department, focused on advanced application testbeds to apply the results of ASCR research to mission critical problems in those areas.

External Factors Affecting Performance:
External factors, in addition to budgetary constraints, that affect the level of performance on these goals include: (1) changing mission needs as described by the DOE and the Office of Science (SC) mission statements and strategic plans; (2) scientific opportunities as determined, in part, by proposal pressure and by scientific workshops; (3) the results of external program reviews and international benchmarking activities of entire fields or subfields.

Validation and Verification:

Data Sources:	The planning and operations documents and agreements, MOUs, etc. of ASCR
Baselines:	Baselines and timelines that contain the milestones, rate of activity, schedules, etc. of facilities operations that reside at headquarters, operations offices and at each facility; the BES facility upgrades and construction activities identified in the FY 2001 budget request
Frequency:	A formalized peer review process for activities at the DOE laboratories and peer reviews grant applications as described in 10 CFR 605 on a regular basis at least once every 3-4 years
Data Storage:	Annual reports of facility performance and progress data are reported to, and reside at, Headquarters, operations offices, and at each facility
Verification:	verification i.e. broad program review, advisory committee, surveys etc.

Planned Program Evaluation:
The Integrated Software Infrastructure Centers (ISICs) initiated in FY 2001 will undergo a progress review to ensure effective coupling between the ISICs, and between the ISICs and application teams in the Mathematical, Information, and Computational Science (MICS) Scientific Applications Pilot Projects efforts and with the Scientific Discovery through Advanced Computing (SciDAC) teams funded by the other Programs and SC.

GPRA Program Activity: Fusion Energy Sciences

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
250 Energy Programs					
Fusion Energy Sciences	-	SC	238	248	248*

* This reflects the amended FY 2002 budget request.

Description of the Program:

The mission of the U.S. Fusion Energy Science (FES) Program is to advance plasma science, fusion science, and fusion technology—the knowledge base needed for an economically and environmentally attractive fusion energy source. The research programs supported by the Fusion Energy Science program are kept relevant and outstanding through: independent technical peer evaluations; Advisory Committee reviews; program evaluations; and research needs of DOE programs and the scientific community.

General Performance Goals:

SC1-1 MAKING ADVANCES IN PHYSICAL SCIENCES IN QUEST FOR CLEAN, AFFORDABLE AND ABUNDANT ENERGY
Deliver excellent research in plasma science, fusion science and fusion technology, cognizant of DOE mission needs as well as the needs of the broad national science agenda. Provide national and international leadership in select areas of plasma science, fusion science, and fusion technology. Be the steward for plasma science, fusion science, and fusion technology at the DOE laboratory complex and research facilities, and for the scientific and technical workforce, providing the infrastructure to meet elements of the Nation's science agenda now and in the future. Ensure that the fusion research program is effectively integrated to produce results that advance the program's mission while working to build effective, mutually beneficial connections with other fields of science. Enhance the effectiveness of available U.S. funding through mutually beneficial collaborative activities with fusion programs abroad.

SC4-1 PROVIDING EXTRAORDINARY SCIENTIFIC TOOLS, WORKFORCE, AND INFRASTRUCTURE:
Manage the fusion program's human resources and the operations of the national fusion science user facilities to the highest standards for efficiency, productivity, and safety. Use peer reviews and merit evaluations to plan, select, implement, and review fusion energy sciences programs. Coordinate with the NNSA's Office of Defense Programs on International Fusion Energy (IFE) activities. Continue to educate and train young scientists who will contribute broadly to the Nation's progress in many fields of science and technology.

Performance Indicators: FES program will measure the success of their activities by tracking the following common performance indicators (defined on page 170):

- Excellence and Relevance
- Leadership
- Quality
- Safety and Health

In addition to these performance indicators, specific measures and targets for FES program for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results (Mid-Year)
• *Maintain high scientific quality in the Energy Research Program as judged by the Program Advisory Committees. (ST3-4)*[2] (MET GOAL)	• *Maintain high scientific quality in the Energy Research Program as judged by the Program Advisory Committees. (SC1-1)* (MET GOAL) • *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 (SC3-1)* (MET GOAL) • *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 1 mega-ampere, currents for shorter pulses. (SC1-5)* (MET GOAL) • *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. (SC1-6)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. ST3-4 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed 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. (SC1-1)*	
• *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. (SC1-1)*	• *Use the recently upgraded plasma microwave heating system and new sensors on the DIII-D tokamak to study feedback stabilization of disruptive plasma oscillations. This understanding could permit substantial increases in the effective containment of plasma pressure within a given magnetic field. (SC1-1)*
• *Initiate and meet schedules for dismantling, packaging, and offsite shipping of the Tokamak Fusion Test Reactor (TFTR) systems. (SC4-1)*	• *Complete in a safe manner the Decontamination and Decommissioning of the Tokamak Fusion Test Reactor (TFTR) systems. (SC4-1)*
	• *Successfully bring into operation the recently completed 500 kV Ion Source Test Stand at LLNL, and start experiments to explore new ion source configurations to discover improved ways of producing heavy ion drive beam currents. (SC1-1)*

Means and Strategies:

The DIII-D microwave system upgrade will be carried out under a contract with General Atomics in San Diego. Also, the Decontamination and Decommissioning activities of the Tokamak Fusion Test Reactor at the Princeton Plasma Physics Laboratory (PPPL) will be completed in a safe manner. This includes the removal, shipping, and disposal of the tokamak and remaining radioactive components from the test cell and the basement.

Collaboration Activities:

Japanese engineers will collaborate with PPPL during the Decontamination and Decommissioning (D&D) of the TFTR. The NSF/DOE Partnership supports basic plasma physics and engineering efforts through coordinated review and funding. The U.S. - Japan collaborative program provides optimum use of facilities and research staff through coordinated research activities.

External Factors Affecting Performance:

The equipment required for the DIII-D microwave upgrade represents cutting edge technology, which always presents some risk in implementation. External factors which could affect the TFTR D&D are changes in regulations regarding burial of radioactive waste.

Validation and Verification:

Data Sources:	Progress on the DIII-D microwave upgrade is described in monthly progress reports that are submitted to OFES. PPPL provides regular reports to OFES, which includes status reports on TFTR D&D. Data used for validation and verification are the D&D project cost and schedule records
Verification:	Participating parties will verify when signing the new partnership agreements

Planned Program Evaluation:

The Office of Science obtains validation of the relevance and quality of its current and new research efforts through peer review, in addition to the advisory committees and professional scientific associations which are involved in providing support and guidance to the SC programs. The five advisory committees are composed of industry, university, and government officials who are qualified in the scientific disciplines of the program area of the advisory committee. SC tasks them on various issues to provide advice to program managers on approaches, relevance of research portfolio, or strategic planning. In FY 2002 SC will complete the evaluation of the scientific and programmatic relevance and the optimum design scope for a possible National Spherical Torus Experimental project (NSTX) and assessment of those results by Fusion Energy Science Advisory Committee (FESAC).

CORPORATE MANAGEMENT

The Department manages an extensive array of energy programs over a nationwide complex including headquarters organizations, operations offices, field offices, national laboratories, power marketing administrations, special purpose offices, and sites now dedicated to environmental cleanup. The Department needs strong corporate management in order to integrate its diverse portfolio of program missions, its facilities, and its contractors spread over a large geographic base.

This strong corporate culture is also necessary to complement program managers' pursuit of program mission goals. The offices funded under the Corporate Management goal:

- provide oversight and internal review of policy issues and budgets,
- act as honest brokers in decision-making,
- provide leadership on broad departmental management issues,
- represent the Department with other Federal Agencies.

Corporate Management goal and objectives provide the focus for implementing the Secretary's initiatives to improve management and accountability while ensuring the safety and health of the DOE workforce and members of the public.

CORPORATE MANAGEMENT GOAL

Demonstrate excellence in the Department's environment, safety and health practices and management systems to support our world class programs.

The Corporate Management goal is supported by the following five strategic objectives.

CM1: ***Ensure the safety and health of the DOE work force and members of the public, and the protection of the environment in all Departmental activities.***

CM2: ***Manage human resources and diversity initiatives and implement practices to improve the delivery of products and services.***

CM3: ***Manage financial resources and physical assets to ensure public confidence.***

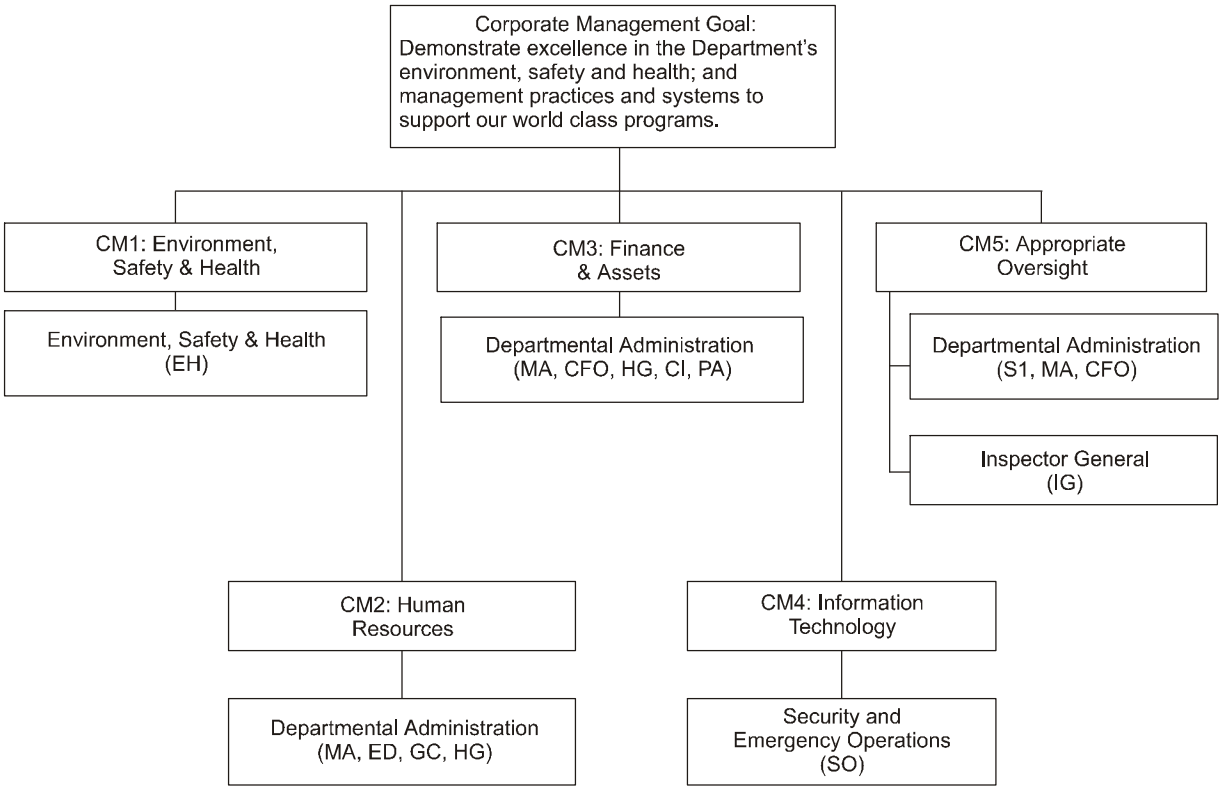
CM4: ***Manage information technology systems and infrastructure to improve the Department's efficiency and effectiveness.***

CM5: ***Use appropriate oversight systems to promote the efficient, effective, and economical operation of the Department of Energy.***

The following table maps the Presidential Budget's Program and Financing (P&F) accounts and program activities to the Department of Energy's offices and GPRA Program Activities. The alignment includes aggregation, disaggregation, and consolidation of budget decision units. The chart that follows this table shows how the decision units support the Department's Strategic Plan objectives for this business line.

Presidential Budget Program and Financing (P&F) Accounts and Program Activities		**FY2002 Budget Request ($M)**	**DOE Office**	**GPRA Program Activities**
270 Energy Supply				
	Environment, Safety & Health (non defense)	36	EH	Environment, Safety & Health
050 Other Defense Activities				
	Environment, Safety & Health (defense)	105	EH	Environment, Safety & Health
Total Environment, Safety & Health		**140**	**EH**	**Environment, Safety & Health**
Other Departmental Support and Staff Offices				
	Office of the Secretary	5	S1	Office of the Secretary
	Management and Administration	76	MA	Management and Administration
	Chief Financial Officer	37	CFO	Chief Financial Officer
	Board of Contact Appeals	1	HG	Hearings and Appeals
	Congressional and Intergovernmental Affairs	5	CI	Congressional and Intergovernmental Affairs
	Public Affairs	5	PA	Public Affairs
	General Counsel	23	GC	General Counsel
	Office of Policy	7	PO	Office of Policy
	International Affairs	9	IA	International Affairs
	Economic Impact and Diversity	7	ED	Economic Impact and Diversity
	Cost of Work for others	(66)		
	Adjustment - Transfer from Other Defense	(25)		
Subtotal Departmental Administration		**84**		**Departmental Administration**
Economic Regulation - Hearings and Appeals		2	HG	Hearings and Appeals
Other Defense Activities - Hearings and Appeals		3	HG	Hearings and Appeals
Office of the Inspector General		31	IG	Office of the Inspector General
Adjustment - FERC Receipts		(26)		
Adjustment - Colorado River Basin		(26)		
Adjustment - NNSA Administration Support		25		
Total - Other Departmental Support and Staff Offices		**93**		

The Corporate Management goal is supported by five strategic objectives. Each strategic objective is being pursued through long-term strategies. In this annual performance plan these long term strategies have been stated in terms of General Performance Goals against which outcome performance indicators and annual (output) performance measures have been established. To make the linkage of these outcomes and outputs to the budget resources we have organized the plan by GPRA Program Activities which are aligned with the budget decision units through aggregation, disaggregation, and consolidation. The general performance goals and indicators and annual measures and targets are discussed with the GPRA Program Activities on the following pages. This approach allows us to clearly link annual performance with annual budget resources and the strategic plan objectives. The chart below gives an overview of the linkage of budget decision units and strategic objectives for Corporate Management.



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GPRA Program Activity: Environment, Safety and Health

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	**FY 2001**	
270 Energy Supply					
Environment Safety and Health (non defense)	-	EH	38	36	36
050 Other Defense Activities					
Environment Safety and Health (defense)	-	EH	100	125	105
Total			138	161	140

Description of the Program:

The Office of Environment, Safety and Health (EH) is a corporate resource that provides leadership and Departmental management excellence to protect the workers, the public, and the environment. EH provides corporate policy, guidance, and technical expertise to support and advise the Secretary regarding the line management implementation of environment, safety, and health requirements and programs. EH staff are expert in disciplines such as environmental protection; industrial hygiene; industrial, chemical, and constructions safety; public health; occupational medicine, and risk management. EH activities funded under this GPRA activity cover both the "Energy Supply" appropriation and the "Other EH Defense Activities" appropriation. Under the Energy Supply appropriation EH funds two major activities: Policy, Standards and Guidance; and Corporate Programs. This better characterizes EH as a corporate resource to advance the DOE mission while promoting the establishment of effective and efficient environment, safety, and health programs. Under the Other EH Defense Activities appropriation EH funds the following four major core activities: Oversight, Health Studies, and the Radiation Effects Research Foundation (RERF), and the Gaseous Diffusion Plants activity. In addition, funding is provided for Exposure Compensation Activities that relate to compensation of workers across the complex for work related illnesses. The Gaseous Diffusion Plants activity will be completed in FY 2001. No funding is requested in FY 2002. EH has established the following general performance goal in support of the Department's strategic plan.

General Performance Goal:

CM1-1 INSTITUTING A SOUND ES&H CULTURE

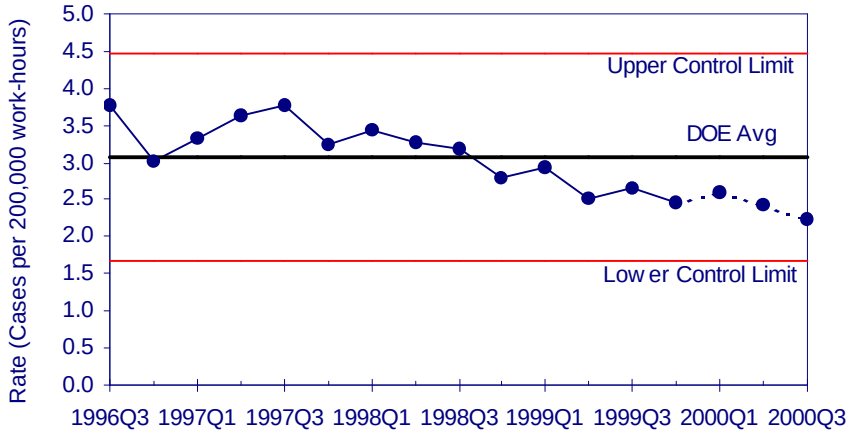
Integrate and embed risk-based, outcome oriented environment, safety, and health (ES&H) management practices into the performance of DOE's day-to-day work. Clearly identify and fund ES&H priorities and ensure resources are appropriately spent on those priorities. Conduct oversight special reviews, assessments, evaluations, and inspections of such topics as environmental protection, fire protection, safety management implementation, and accidents. Identify at-risk worker populations and employ appropriate mitigation measures. Continue shift from a reactive approach to emphasizing excellence and prevention in protecting worker and public safety and health. Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Performance Indicators:

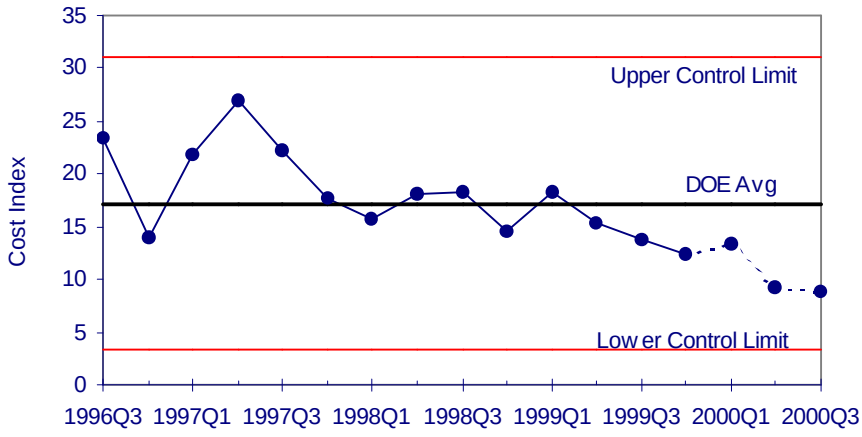
EH measures the effectiveness of Integrated Safety Management implementation by tracking five complex-wide performance indicators:

- *Total Recordable Case Rate;*
- *Occupational Safety Cost Index;*
- *Hypothetical Radiation Dose to the Public;*
- *Worker Radiation Dose; and*
- *Reportable Occurrences of Releases to the Environment.*

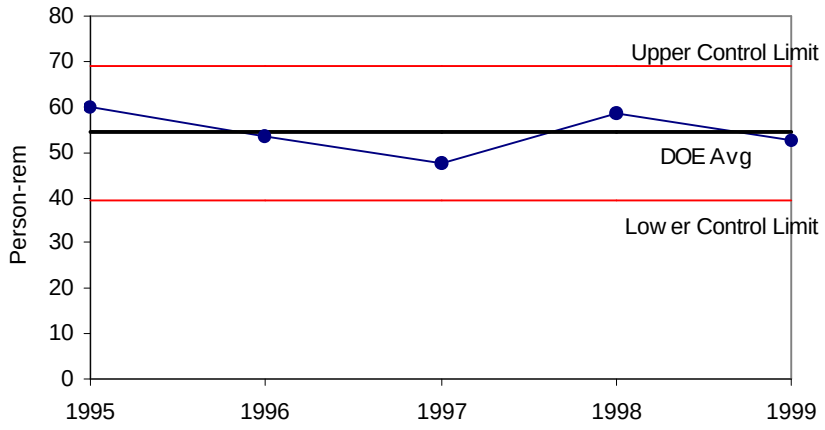
Total Recordable Case Rate: Recordable Case Rate measures work- related death, as well as injury or illness that results in loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment beyond first aid.



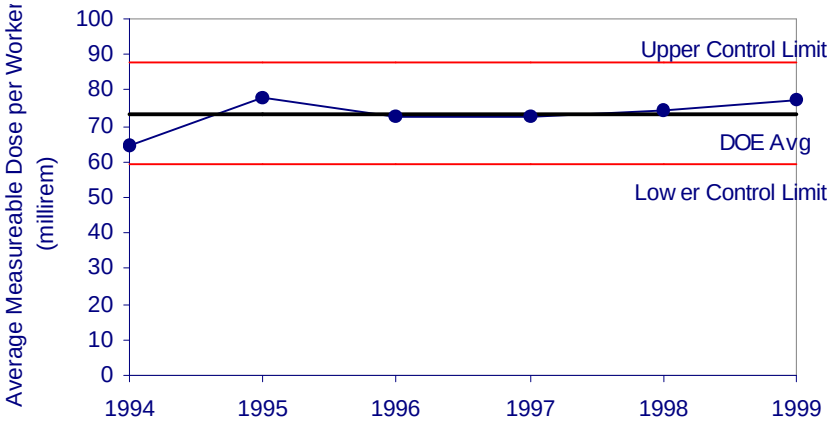
Occupational Safety Cost Index: Occupational safety Cost Index is a measure of the direct and indirect costs based on the Cost Index formula, due to safety-related injuries/illnesses.



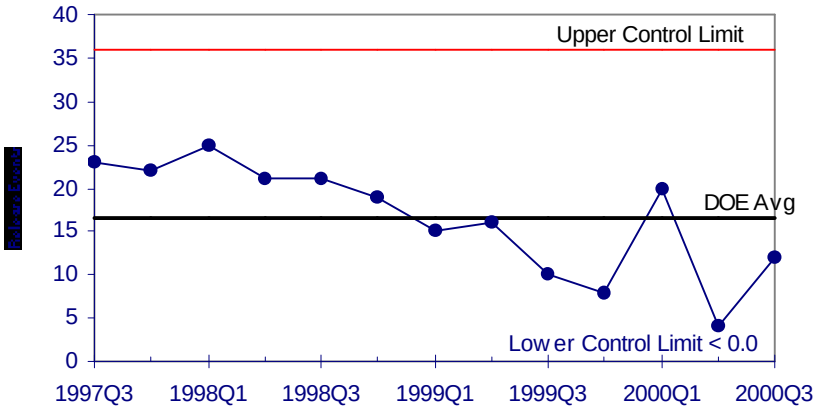
Hypothetical Radiation Dose to the Public: Hypothetical radiation dose to public is an estimate of of the collective radiation dose to the public within 50 miles of DOE facilities due to airborne releases of radionuclides.



Worker Radiation Dose: 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: Reportable occurrence of releases to the environment include releases of radionuclides, hazardous substances, or regulated pollutants that must be reported to Federal, State, or local agencies.



Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Conduct oversight special reviews, assessments, evaluations, and inspections of such topics as emergency management, safety management, and accidents. (CM1-1)* [2] (MET GOAL)	• *Conduct oversight special reviews, assessments, evaluations, and inspections of such topics as emergency management, safety management, and accidents. (CM1-1)* (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, shall be issued in FY 2000. (CM2-4)* (NEARLY 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. (CM1-1)* (MET GOAL) • *Provide medical screening to all DE workers formerly exposed to beryllium during their employment at DOE facilities (CM1-1)* (MET GOAL) • *Develop a stronger, more coherent public health agenda at and surrounding DOE sites. (CM1-1)* (MET GOAL) • *Accomplish the milestone of the FMFIA corrective action plan to complete the nuclear safety standards upgrade project. (CM1-1)* (NEARLY MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. CM1-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
	• *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. (CM1-1)*
• *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. (CM1-1)*	
• *Fully Implement Integrated Safety Management at all DOE sites. (CM1-1/FMFIA-safety and health)*	
• ~~*Establish a beryllium registry within one calendar year of release of the final Beryllium Rule. (CM1-1)*~~ [Final Beryllium rule was released in January 2001.]	• *Establish a beryllium registry in January 2002 for current and former DOE workers who may have been exposed. (CM1-1/FMFIA-safety and health)*
• *Publish 10 interim or final international health scientific and technical reports from the RERF, Marshall Islands, and Russians to increase our information defining the relationship between ionizing radiation dose and its effect on human health. (CM1-1)*	• *Publish an additional 10 interim or final international health scientific and technical reports from the RERF, Marshall Islands, and Russians to increase our information defining the relationship between ionizing radiation dose and its effect on human health. (CM1-1)*

Note: For FY 2001, the added target was based on the FMFIA process.

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 interest 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.

Oversight 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 is 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.

Collaboration Activities:

EH maintains close contacts with private industry, regulatory agencies, independent standard-setting groups, and national environment, safety, and health organizations, and 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) regulation); and DOE policy and guidance.

External Factors Affecting Performance:

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

Validation and Verification:

Data Sources:	The field sites provide their operating data to EH's various reporting systems
Baselines:	Technical baselines have been established using historical data.
Frequency:	Data is updated monthly and reports are issued quarterly and annually
Data Storage:	Data is stored at various sites and in EH's data bases.
Verification:	Data entry quality control procedures have been established by each EH information system manager.

Planned Program Evaluation:

An extensive peer and program review process is followed to assure that reports reflect the highest quality achievable.

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GPRA Program Activity: Departmental Administration - Management and Administration

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
Departmental Administration - Management and Administration		MA	81	89	76

Management and Administration: The Office of Management and Administration (MA) provides Department-wide administrative and management support. It is responsible for administrative services, human resources, training, procurement and financial assistance oversight and policy, and other management systems and processes. MA also provides human resources and procurement services to DOE headquarters staff, manages the headquarters facilities, and supports DOE missions with a wide range of functions. MA activities support the following general performance goals.

General Performance Goals:

CM2-1 MANAGING HUMAN RESOURCES
Align programs and policies pertaining to human capital to DOE's mission and integrating human resource management into DOE's system for planning, budgeting, and program evaluation. Continue to recruit, develop, and manage our workforce, including entry level positions to sustain world-class programs and operations. Improve Federal technical workforce capabilities through support of Federal Technical Capability Panel operations for activities related to the Technical Qualification Program, program reporting and assessments. Continue to conduct self-assessments to measure organizational performance including evaluating results, measuring trends, and recommending organizational improvements to DOE leadership.

CM3-2 ENSURING PUBLIC CONFIDENCE IN THE DEPARTMENT'S CONTRACTUAL TRANSACTIONS
Maximize the use of electronic commerce systems in purchasing and personal property sales, and ensure integration with internal financial management systems as well as external interfaces. Increase the use of performance-based service contracts by reviewing selected eligible actions for conversion and by conducting training for program and project managers to continually improve performance-based statement of work, as well as, to ensure evaluation of contractor performance. Ensure competent organizational workforce by achieving professional certification for the majority of procurement personnel; and, implement leadership development and succession planning programs.

Performance Indicators:

Performance indicators for these goals are in development. Specific output measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Improve Federal technical workforce capabilities at defense sites by implementing the FY 1999 milestones of the Revised Implementation Plan for DNFSB Recommendation 93-3. (CM1-3)*[2] (MET GOAL)	• *Improve Federal technical workforce capabilities at defense sites by implementing the FY 2000 milestones of the Revised Implementation Plan for DNFSB Recommendation 93-3. (CM1-3)* (MET GOAL)
• *Implement a DOE-wide employee accessible automated personnel system by December 1998. (CM3-3)* (EXCEEDED GOAL)	• *Increase the electronic transfer of documents through implementation of paperless workflow in CHRIS, reducing personnel paper transactions by 15 percent. (CM3-3)* (EXCEEDED GOAL)
• *Improve workforce skills and reduce training costs by implementing the FY 1999 milestones in the DOE Corporate Education, Training, and Development Plan. (CM3-3)* (MET GOAL)	• *Improve workforce skills and reduce training costs by implementing the FY 2000 milestones in the DOE Corporate Education, Training, and Development Plan. (CM3-3)* (MET GOAL)
	• *Have 90 percent of contract professionals certified under DOE professional development standards. (CM4-1)* (NEARLY MET GOAL)
• *Convert all management and operating contracts awarded in FY 1999 to performance-based contracts. (CM4-1)* (MET GOAL)	• *Convert all M&O contracts awarded in FY 2000 to a Performance Based Service Contract (PBSC) using government-wide standards [FAR, (48 CFR Part 39) and Office of Federal Procurement Policy letter 91-2]. (CM4-1)* (MET GOAL)
• *Award 50 percent of all management and operating (M&O) contracts, including three M&O contracts that will change to Federal Acquisition Regulation (FAR) contracts during FY 1999, using competitive procedures. (CM4-1)* (EXCEEDED GOAL)	• *Convert one support services contract at each major site to PBSC using the government-wide standards [Federal Acquisition Regulations, (48 CFR Part 39) and Office of Federal Procurement Policy letter 91-2]. (CM4-1)* (MET GOAL)
	• *Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of contract management. (CM4-1/FMFIA)* (MET GOAL)
	• *Improve overall efficiency and safety of aviation services by conducting a comprehensive aviation program study by July 2000, including an OMB Circular A-76 analysis and a cost effectiveness evaluation; and, by establishing a review process for the conduct of charter and contract aviation services. (CM3-1)* (NEARLY MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. CM1-3 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Improve Departmental Human Capital Management by initiating comprehensive human resources strategies which will:* – *Implement the FY 2001 milestones in the DOE Corporate Training Plan;* – *Increase the electronic transfer of documents in CHRIS, resulting in 15% of the documents processed electronically. (CM2-1)* • *Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of human capital management. (CM2-1/FMFIA)*	• *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% at DOE Headquarters;* – *increase employee access to mission-related training by at least 30% through "on-line" and other technology assisted learning capabilities;* – *achieve cost savings and reduce traditional manually-generated personnel and training paper records by at least 20% utilizing the automated Corporate Human Resources Information System (CHRIS);* – *address skills gaps and aging workforce challenges by hiring at least 15% of new administrative, technical and professional employees at entry levels;* – *reduce managerial layering and shift staffing resources to front line, mission-critical positions consistent with Administration guidelines; and* – *establish an Agency plan for ensuring the accuracy of the FAIR Act data for FY 2002 and for completing public-private or direct conversion competitions of 5% of the commercial FTEs listed on that inventory. (CM2-1)*
• *Convert all M&O contracts awarded in FY2001 to PBSC management contracts. (CM3-1)* • *Award approximately 50% of service contracts as PBSC using government-wide standards. (CM3-1)* • *Select and begin implementation of DOE wide electronic contracting for large procurements. (CM3-1)* • *Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of contract management. (CM4-1/FMFIA)* • *Conduct a comprehensive aviation program study by April 2001, including an OMB Circular A-76 analysis and a cost effectiveness evaluation; and, establish a review process for the conduct of charter and contract aviation services. (CM3-1)*	• *Increase the use of on-line procurement and other E-Government services and information so that for100% of acquisitions valued at over $25,000, all synopses for which widespread notice is required, and all associated solicitations (unless covered by an exemption in the Federal Acquisition Regulation), will be posted on the Government wide point of entry website (www.FedBizOpps.gov). (CM3-1)* • *Increase the use of performance-based contracts so that:* – *60% of total eligible service contracting dollars (over $100k) will be obligated as performance-based service contracts;* – *66% of total eligible new service contract actions (over $100K) will be performance-based service contracts. (CM3-1)*

Note: For FY 2001, two targets were added by the FMFIA process.

Means and Strategies:

During FY 2002, The Office of Management and Administration (MA) will continue serving as the Department's primary administrative and management support organization. It will accomplish this by focusing on emerging management issues and ensuring human capital, contract reform, and other major areas are analyzed and addressed on both a Department-wide and Headquarters basis.

MA supports the Administrations's recent management reform initiatives and will work with DOE line managers to develop appropriate Departmental plans to eliminate unnecessary layers of management and direct personnel to high priority missions. We will complete the development and implementation of a new Subcontract Reporting System which will eliminate the preparation of paper reports from contractors, deploy a web-based system for large contracts and financial assistance awards, and increase the number of solicitations posted to this system by 25% from FY 2001. MA will prepare a plan for expanding A-76 competitions to meet the 5% target, and provide a more accurate FAIR Act inventory. The plan will describe functions and locations of FTEs to be competed or converted under A-76, as well as training requirements and planned contract support.

MA will also continue administering the Department's Working Capital Fund, a financial management tool for providing such common services as headquarters space, nationwide payroll, the telephone and wide area network systems, mail, and other services delivered by MA, the Chief Financial Officer, and the Chief Information Officer.

Collaboration Activities:

MA coordinates with a broad range of external Federal agencies including the Office of Management and Budget, Office of Personnel Management, and the General Services Administration, Congressional offices, and numerous private sector companies and organizations. Due to its administrative and management role at the Department it also works closely with all DOE organizations and DOE Management and Operating contractors.

External Factors Affecting Performance:

Administration policies, Congressional guidance, Departmental activities and requests, and other external factors could impact MA performance.

Validation and Verification:

Data Sources:	Customer, stakeholder, and staff feedback, Reports to Congress
Baselines:	Various baselines established through the MA Balanced Scorecard Action Plan utilized throughout MA
Frequency:	Monthly, quarterly, annually depending on requirements
Data Storage:	Various MA Tracking Systems and feedback mechanisms
Verification:	Internal Program Reviews, customer feedback from surveys and focus groups

Planned Program Evaluation:

MA is utilizing the Balanced Scorecard which is a structured approach to planning, goal setting, performance measurement, and performance management that links MA's strategic goals to the activities necessary to achieve desired results. Each MA organization developed a Balanced Scorecard Action Plan providing detailed information on how it will be measured on achieving its commitments. Program Reviews are held internally to the organizations as well as with the Director of Management and Administration on regular basis to measure progress.

GPRA Program Activity: Departmental Administration-Chief Financial Officer

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
Departmental Administration - Chief Financial Officer	-	CFO	31	35	37

Chief Financial Officer (CFO): The CFO provides centralized direction and oversight of the full range of financial and planning activities including: strategic planning and program evaluation; project management; budget formulation, presentation and execution; Department-wide oversight of internal controls; Departmental accounting and financial policies, procedures and directives; operation and maintenance of the Department's payroll system and financial information system/Standard General Ledger; and, financial management (accounting, cash management, and reporting). CFO activities support the following general performance goal.

General Performance Goal:

CM3-1 MANAGING FINANCIAL RESOURCES AND PHYSICAL ASSETS
Continue to streamline and improve operations, improve decision-making, ensure accountability, maximize departmental resources, and achieve intended results by corporately managing the Department's mission, functions, and activities. The Office of the CFO has the lead responsibility for this goal and prepares and publishes the Department's strategic plan, annual performance plan, annual performance and accountability report that includes the Department-wide audited financial statement. CFO is executing the project for implementing the BMIS Phoenix core financial system including pilots, training, system interfaces, SGL integration and data conversion; CFO is also managing a Departmental Project Management Tracking and Control System to monitor the status of projects in terms of cost, schedule, and technical performance. Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Performance Indicator:

Independent auditor's unqualified opinion in the annual audit of the Department's financial statements.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *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 (a milestone of a FMFIA action plan. (CM3-1/FMFIA)*[2] (NEARLY MET GOAL)	• *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 solutions for special DOE requirements. (CM3-1)* (MET GOAL)
• *Verify progress against established project scope, schedule, and cost baselines on projects valued at $5 million or more. (CM4-2)* (BELOW EXPECTATION: Office of Field Integration responsible for this goal, was closed out. Beginning in FY 2000 this function is the responsibility of the CFO.)	• *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. (CM4-2)* (NEARLY MET GOAL)
• *Complete four Energy Systems Acquisitions Advisory Board (ESAAB) critical actions on required strategic and major systems. (CM4-2)* (MET GOAL: Office of Field Integration responsible for this goal, was closed out. Beginning in FY 2000 this function is the responsibility of the CFO.)	• *By September 30, 2000 reestablish the Acquisition Executive and ESAAB processes for use on critical decisions for projects of $5 million or more. (CM4-2)* (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, to the Congress. (CM4-2)* (MET GOAL)
• *Accomplish the milestones of the FMFIA corrective action plan for the Departmental challenge of project management. (CM4-2/FMFIA)* (BELOW EXPECTATIONS: Office of Field Integration responsible for this goal, was closed out. Beginning in FY 2000 this function is the responsibility of the CFO.)	• *Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of project management. (CM4-2/FMFIA)* (NEARLY MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. CM3-1 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Targets(Revised Final)	FY 2002 Proposed Target
• *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. (CM3-1)*	• *Complete the implementation of the BMIS Phoenix core financial system nation-wide. (CM3-1)*
• *By April 2001 have all ongoing capital asset acquisition projects, valued at $5 million or more, fully integrated into the project management policies, procedures, and systems implementation. (CM3-1)*	
• *Recruit and hire additional personnel to address immediate needs in HQ critical financial functions (CM2-1/FMFIA-human capital management)*	
• *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. (CM3-1)*	• *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. (CM3-1)*
• *Improve External Independent Review procedures and Statements of Work. (CM3-1/FMFIA-project management)*	• *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. (CM3-1/FMFIA-project management)*
• *By April 2001 resolve all recommendations from the National Research Council's report, "Improving Project Management in the Department of Energy." (CM3-1)*	

Note: For FY 2001, two measures was added based on the FMFIA process.

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GPRA Program Activity: Departmental Administration - Economic Impact and Diversity

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
Departmental Administration-Economic Diversity	-	ED	6.6	6.6	6.7

Office of Economic Impact and Diversity: The Office of Economic Impact and Diversity develops and executes department-wide policies to implement applicable legislation and Executive Orders that strengthen diversity requirements affecting the workforce, small and disadvantaged businesses, minority educational institutions, and historically under represented communities. The Office promotes excellence and equity in the Department's workforce, undertakes measures that promote a positive work environment for all employees, addresses unlawful discrimination, advocates environmental justice, protects whistle blowers, and creates partnerships with small and disadvantaged businesses and minority educational institutions. The Office includes the Offices of Minority Economic Impact, Civil Rights and Diversity, Small and Disadvantaged Business Utilization, Employee Concerns and the National Ombudsman. ED activities support the following general performance goals

General Performance Goals:

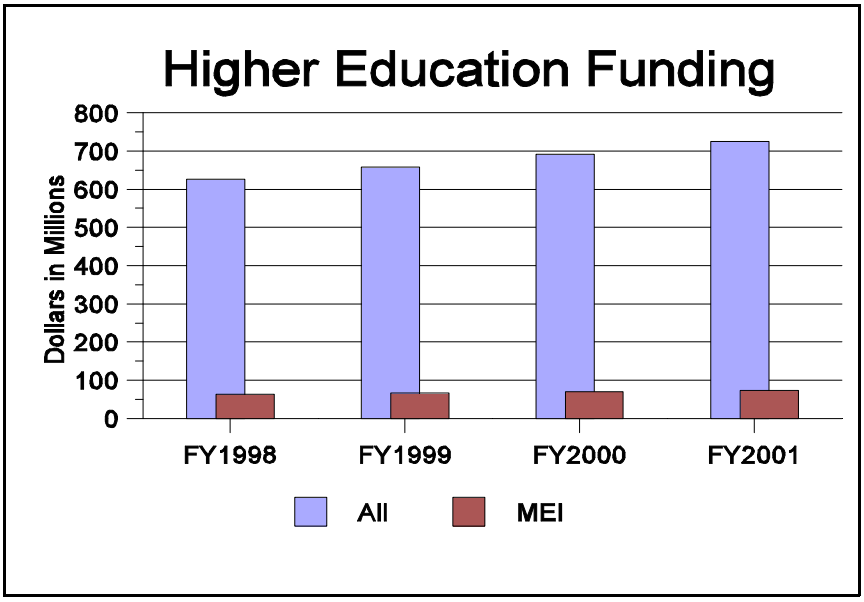
CM1-1 INSTITUTING A SOUND ES&H CULTURE
Integrate and embed risk-based, outcome oriented environment, safety, and health (ES&H) management practices into the performance of DOE's day-to-day work. Identify at-risk worker populations and employ appropriate mitigation measures. Continue shift from a reactive approach to emphasizing excellence and prevention in protecting worker and public safety and health.

CM2-1 MANAGING HUMAN RESOURCES
Align programs and policies pertaining to human capital to DOE's mission and integrating human resource management into DOE's system for planning, budgeting, and program evaluation. Continue to recruit, develop, and manage our workforce, including entry level positions to sustain world-class programs and operations. As part of this goal, ED will fully implement the Department's Minority Educational Institutions Strategy and increase management accountability in implementing the DOE Strategic Plan and Workforce 21. ED will also develop and administer, in conjunction with the National Academy of Public Administration, a survey to determine customer knowledge of and satisfaction with the Department's employee concerns programs.

CM3-1 MANAGING FINANCIAL RESOURCES AND PHYSICAL ASSETS
Continue to streamline and improve operations, improve decision-making, ensure accountability, maximize departmental resources, and achieve intended results by corporately managing the Department's mission, functions, and activities. ED supports this goal by securing resources for minority institutions. Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Performance Indicator: DOE Funding of Higher Education (see next page)

The following chart illustrates the Department's funding for minority educational institutions (MEI) in comparison with all of the Department's funding for higher education.



This following facing pages show four years of performance measures for Economic Impact and Diversity.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Enhance America's science workforce by ensuring that minority-serving institutions are afforded and take advantage of the Federal Research, development, education and equipment opportunities for which they are eligible and increasing their awards by 5% over FY 1998. (CM3-4)*[2] (BELOW EXPECTATION : New Policy Statement to be issued in FY 2000.) • *Commit to specific procurement strategies that will increase the participation of women-owned small businesses in the Federal marketplace through a Memorandum of Understanding with the Small Business Administration. (CM3-4)* (MET GOAL) • *Publish in the Code of Federal Regulations the DOE Mentor-Protégée Program. (CM3-4)* (NEARLY MET GOAL: Final action on the proposed rule is expected in May 2000).	• *Determine how well the Department's diversity goals are being met by tracking the Department's personnel actions on hiring and competitive promotions against the current Civilian Labor Force statistics. (CM3-4)* (MET GOAL) • *Ensure equitable opportunities for minority educational institutions and small, minority, and women owned businesses to compete. (CM3-4)* (BELOW EXPECTATION) The Department did not meet the SBA assigned goal of 5% of total procurement base for prime contracting. • *Increase employee awareness by publicizing DOE-wide the scope of the employee concerns program, the availability of the ombudsman function, and the DOE employee concerns program offices at the operations and field offices. (CM3-4)* (MET GOAL)

Notes:

1. Only those performance measures for FY 1999 and FY 2000 that provide context for measures for FY 2001 or FY 2002 are presented here. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. CM3-4 for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Achieve the Department's small business percentage goals negotiated with the Small Business Administration and the Office of Federal Procurement Policy. (CM3-1)*	• *Implement a DOE-wide "managing diversity" education strategy to ensure consistency in approach; and educate top leadership and employees on the interdependence of key change initiatives by showing links between managing diversity and related initiatives such as Workforce 21, Task Force Against Racial Profiling, and the Hispanic Outreach Initiative. (CM2-1)* • *Achieve annual small business goals and develop strategies to double small business (SB) prime contracting from 3% in FY 99 to 6% by FY 03. Achieve these objectives by developing enhanced tracking and accountability mechanisms to monitor progress in meeting annual prime and subcontracting goals; an Annual SB Report to the Secretary which identifies opportunities to maximize SB contracting over a three-year cycle; a DOE Order to ensure all elements are complying with Small Business Act requirements; and innovative outreach and partnership efforts with SB concerns. (CM3-1)*

Means and Strategies:

The Office has 41FTEs and a budget of $7.2 million to devise and oversee innovative strategies to improve small business development, economic development, workforce opportunities, community outreach and involvement, environmental justice and research concerns, and minority educational institutions involvement. These strategies will be carried out by Diversity Managers, Minority Education Liaisons and Small Business Program Managers in the Departmental program and field offices. Current strategies include: Strategic Plan for Achieving and Promoting A Workforce that Looks Like America - A Companion to Workforce 21; Minority Education Strategies; Employee Concerns Guidance; Small Business Goals and Department of Energy Acquisition Regulations Governing the Diversity Contract Clause and 8A Delegation; Environmental Justice and Public Participation Strategy; and goals and objectives regarding improving the business and community development processes. An integrated information management system is needed to gather and analyze data more efficiently and effectively.

Collaboration Activities:

DOE coordinates its diversity programs with the Small Business Administration, White House Initiative Offices on Minority Education, the Equal Employment Opportunity Commission, Council on Environmental Quality, Environmental Protection Agency, and the National Environmental Justice Advisory Council.

External Factors Affecting Performance:

Multiple industry-specific business conditions and lack of legislation will affect the implementation of environmental justice strategies. Also, new procurement guidelines will affect the attainment of small business goals.

Validation and Verification:

Data Sources:	Various Reports Mandated by Legislation and Executive Orders, Program office reports, Procurement Automated Data System, Diversity tracking systems, and Affirmative Action Reports.
Baselines:	Workforce– 03-31-99; Business and Minority Education-1998
Frequency:	Quarterly, semi-annual and Annual
Data Storage:	Procurement Automated Data System, Subcontracting Reporting System, Diversity Tracking Systems
Verification:	Annual Reports

Planned Program Evaluation:

The diversity policy of the Department, and its related programs and initiatives, have been implemented with performance measures, and should build the increased representation that we need. The Department still has a long way to go to achieve the kind of diversity viewed as ideal. Diversity metrics will be incorporated into contract performance, personnel performance, organizational structures and program implementation. The Department also has an Executive Steering Committee charged with reporting to the Secretary on the progress of workforce diversity goals.

GPRA Program Activity: Departmental Administration - Policy

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
Departmental Administration-Policy	-	PO	6.9	7.4	7.4

Office of Policy: The Office of Policy (PO) is the primary policy advisor to the Secretary and the Department's senior management on issues related to the availability, economic efficiency, and reliability of the Nation's energy sector, and is the source of accurate and unbiased analysis of existing and prospective energy-related policies. The Policy Office's role is to deliver integrated and cross-cutting policy advice to Departmental leadership and represent the Department in interagency discussions on energy policy. During the last two years, the Office has been directed to: 1) serve as the R&D Secretariat and lead a Department-wide review and analysis of the energy resources R&D portfolio; 2) coordinate DOE responses to energy-related emergencies through the newly created Office of Energy Emergencies; and 3) develop a coordinated, Department-wide program to address nuclear materials stewardship. PO activities support the following general performance goals that flow from the Department's Strategic Plan.

General Performance Goals:

ER1-2 ENHANCING DOMESTIC OIL AND GAS SUPPLIES
Provide policy, legislative, regulatory, and technology options, as well as improved practices to enhance the availability of domestic oil and natural gas supplies, while minimizing the environmental impacts of production. Develop technologies and improved practices to enhance the reliability and adequacy of the domestic natural gas pipeline and storage system. Policy Office supports this goal by developing and assessing policy options (1) to spur domestic production and transport of natural gas,; and (2) to ensure adequate supply of petroleum, through increased domestic production and transport of oil and oil products.

ER1-4 COORDINATING FEDERAL GOVERNMENT RESPONSES TO ENERGY EMERGENCIES
Coordinate Federal agency responses to regional or national energy supply shortages or other unusual market disruptions that could adversely impact consumers or the economy. Policy Office coordinates Federal and State responses to energy emergencies in a manner that anticipates emergencies, and fosters improved responses through better communication among Federal, State, and industry stakeholders.

ER2-1 ESTABLISHING A MORE OPEN, COMPETITIVE ELECTRIC SYSTEM
Identify policy, legislative, regulatory, and technology options, as well as improved practices, to enhance the development of competitive electricity markets that result in a more efficient and reliable electric power system, while also producing consumer savings and environmental benefits. Policy Office conducts analyses of the electric sector markets and regulation, and restructured electricity markets in order to enable decision makers and legislators to better address electricity reliability, prices and other related economic issues. In FY 2001, PO will coordinate the Department's contribution to the efforts of the Energy Policy Development Group to develop and recommend a national energy policy to the President. (FMFIA)

ER3-4 CONDUCTING POLICY ANALYSIS FOR DEPLOYING ENERGY EFFICIENT TECHNOLOGIES
Ensuring that energy-related regulations and other policies produce economic, energy and environmental benefits. The Policy Office analyzes the likely effects on energy production and use, including electricity generation, of environmental regulations that are under consideration, and assess regulatory alternatives that would assure achievement of environmental objectives, while minimizing any adverse impacts on the energy sector, consumers and the economy.

ER 4-1 ENSURING ENERGY-RELATED REGULATIONS AND POLICIES PRODUCE ECONOMIC, ENERGY AND ENVIRONMENTAL BENEFITS

Analyze the likely effects on energy production and use, including electricity generation, of environmental and other energy-related regulations or policies that are under consideration with the objective of assuring the achievement of environmental objectives, while also producing benefits for the energy sector, consumers and the economy.

ER5-1 COOPERATING INTERNATIONALLY TO REDUCE ENERGY RELATED ENVIRONMENTAL IMPACTS

Develop U.S. policies and approaches for international environmental agreements that impact energy production, transportation, and use. Policy Office assists the Administration in the development and analysis of U.S. proposals to reduce greenhouse gas emissions in order to further the cost-effective achievement of any domestic and international commitments to address global climate change concerns. PO will develop and coordinate U.S. efforts to support technology transfer as a means of encouraging reductions in greenhouse gas emissions internationally. PO will continue development of the U.N. Persistent Organic Pollutants agreement, following successful conclusion of the agreement in 2000. PO will contribute to U.S. efforts at the 9th Session of the U.N. Commission on Sustainable Development to produce outcomes that reflect U.S. policies on energy, transport, and atmosphere and will support U.S. efforts at upcoming U.N. Economic Commission for Europe (Convention for Long Range Transboundary Air Pollution) negotiations on particulates.

CM3-1 MANAGING FINANCIAL RESOURCES AND PHYSICAL ASSETS

Continue to streamline and improve operations, improve decision-making, ensure accountability, maximize departmental resources, and achieve intended results by corporately managing the Department's mission, functions, and activities. Policy Office supports this goal by developing science and technology policies in support of Departmental missions in fundamental science, mission-driven research and development, laboratory missions and management, and international science and technology cooperation. PO will also maintain the Nuclear Materials Stewardship Initiative to ensure the life-cycle management of nuclear materials is safe, environmentally sound, efficient, cost-effective, and transparent (to meet nonproliferation objectives). PO will issue by September 2001, an update to the "Multi-year Agenda for the Nuclear Materials Council" contained in the Integrated Nuclear Materials Management Plan submitted to Congress in June 2000.

Key Accomplishments for FY 2000 and FY 1999

Office of Policy met all its performance targets for FY 1999 and FY 2000. Following are highlights of PO's accomplishments for FY 1999 and FY 2000:

- Y2K Transition: The Policy Office successfully coordinated the government and electric power industry's preparations for a smooth transition to the year 2000 in the electric power sector.

- Published Powering the New Economy: This report updates the Department's 1998 Comprehensive National Energy Strategy, highlights accomplishments and investments, and examines the energy challenges we face in the 21st century.

- Oil and Gas Security: Following increased volatility in the heating oil market, the President requested DOE to examine policy options for converting factories and major users from oil to other fuels, which could help increase future oil supplies for use in heating homes. The resulting report, The Northeast Heating Fuel Market: Assessment and Options was co-led by the Policy Office. PO significantly contributed to the Administration's analysis of gasoline prices in the Upper Midwest to determine the factors contributing to the tight supplies and led numerous real-time assessments of heating oil supply problems in Northeast.

- Energy Reliability and Emergencies Response: The Policy Office coordinated and led the Power Outage Study Team (POST), which was formed to examine power outages and system disturbances that occurred in the summer of 1999. The team consisted of experts from DOE, the national laboratories, and the academic community. In March, 2000, POST published, the Report of the U.S. Department of Energy's Power Outage Study Team, which examined a number of actions that the federal government can take to avoid future outages. To address concerns about power outages in 2000, the Policy Office conducted three emergency exercises with state and local governments to help prepare for potential summer power supply emergencies and is working closely with the utility industry to gain up-to-date relevant information about potential grid-related problems as quickly as possible.

- Electricity Restructuring: The Policy Office led the Department's assessment of electric industry restructuring and provided the primary expertise that resulted in the Administration's proposals to restructure the electric utility industry. Policy staff continued to examine the effects of restructuring on future energy security, reliability of supply, costs to consumers and environmental implications.

- Energy and the Environment: The Policy Office led the Department's effort to assess the potential impacts of Environmental Protection Agency (EPA) regulatory proposals on motor fuels, utility nitrogen oxide emissions, and the Toxic Release Inventories. The Policy Office developed recommendations, together with supporting analysis, that significantly reduced the potential adverse impacts of these regulations on the Nation's energy consumers and the energy sector. Policy staff assured balanced consideration of energy issues in the development of Administration environmental policies by other Federal agencies.

- Climate Change: The Policy Office led the Department's participation in the development of the Administration's climate change policies and provided analytic support of these policies in international negotiations and other venues. Staff have consistently focused on the design and advocacy of flexible, market-based mechanisms for limiting global greenhouse gas emissions at modest cost, and on encouraging the full participation of both developed and developing countries in these efforts.

- R & D Analysis: The Policy Office led the Department-wide review and analysis of the energy resources R&D portfolio, assessing its adequacy and identifying gaps. Staff contributed to numerous science and technology policy initiatives, including peer review, recoupment, R&D evaluation, and development of a DOE order on technology partnering and CRADA policy and procedures.

- Nuclear Materials Management: The Policy Office served as a catalyst for the Department and the National Laboratories to address a major national security and environmental management issue—nuclear materials stewardship. Completed the Integrated Nuclear Materials Management Plan, delivered it to Congress, and undertook a 25-point multi-year action agenda through multi-disciplinary teams. As a result of initiatives led by the Office of Policy, the Department has established a formal mechanism to resolve cross-cutting issues and develop department-wide policies and programs that address nuclear materials stewardship.

Means and Strategies:

During FY2002, the Office of Policy will continue to concentrate on analyzing the impact of competition in the electric utility sector, strengthening the Nation's energy security, and developing Federal policies that minimize the costs of achieving National environmental goals and international commitments to curb greenhouse gas emissions, while avoiding adverse effects on the reliability of energy supplies. In addition, PO will continue efforts to coordinate responses to energy emergencies, lead Department-wide reviews and analyses of the energy resources R&D portfolio; and oversee DOE's stewardship of nuclear materials.

Collaboration Activities:

PO coordinates with a broad range of external agencies, congressional offices, business and non-governmental organizations via interagency and public fora. It also works closely with all other elements of the Department.

External Factors Affecting Performance:

Global and domestic economic trends, sector-specific market conditions, Administration environmental and other energy-related policies, congressional guidance and Non Governmental Organizations (NGO) issues and concerns affect the development and deployment of DOE's positions on varying energy policy issues.

Validation and Verification:

Data Sources:	Customer and internal staff feedback
Baselines:	Anticipated policy outcomes against which feedback is to be measured.
Frequency:	TBD based on level of effort and progress made.
Data Storage:	PO managers and senior management will develop and maintain the feedback data on our progress.
Verification:	Anticipate customer surveys and internal assessment of progress.

Planned Program Evaluation:

PO will use a process of internal and external reviews and assessments to evaluate progress on these dynamic and evolving energy policies. PO will document the number of presentations to public groups on energy policy issues and measure the number of official correspondence it has responded to on key energy policy issues. PO will document the influence of our analyses within the interagency process.

GPRA Program Activity: Departmental Administration - International Affairs

President's Budget Program and Financing (P&F) Accounts and Program Activities	Program Sub-Activities	DOE Office	Comparable Approp. ($M)		FY 2002 Request ($M)
			FY 2000	FY 2001	
Departmental Administration -IA	-	IA	8.0	9.0	9.0

International Affairs: The Office of International Affairs formulates and develops international energy policy; leads the Department's bilateral and multilateral cooperation with other nations and international organizations, including participation in international negotiations; coordinates the implementation of international cooperative agreements; advances energy, environmental, and non-proliferation policies in international agreements; promotes positive relationships with foreign nations that support U.S. policy goals; and, promotes policy and regulatory reforms in foreign countries that will remove barriers and open markets for U.S. firms abroad. IA also coordinates DOE's international energy, science and technology relations with other countries. IA activities support the following general performance goal.

General Performance Goal:

ER5-2 COOPERATING INTERNATIONALLY TO DEVELOP OPEN AND TRANSPARENT ENERGY MARKETS

Enhance energy security by increasing the capacity and diversity of international oil and gas producers. Promote open energy markets and increase the transparency of world oil markets. Promote deployment of clean and efficient energy systems. IA will work towards increasing U.S. energy-related business internationally by removing policy, legal and fiscal barriers for U.S. companies by: Implementing with other APEC members and the private sector initiatives to promote energy sector reform including natural gas and independent power production and reporting results to APEC ministers and economic leaders; Advancing energy activities in U.S.-China Forum on Environment and development, and the goals of the joint statement, the "Energy and Environment Cooperation Initiative"; Continuing to lead a regulatory reform initiative to promote economic growth through private investment in sustainable energy development and regional integration; Continuing to develop and sustain our African Energy Partnership, including with Angola, Nigeria and South Africa; Continuing to promote science and technology cooperation and economic growth through private investment in developing countries as per the President's Council on Science and Technology (PCAST) recommendations; Continuing to lead regulatory reform initiative under Binational Commission to promote adoption by Russian Government of transparent, fair, consistent regulations in the oil, gas and power sectors in order to attract investment; Continuing to lead Western Hemispheric process of developing a vision of and plans for region's energy infrastructure in the 21st century, emphasizing a government-business dialogue and partnership; Continuing coordination of the Russian-American Fuel Cell Consortium (RAFCO) which has as one of its primary goals, the opening up of the Russian market to U.S. manufactured fuel cells; Continuing DOE leadership in international energy initiatives instrumental in developing an effective legal and regulatory framework for private sector energy investment and policies to encourage diversification of fuel supplies.

Key Accomplishments for FY 2000 and FY 1999:

Office of International Affairs met all its performance targets for FY 1999 and FY 2000. Following are highlights of IA's accomplishments for FY 1999 and FY 2000:

- DOE continues to work with the new Russian leadership under the U.S.-Russia Joint Commission to obtain a reaffirmation of the production sharing agreement (PSA) legislation, to ensure the new tax code conforms with the PSA laws, and to encourage adoption of normative acts (implementing regulations) for the PSA legislation. DOE continues to urge that the Federal Energy Commission remain an effective, independent agency. In FY 2000, the Secretary held a meeting with the Energy Minister to discuss these and other issues.

- DOE chairs the Energy Working Group under the U.S.-Ukraine Bi-National Commission, whose goal is to work on a government to government basis urging the Government of Ukraine to develop laws and an environment conducive to western investment. In FY 2000, the Deputy Secretary participated in a meeting of the U.S.-Ukraine Bi-National Commission that took place in the U.S. in December. DOE chairs an interagency effort focused on Black Sea energy development and environmental protection .DOE sponsored a workshop in Odessa on regional oil spill response planning. In FY 2000, DOE held workshops in Georgia and Romania to further the work of this initiative.

- DOE signed an energy technology cooperative Memorandum of Understanding with the Kingdom of Saudi Arabia in FY 1999. In FY 2000, technical cooperation agreements were signed with the Egyptians and Israelis on solar power and fuel cells, and with the PNA on general energy cooperation. DOE is pursuing policies to encourage energy privatization and U.S. investment in energy projects. In FY 2000, DOE co-sponsored an electric power conference with the Secretary as the keynote speaker. DOE signed clean energy statements with Estonia, Latvia, and Lithuania. DOE signed a technical agreement with Estonia to cooperate on oil shale development.

- Eight projects were funded in FY 1999 under the Russian- American Fuel Cell Consortium on the design and development of advanced catalysts, electrodes, and membranes, advanced separator plates and high temperature sealants for fuel cells. One of its primary goals is to open the Russian market to U.S. manufactured fuel cells.

- DOE hosted Fourth APEC Energy Ministers Meeting in San Diego, May 12, 2000. Commitment of all 21 APEC members was obtained to an implementation strategy for initiatives and independent power production.

- The International Energy Agency met in Paris May 24-25, 1999 to celebrate its 25th anniversary and to discuss current issues at its bienniel Governing Board Meeting at the Ministerial Level. Ministers agreed that the IEA had fulfilled its original purpose of enhancing energy security in the context of the 1970s. Ministers had frank discussions of climate change issues and the challenge of meeting the Kyoto targets. The U.S. delegation was headed by U.S. DOE Deputy Secretary, EB Assistant Secretary, and U.S. Ambassador to the OECD.

- DOE and the State Development Planning Commission co-chair the Energy Policy Working Group under the U.S.-China Forum on Environment and Development: The Forum and its working groups are working on a wide range of cooperative programs in energy efficiency, including a pilot Motor Challenge program for China and a design study for an energy efficient building demonstration in Beijing; a clean energy program through the U.S. Eximbank; and renewable energy. Activities helped promote China's signing of a joint U.S.-China Statement on Cooperation on Environment and Development in May 2000.

- DOE is also pursuing regulatory reform efforts in Russia through the Russians Federal Energy Commission and in efforts aimed at facilitating economic growth in Africa by fostering trade and investment and encouraging regional market development. A cornerstone of the African Initiative was the U.S.-Africa Energy Ministers Conference, held in Tucson, Arizona on December 13-15, 1999.

Means and Strategies:

During FY2002, the Office of International Affairs, serving as the primary policy advisor to the Secretary and the Department on international energy policy matters will continue to focus on the following core mission areas: 1) oil market stability, 2) clean energy development, 3) regional integration, 4) energy sector reform, 5) increased U.S. private sector participation in international markets, and 6) increased leverage for DOE R&D funds through expanded international collaboration.

Collaboration Activities:

IA coordinates with a broad range of external agencies, congressional offices, business and non-governmental organizations via interagency and public fora.

External Factors Affecting Performance:

Industry-specific business conditions, Administration policies, congressional guidance and NGO issues and concerns affect the development and deployment of DOE's positions on varying energy policy issues.

Validation and Verification:

Data Sources:	Customer and internal staff feedback
Baselines:	Anticipated policy outcomes against which feedback is to be measured.
Frequency:	TBD based on level of effort and progress made.
Data Storage:	IA issues managers and senior management will develop and maintain the feedback data on our progress.
Verification:	Anticipate customer surveys and internal assessment of progress.

Planned Program Evaluation:

IA will engage in periodic assessments of analysis and advocacy via program reviews to ensure that international activities affecting the energy sector are consistent with national and international energy policies, as measured by enhanced U.S. energy, environmental and economic security.

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GPRA Program Activity: Office of Inspector General

President's Budget Program and Financing (P&F) Accounts and Program Activities	**Program Sub-Activities**	**DOE Office**	**Comparable Approp. ($M)**		**FY 2002 Request ($M)**
			FY 2000	FY2001	
270 Energy Supply					
Office of Inspector General	-	IG	30	31	31

Description of Office:

Major statutory responsibilities of the Office of Inspector General (OIG) under the Inspector General Act of 1978, as amended, are to detect and prevent fraud, waste, abuse, and violations of law and to promote economy, efficiency, and effectiveness in the operations of the Department of Energy (DOE), including the National Nuclear Security Administration (NNSA). In addition to the broad provisions of the Inspector General Act, Congress requested the OIG to assess the most significant management challenges facing the Department. In response, the OIG initiated an analysis and issued a special report that focused on those areas that warrant increased emphasis or appear to have reached a heightened level of urgency. The OIG determined that the most serious challenges facing the Department today can be categorized as follows:

- Effective Establishment of the NNSA;
- Contract Administration;
- Energy Supply/Demand Technology;
- Environmental Remediation (including radioactive waste storage);
- Human Capital;
- Information Technology;
- Infrastructure;
- Property Controls and Asset Inventories;
- Safety and Health; and
- Security

General Performance Goals:

CM5-1 PROMOTING THE EFFECTIVE, EFFICIENT, AND ECONOMICAL OPERATION OF THE DEPARTMENT OF ENERGY, INCLUDING NNSA, THROUGH AUDITS, INVESTIGATIONS, INSPECTIONS AND OTHER REVIEWS

Complete required financial audits by March 1 of each year. Address emerging issues by responding to Departmental priority requests, answering congressional inquiries, conducting joint reviews with other Federal agencies, testifying before Congress, and assisting the Justice Department in Qui Tam and other cases. Evaluate the results of the Department's use of performance measures to monitor programs and operations. Plan the OIG audit, investigation, and inspection workloads by focusing on the issues that are critical. IG has the lead responsibility for this goal. Specific measures and targets for FY 1999 - FY 2002 are listed in the table that follows.

Annual Performance Measures[1]:

FY 1999 Results	FY 2000 Results
• *Render, by designated due date, an opinion annually on the Department's consolidated financial statements, system of internal controls, and compliance with laws and regulations. (CM6-1)*[2] (MET GOAL)	• *Complete the required annual financial statement audits by designated due dates in the law. (CM6-1)* (MET GOAL)
• *Complete at least 60 percent of the audits planned for the year and replaced those audits not started with more significant audits which identify time-sensitive issues needing review. (CM6-1)* (MET GOAL)	• *Complete at least 60 percent of the audits planned for the year and replace those audits not started with more significant audits which identify time-sensitive issues needing review. (CM6-1)* (EXCEEDED GOAL)
	• *Initiate at least 80 percent of inspections planned for the year and replace those not started with inspections having greater potential impact. (CM6-1)* (MET GOAL)
• *Focus investigations on allegations of serious violations of Federal law by:* – *Obtaining judicial and/or administrative action on 30 percent of all cases in open status during the fiscal year;* – *Obtaining acceptance of 75 percent of the cases presented for prosecution. (CM6-1)* (MET GOAL)	• *Obtain judicial and/or administrative action on at least 35 percent of all cases investigated during the fiscal year. (CM6-1)* (EXCEEDED GOAL)
	• *Obtain at least 75 percent acceptance rate on criminal and civil cases formally presented for prosecutorial consideration. (CM6-1*) (BELOW EXPECTATION):
• *Plan and, on a timely basis, conduct reviews based on assessment of risk and/or benefit to key Department programs. (CM6-1)* (MET GOAL)	

Notes:

1. Only those performance measures for FY 1999 and FY 2000 are listed here that provide context for measures for FY 2001 or FY 2002. Further, only the assessment of their results, e.g. "MET GOAL" is noted here. Complete description of the results is in the Department's Performance and Accountability Report (DOE/CR-0071).

2. The performance goal linkages as noted at the end of each measure, e.g. (CM6-1) for FY 1999 and FY 2000 refer to the 1997 strategic plan.

FY 2001 Target (Revised Final)	FY 2002 Proposed Target
• *Complete the required annual financial statement audits by March 1 of each year designated due dates in the law. (CM5-1)*	• *Complete the required annual financial statement audits by March 1 of each year designated due dates in the law. (CM5-1)*
• ~~*Complete*~~ *Initiate at least 60 percent of the audits planned for the year and replace those audits not started with more significant audits which identify time-sensitive issues needing review. (CM5-1)*	• *Initiate at least 60 percent of the audits planned for the year and replace those audits not started with more significant audits which identify time-sensitive issues needing review. (CM5-1)*
• *Initiate at least ~~80~~ 70 percent of inspections planned for the year and replace those not started with inspections having greater potential impact. (CM5-1)*	• *Initiate at least 70 percent of inspections planned for the year and replace those not started with inspections having greater potential impact. (CM5-1)*
• *Obtain judicial and/or administrative action on at least 35 percent of all cases investigated during the fiscal year. (CM5-1)*	• *Obtain judicial and/or administrative action on at least 35 percent of all cases investigated during the fiscal year. (CM5-1)*
• *Obtain at least ~~75~~ 70 percent acceptance rate on criminal and civil cases formally presented for prosecutorial consideration. (CM5-1)*	• *Obtain at least 70 percent acceptance rate on criminal and civil cases formally presented for prosecutorial consideration. (CM5-1)*
• *Complete the milestones listed in the corrective action plan for the Management challenge of inadequate audit coverage. (CM5-1/FMFIA)*	• *Complete the milestones listed in the corrective action plan for the Management challenge of inadequate audit coverage. (CM5-1/FMFIA)*

Note: For FY 2001, three targets were changed based on results in FY 2000.

Means and Strategies:

The Office of Inspector General (IG) continues to focus its efforts on major issue areas the IG has identified as most susceptible to fraud, waste and abuse within the Department of Energy, including the National Nuclear Security Administration. The OIG annual assessment identified the following Department management challenges:

- Effective Establishment of the NNSA;
- Contract Administration;
- Energy Supply/Demand Technology;
- Environmental Remediation (including radioactive waste storage);
- Human Capital;
- Information Technology;
- Infrastructure;
- Property Controls and Asset Inventories;
- Safety and Health; and,
- Security

External Factors Affecting Performance:

A number of key external factors affect the achievement of OIG goals and objectives. These factors have significant impact on assigning workload, formulating budgets, assessing organizational structure, evaluating procedures and establishing priorities.

- Performing annual financial statement audits required by the Government Management Reform Act (GMRA) of 1994.

- Reviewing Department information security systems, as required by the Government Information Security Reform Act of 2001.

- Reviewing the Department's implementation of the Government Performance and Results Act of 1993.

- Reviewing employee whistle blower reprisal complaints made pursuant to Section 6006 of the Federal Acquisition Streamlining Act of 1994, and the Intelligence Community Whistleblower Act of 1998.

- Auditing the operation of the value-engineering program in the Department required by OMB Circular 131.

- Reporting to the Intelligence Oversight Board required by Executive Order 12863, "President's Foreign Intelligence Advisory Board," at least quarterly and "as necessary or appropriate," and performing reviews required by Executive Order 12333, "United States Intelligence Activities," to ensure the Department's intelligence activities are conducted in accordance with existing requirements.
- Responding to Departmental Priority Requests, which can be resource intensive.

- Answering congressional inquiries, which are often unanticipated, require immediate attention, and consume significant resources.

- Conducting joint reviews with other Federal agencies, the number of which are expected to increase in future years.

- Testifying at congressional hearings.

- Assisting the Justice Department in highly resource-intensive Qui Tam cases.

- Assisting the Department of Justice in prosecutorial decisions regarding acceptances/declinations and other judicial actions.

- Reviewing annually Departmental policies and procedures with respect to the export of sensitive U.S. military technologies and information to countries and entities of concern.

Validation and Verification:

Data Sources:	Semiannual Report to Congress, Inspector General Act of 1978, as amended, GMRA of 1994
Frequency:	Semiannually and Annually
Data Storage:	OIG Tracking System
Verification:	OIG and DOE Annual Performance Reports

Planned Program Evaluation:

- Organizational Self-Assessment Report
- OIG Semiannual Report to Congress
- DOE and OIG Annual Performance Reports

APPENDIX

Criteria for Performance Plan Performance Measures and Goals

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

PRESIDENTIAL	(1) a significant budgetary obligation, (2) White House interest has been demonstrated, or (3) there is Secretarial intent to raise to it to the Presidential level.
SPECIFIC	Plainly state precisely what will be done in this fiscal year.
QUANTIFIED	Clearly state the measurement and target level of performance. Naked percentages are too vague without specifying the base. Instead, state the from and to levels with an optional percentage.
MEANINGFUL	Each general performance goal must provide a context, and stand alone without knowledge of last year's Plan or our performance results. State why it will be done, e.g., the purpose or planned outcome. The "so as to ..." should be clear for each measure.
CHALLENGING	Performance levels should be set so as to have about an 80% confidence in meeting the target for the fiscal year. A higher confidence level is under committing and a lower confidence level is over committing.
CONCISE	Descriptions of general performance goals and measures should be short, direct, and to the point. A general performance goal description or statement of a measure should be limited to 5 lines (about 40 words). Explanations should not be included.
WRITTEN FOR TAXPAYERS	Performance measures should be written in common language, requiring only a newspaper article level knowledge of DOE and world events.
COMPREHENSIVE	The overall plan must reasonably represent the whole of the resources we are entrusted to apply to the Department's mission in this fiscal year.
AUDITABLE	Each performance measure should be based on factual information, so that the IG and/or GAO will be satisfied if they were to do an audit.

APPENDIX

DOE Office Designations

CI	Congressional & Intergovernmental Affairs
CN	Counterintelligence
CFO	Chief Financial Officer
DP	Defense Programs
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
IA	International Affairs
IG	Inspector General
IN	Intelligence
MA	Management and Administration
NA	Office of the Administrator, NNSA
NE	Nuclear Energy, Science & Technology
NN	Defense Nuclear Nonproliferation
NNSA	National Nuclear Security Administration
NR	Naval Reactors
OA	Independent Oversight and Performance Assurance
PA	Public Affairs
PO	Policy and International Affairs
PMAs	Power Marketing Administrations
RW	Civilian Radioactive Waste Management
S1	Secretary's Office
SC	Science
SO	Security and Emergency Operations
WT	Worker & Community Transition

APPENDIX

Department's Major Management Challenges

DOE Management Challenge	Related Business Line and Strategic Objectives	DOE Offices	Page Reference	Last Scheduled Corrective Action
1. Surplus Fissile Material[1, 2]	NS4-6	NN	123	2005
2. Environmental Compliance[1, 2]	EQ1	EM	no actions in FY2001 or FY2002	2006
3. Nuclear Waste Disposal[2]	EQ2-1	RW	169	2010
4. Safety and Health[2]	CM1-1 EQ1-1	EH EM	213 159	2005
5. Project Management[1]	CM3-1 NS2-1	CFO DP	223 95	2003
6. Security[1, 2]	NS6-1 NS6-2	CN SO	133 143	2001
7. Energy Markets[2]	ER2-1	PO	231	2001
8. Human Capital Management[1, 2]	CM2-1	MA CFO NN	219 223 113	2002
9. Managing Physical Assets[2]	NS3-1 SC4-1	DP SC	99 176	2001
10. Information Technology Management[2]	CM4-1	SO	143	2002
11. Contract Management[1, 2]	CM3-2	MA	219	2001
12. Inadequate Audit Coverage	CM5-1	IG	239	2002

Notes:

1. General Accounting Office included this challenge in its discussion of Major Management Challenges at the Department (GAO-01-246).
2. Also identified by the Inspector General as a Management Challenges at the Department (DOE/IG-0491).

APPENDIX

Crosswalk of General Performance Goals and GPRA Program Activities
Energy Resources Business Line:

General Performance Goals		DOE Office - GPRA Program Activities	Page
ER1-1	MAINTAINING AN EFFECTIVE STRATEGIC PETROLEUM RESERVE	FE - Petroleum Reserves	46
ER1-2	ENHANCING DOMESTIC OIL AND GAS SUPPLIES	FE - Domestic Oil and Gas Supply RD&D PO - Policy	31 231
ER1-3	ASSURING ADEQUATE LONG TERM SUPPLIES OF CLEAN LIQUID TRANSPORTATION FUELS	EE - Renewable & Distributed Energy FE - Clean Fuels RD&D EE - Transportation Sector	5 39 25
ER1-4	COORDINATING FEDERAL GOVERNMENT RESPONSES TO ENERGY EMERGENCIES	PO - Policy	231
ER2-1	ESTABLISHING A MORE OPEN, COMPETITIVE ELECTRIC SYSTEM	PO - Policy	231
ER2-2	DEVELOPING LARGE, HIGH EFFICIENCY, ADVANCED POWER SYSTEMS	NE - Nuclear Energy R&D FE - High Efficiency, No/Low Emissions Power Systems RD&D EE - Renewable & Distributed Energy	61 35 5
ER2-3	CONDUCTING R&D TO INCREASE THE USE OF RENEWABLE, DISTRIBUTED AND HYBRID ENERGY SYSTEMS	EE - Renewable & Distributed Energy EE - Energy Management (FEMP) EE - Transportation Sector	5 15 25
ER2-4	SUPPORTING RESEARCH TO IMPROVE EXISTING POWER PLANTS	NE - Nuclear Energy R&D	61
ER2-5	RELIABLY DELIVERING FEDERAL HYDROELECTRIC POWER	PMA - Power Marketing Administrations	82
ER2-6*	APPLYING DOE NUCLEAR EXPERTISE TO SUPPORT USE AND DEVELOPMENT OF MEDICAL ISOTOPES	NE - Nuclear Energy Science Activities	55
ER2-7*	APPLYING DOE NUCLEAR EXPERTISE TO SUPPORT EXPLORATION OF THE PLANETS	NE - Nuclear Energy Science Activities	55
ER2-8*	PRESERVING THE NATION'S SCIENCE AND ENGINEERING EDUCATIONAL INFRASTRUCTURE FOR ENERGY TECHNOLOGY	NE - Nuclear Energy Educational Infrastructure NE - Nuclear Energy R&D	51 61

* NE activities under objective ER2 were regrouped since the Department's Strategic Plan was published and as such do not map one for one with the strategies in the strategic plan.

Crosswalk of General Performance Goals and GPRA Program Activities
Energy Resources Business Line (continued):

General Performance Goals		DOE Office - GPRA Program Activities	Page
ER3-1	DESIGNING AND DELIVERING THE VEHICLES OF THE FUTURE	EE - Transportation Sector	25
ER3-2	IMPROVING THE ENERGY EFFICIENCY OF BUILDINGS	EE - Building Technology, State and Community Program EE - Energy Management (FEMP)	11 15
ER3-3	IMPROVING EFFICIENCY OF ENERGY INTENSIVE INDUSTRIES	EE - Industry Sector	19
ER3-4	ENSURING ENERGY-RELATED REGULATIONS AND POLICIES PRODUCE ECONOMIC, ENERGY AND ENVIRONMENTAL BENEFITS	PO - Policy	231
ER 4-1	ENSURING ENERGY-RELATED REGULATIONS AND POLICIES PRODUCE ECONOMIC, ENERGY AND ENVIRONMENTAL BENEFITS	PO - Policy	232
ER4-2	EXPANDING PUBLIC ACCESS TO ENERGY INFORMATION	EI - Energy Information Administration	73
ER5-1	COOPERATING INTERNATIONALLY TO REDUCE ENERGY RELATED ENVIRONMENTAL IMPACTS	PO - Policy EE - Renewable & Distributed Energy	232 6
ER5-2	COOPERATING INTERNATIONALLY TO DEVELOP OPEN AND TRANSPARENT ENERGY MARKETS	IA - International Affairs EE - Renewable & Distributed Energy	235 6

Crosswalk of General Performance Goals and GPRA Program Activities
National Nuclear Security Business Line:

General Performance Goals		DOE Office - GPRA Program Activities	Page
NS1-1	MAINTAINING STOCKPILE CONFIDENCE	DP - Defense Programs	92
NS2-1	CONDUCTING CAMPAIGNS	DP - Defense Programs	96
NS3-1	ENSURING ENTERPRISE VITALITY AND READINESS	DP - Defense Programs	100
NS3-2	MANAGING CONTRACTOR WORK FORCE RESTRUCTURING	WT - Worker and Community Transition	135
NS4-1	CONDUCTING NONPROLIFERATION AND VERIFICATION R&D	NN - Nonproliferation and Verification	103
NS4-2	IMPROVING INTERNATIONAL NUCLEAR SAFETY	NN - International Nuclear Safety	107
NS4-3	SUPPORTING ARMS CONTROL AND NONPROLIFERATION POLICIES	NN - Arms Control and Nonproliferation	111
NS4-4	STRENGTHENING RUSSIA'S MATERIALS PROTECTION, CONTROL, AND ACCOUNTING	NN - International Material Protection, Control and Accounting	115
NS4-5	ASSURING TRANSPARENCY IN THE CONVERSION OF RUSSIAN HIGHLY ENRICHED URANIUM (HEU)	NN - Highly Enriched Uranium Transparency Implementation	119
NS4-6	REDUCING INVENTORIES OF SURPLUS WEAPONS-USABLE FISSILE MATERIALS WORLDWIDE IN A SAFE, SECURE, TRANSPARENT AND IRREVERSIBLE MANNER	NN - Fissile Material Disposition	123
NS5-1	PROVIDING SPECIAL NUCLEAR POWER SYSTEMS FOR NATIONAL SECURITY	NR - Naval Reactors	127
NS6-1	PROVIDING INTELLIGENCE AND COUNTERINTELLIGENCE	IN - Intelligence CN - Counterintelligence	131
NS6-2	PROVIDING SECURITY AND EMERGENCY OPERATIONS	SO - Security and Emergency Operations	139
NS6-3	CONDUCTING INDEPENDENT OVERSIGHT AND PERFORMANCE ASSURANCE	OA - Independent Oversight & Performance Assurance	145

Crosswalk of General Performance Goals and GPRA Program Activities

Environmental Quality Business Line:

General Performance Goals		DOE Office - GPRA Program Activity	Page
EQ1-1	COMPLETING GEOGRAPHIC SITE CLEANUP	EM - Environmental Management	153
EQ1-2	DISPOSING OF WASTE GENERATED DURING PAST AND CURRENT DOE ACTIVITIES	EM - Environmental Management	154
EQ1-3	STABILIZING NUCLEAR MATERIAL AND SPENT NUCLEAR FUEL	EM - Environmental Management	155
EQ1-4	DEVELOPING AND DEPLOYING INNOVATIVE CLEANUP TECHNOLOGIES	EM - Environmental Management	156
EQ2-1	CONTINUING WITH YUCCA MOUNTAIN SITE CHARACTERIZATION	RW - Civilian Radioactive Waste Management	165
EQ3-1	DISPOSE OF THE DEPARTMENT'S DEPLETED URANIUM HEXAFLORIDE AND EXCESS NATURAL URANIUM INVENTORIES	EM - Uranium Programs	156
EQ3-2	MANAGE LEGACIES ASSOCIATED WITH CIVILIAN NUCLEAR POWER DEVELOPMENT ACTIVITIES	NE - Nuclear Energy Facilities and Infrastructure	67

Science Business Line:

General Performance Goals		DOE Office - GPRA Program Activities	Page
SC1-1	MAKING ADVANCES IN PHYSICAL SCIENCES IN QUEST FOR CLEAN, AFFORDABLE AND ABUNDANT ENERGY	SC - Biological and Environmental Research SC - Basic Energy Sciences SC - Advanced Scientific Computing Research SC - Fusion Energy Sciences	185 193 197 201
SC2-1	DEVELOPING SCIENCE FOUNDATIONS TO PROTECT OUR LIVING PLANET	SC - Biological and Environmental Research	185
SC3-1	ADVANCING OUR UNDERSTANDING OF THE NATURE OF MATTER AND ENERGY	SC - High Energy Physics & Nuclear Physics SC - Biological and Environmental Research SC - Basic Energy Sciences	177 185 193
SC4-1	PROVIDING EXTRAORDINARY SCIENTIFIC TOOLS, WORKFORCE, AND INFRASTRUCTURE	SC - High Energy Physics & Nuclear Physics SC - Biological and Environmental Research SC - Basic Energy Sciences SC - Advanced Scientific Computing Research SC - Fusion Energy Sciences	177 185 193 197 201

Crosswalk of General Performance Goals and GPRA Program Activities
Corporate Management Business Line:

General Performance Goals		DOE Office - GPRA Program Activities	Page
CM1-1	INSTITUTING A SOUND ES&H CULTURE	EH - Environmental Safety and Health ED - Economic Impact and Diversity	209 225
CM2-1	MANAGING HUMAN RESOURCES	MA - Management and Administration ED - Economic Impact and Diversity	217 225
CM3-1	MANAGING FINANCIAL RESOURCES AND PHYSICAL ASSETS	CFO - Chief Financial Officer ED - Economic Impact and Diversity PO - Policy	221 225 232
CM3-2	ENSURING PUBLIC CONFIDENCE IN THE DEPARTMENT'S CONTRACTUAL TRANSACTIONS	MA - Management and Administration	217
CM4-1	PROMOTING EFFECTIVE MANAGEMENT OF INFORMATION TECHNOLOGY RESOURCES IN THE DEPARTMENT	SO - Security And Emergency Operations	140
CM5-1	PROMOTING THE EFFECTIVE, EFFICIENT, AND ECONOMICAL OPERATION OF THE DEPARTMENT OF ENERGY THROUGH AUDITS, INVESTIGATIONS, INSPECTIONS AND OTHER REVIEWS	IG - Office of the Inspector General	239