Department of Energy
FY 2006 Congressional Budget Request

Strategic Highlights

FY 2006 – FY 2010

For

The Offices of Science and Environmental Management

February 2005

Office of Management, Budget and Evaluation/CFO

Table of Contents

Executive Summary…….…….. 2

Organization Plans

Office of Science (SC)……... 4
Strategic, General and Program Goals
Planning Profile
Decision Criteria
Program Objectives
External Factors

Office of Environmental Management (EM) ……...11
Strategic, General and Program Goals
Planning Profile
Decision Criteria
Program Objectives
External Factors

Appendix
Laboratory Plans ……..45

Department of Energy
Strategic Highlights
FY 2006–FY 2010

Executive Summary

The Department of Energy's (DOE's) Strategic Plan provides our mission and lays the foundation for the activities that should be done to accomplish that mission. It also identifies corresponding strategies to do this over the next 25 years. These ensure the strategic planning goals cascade into Departmental level planning documents which discuss the "how and when" things are to be done.

The Department has been at the forefront of all Cabinet agencies in making itself more effective, more efficient, more results oriented, and more accountable to the citizens who pay the taxes and benefit from the programs and services government provides. Using the President's Management Agenda as the framework, DOE has organized its efforts and focused on the bottom line in delivering results to the taxpayer.

To continue our progress toward greater accountability and delivering on our promises, the Department is launching a five-year planning initiative. We begin by submitting five-year plans for the National Nuclear Security Administration (NNSA), the Office of Science and the Office of Environmental Management. The NNSA has already developed a five-year planning process and documented this in their Future-Years Nuclear Security Program (FYNSP). This was initially incorporated into the DOE FY 2005 annual performance budget and is included in the FY 2006 performance budget request.

This document, the Department's FY 2006-2010 Strategic Highlights for the Offices of Science and Environmental Management, provides a five-year future view for these offices. This submission contains projections for:

- Out-year funding
- Associated activities by site or program
- Linkage to strategic and program goals
- Explanation of tradeoffs
- Associated external factors

For ease of comparative review of FY 2006 - 2010 planning at our multi-program national laboratories, we have incorporated a discussion of NNSA, Science and Environmental Management laboratories as an appendix to this document. This Strategic Highlights document is a complement to the FY 2006 President's Budget submission to Congress.

In FY 2007, we will expand this approach to include the balance of the Department's activities. The plans, along with the related processes required to develop them, are designed to: promote additional discipline to the process of making budgetary decisions by considering them in a multi-year context; demonstrate how limited resources are prioritized and allocated against competing priorities; and improve departmental performance by increasing focus on the mission critical activities required to meet our strategic goals and objectives. This approach is supported by language in the Conference Report to Accompany H.R. 4818 - Consolidated Appropriations Act, 2005.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

In developing this document, the Department was mindful of existing fiscal realities. The President's FY 2006 Budget proposes discretionary policy funding level totals for FY 2007 through FY 2010 for categories of spending in the Department of Defense, Homeland Security, Non-Defense/Non-Homeland Security, and for Total Discretionary spending. Outyear discretionary estimates for most accounts in the Budget, including estimates for the DOE's Office of Science, are generated by formula and do not reflect program policy decisions. Detailed recommendations for FY 2007 and subsequent years will be developed in the preparation of the FY 2007 and subsequent budgets. Estimates for FY 2007 through FY 2010 for the Environmental Management program reflect program policy decisions to continue implementation of reforms that will accelerate the reduction of risk to the public and the environment and reduce the estimated cost to clean up these sites.

We believe this document effectively starts a process that will enhance the Department's future activities in delivering results that directly benefit the taxpayer. It will shape our decision making by ensuring, in the context of fiscal realities, the Department can deliver these results in alignment with our Strategic Plan. We have much more to do, but we are moving forward in the right direction as we continue to fulfill our responsibility to the Nation.

Office of Science

The mission of the Office of Science (SC) is to deliver the remarkable discoveries and scientific tools that transform our understanding of matter and energy and help solve our Nation's energy and national security challenges.

Strategic, General and Program Goals

The Department's Strategic Plan identifies four strategic goals (defense, energy, science, and the environment) plus seven subordinate general goals of which the Office of Science supports the following:

Provide world-class scientific research capacity needed to: ensure the success of Department missions in national and energy security; advance the frontiers of knowledge in physical sciences and areas of biological, medical, environmental, and computational sciences; and provide world-class research facilities for the Nation's science enterprise.

To that end, the Office of Science supports six efforts:

> To explore the Fundamental Interactions of Energy, Matter, Time, and Space—Understand the unification of fundamental particles and forces and the mysterious forms of unseen energy and matter that dominate the universe, search for possible new dimensions of space, and investigate the nature of time itself.
>
> To explore Nuclear Matter, from Quarks to Stars—Understand the evolution and structure of nuclear matter, from the smallest building blocks, quarks, and gluons; to the elements in the Universe created by stars; to unique isotopes created in the laboratory that exist at the limits of stability and possess radically different properties from known matter.
>
> To Harness the Power of Our Living World—Provide the biological and environmental discoveries necessary to clean and protect our environment, offer new energy alternatives, and fundamentally alter the future of medical care and human health.
>
> To Advance the Basic Science for Energy Independence—Provide the scientific knowledge and tools to achieve energy independence, securing U.S. leadership and essential breakthroughs in basic energy sciences.
>
> To Deliver Computing for Accelerated Progress in Science—Deliver forefront computational and networking capabilities to scientists nationwide that enable them to extend the frontiers of science, answering critical questions that range from the function of living cells to the power of fusion energy.

To Bring the Power of the Stars to Earth—Answer the key scientific questions and overcome enormous technical challenges to harness the power that fuels a star.

The High Energy Physics (HEP) program advances understanding of dark energy and dark matter, the lack of symmetry in the current universe, the basic constituents of matter, and the possible existence of other dimensions, collectively revealing key secrets of the universe. The HEP expands the energy frontier with particle accelerators to study fundamental interactions at the highest possible energies, which may reveal new particles, new forces, or undiscovered dimensions of space and time; explain the origin of mass; and illuminate the pathway to the underlying simplicity of the universe. At the same time, the HEP program sheds new light on other mysteries of the cosmos, uncovering what holds galaxies together and what is pushing the universe apart; understanding why there is any matter in the universe at all; and exposing how the tiniest constituents of the universe may have the largest role in shaping its birth, growth, and ultimate fate.

The Nuclear Physics (NP) program builds and operates world-leading scientific facilities and state-of-the-art instrumentation to study the evolution and structure of nuclear matter, from the smallest building blocks, quarks and gluons, to the stable elements in the Universe created by stars; to understand how the quarks and gluon combine to form the nucleons (proton and neutron), what are the properties and behavior of nuclear matter under extreme conditions of temperature and pressure, and what are the properties and reaction rates for atomic nuclei up to their limits of stability. Results and insight from these studies are relevant to understanding how the universe evolved in it earliest moments, how the chemical elements were formed, and how the properties of one of nature's basic constituents, the neutrino, influences astrophysics phenomena such as supernovae. Scientific discoveries at the frontiers of nuclear physics further the nation's energy related research capacity, in turn contributing to the Nation's security, economic growth and opportunities, and improved quality of life.

The Biological and Environmental Research (BER) program advances energy-related biological and environmental research in genomics and our understanding of complete biological systems, such as microbes that produce hydrogen; by developing models to predict climate over decades to centuries; by developing science-based methods for cleaning up environmental contaminants; by providing regulators with a stronger scientific basis for developing future radiation protection standards; and by developing new diagnostic and therapeutic tools, technology for disease diagnosis and treatment, non-invasive medical imaging, and biomedical engineering such as an artificial retina that is restoring sight to the blind.

The Basic Energy Sciences (BES) program contributes to DOE's Strategic Plan by advancing nanoscale science through atomic- and molecular-level studies in materials sciences and engineering, chemistry, geosciences, and energy biosciences. BES also provides the Nation's researchers with world-class research facilities, including reactor- and accelerator-based neutron sources, light sources including the X-ray free electron laser, nanoscale science research centers, and micro-characterization centers. These facilities provide outstanding capabilities for imaging and characterizing materials of all kinds from metals, alloys, and ceramics to fragile biological samples. The next steps in the characterization and the ultimate control of materials properties and chemical reactivity are to improve spatial resolution of

imaging techniques; to enable a wide variety of samples, sample sizes, and sample environments to be used in imaging experiments; and to make measurements on very short time scales, comparable to the time of a chemical reaction or the formation of a chemical bond. With these tools, we will be able to understand how the composition of materials affects their properties, to watch proteins fold, to see chemical reactions, and to understand and observe the nature of the chemical bond. Theory, modeling, and computer simulations will also play a major role in achieving these outcomes and will be a companion to experimental work. BES also supports basic research aimed at advancing hydrogen production, storage, and use for the coming hydrogen economy.

The Advanced Scientific Computing Research (ASCR) program contributes to DOE's Strategic Plan by: significantly advancing scientific simulation and computation; applying new approaches, algorithms, and software and hardware combinations to address the critical science challenges of the future; providing access to world-class scientific computation and networking facilities to the Nation's scientific community to support advancements in practically every field of science and industry. ASCR will continue to advance the transformation of scientific simulation and computation into the third pillar of scientific discovery, after experiment and theory, enabling scientists to look inside an atom or across a galaxy; and inside a chemical reaction that takes a millionth of a billionth of a second or across a climate change process that lasts for a thousand years. In addition, ASCR will shrink the distance between scientists and the resources they need (experiments, data, and other scientists) and accelerate scientific discovery by making interactions happen on a much shorter timescale.

The Fusion Energy Sciences (FES) program advances the theoretical and experimental understanding of plasma and fusion science, including a close collaboration with international partners in identifying and exploring plasma and fusion physics issues through specialized facilities. This includes: 1) exploring basic issues in plasma science; 2) developing the scientific basis and computational tools to predict the behavior of magnetically confined plasmas; 3) using the advances in tokamak research to enable the initiation of the burning plasma physics phase of the FES program; 4) exploring innovative confinement options that offer the potential of more attractive fusion energy sources in the long term; 5) focusing on the scientific issues of nonneutral plasma physics and High Energy Density Physics (HEDP); and 6) developing the cutting edge technologies that enable fusion facilities to achieve goals. FES also contributes through participation in International Thermonuclear Experimental Reactor (ITER), an experiment to study and demonstrate the sustained burning of fusion fuel. This proposed international collaboration will provide an unparalleled scientific research opportunity with a goal of demonstrating the scientific and technical feasibility of fusion power. ITER will advance progress towards developing fusion's potential as a commercially viable and clean source of energy near the middle of the century.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

Planning Profile

*Office of Science**

	B/A (dollars in thousands)					
	FY 2005 Approp.	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Total, Science	3,599,546	3,462,718	3,388,000	3,394,000	3,387,000	3,336,000

*The FY 2007 – 2010 funding estimates are generated by formula and do not reflect program policy decisions. Detailed recommendations for FY 2007 and subsequent years will be developed in the preparation of the FY 2007 and subsequent budgets.

Decision Criteria

The Office of Science uses peer review and federal advisory committees to develop general directions for research investments, to identify priorities, and to determine which scientific proposals merit support. The Office of Science also uses six federal advisory committees to provide scientific guidance, and as an important means of communicating with, and building consensus within, the scientific community. In FY 2004, the Office of Science published two planning documents – *The Office of Science Strategic Plan* and *Facilities for the Future of Science: A Twenty-Year Outlook* – that describe the general directions and initiatives that the office will pursue over the next 20 years.

Program Objectives

During the planning period, the Office of Science will focus its efforts on maximizing scientific opportunity, positioning the basic research program to be ready for the next decade of discovery. Important areas of research will continue, and forefront facilities built; but not everything in the current research portfolio can be maintained. Difficult decisions will have to be made potentially including cuts to core research activities, facility closures, and the loss of research personnel. While these cuts are regrettable, they allow continued vitality of the Office of Science research program.

The Office of Science will continue to seek the advice of the scientific community to identify the most promising scientific opportunities. Connections with the applied programs of the Department will be maintained to ensure that critical National challenges are addressed. Performance, Safety and Security will be developed to the highest industrial standards.

The following are highlights of the scientific priorities for the Office of Science in the planning period:

Fiscal Years 2006 - 2010

- The Office of Science is actively leading the U.S. effort to provide manpower and component (in-kind) contributions in support of ITER—an international project to build and operate the first fusion science facility capable of producing a net energy-generating, sustained burning

plasma—will be a top priority throughout and beyond the planning horizon. The mission for ITER is to demonstrate the scientific and technological feasibility of fusion energy. In addition, the Fusion Simulation Project will be supported to develop the predictive capability for fusion burning plasmas.

- The high-risk, high-payoff basic research component of the Hydrogen Fuel Initiative will continue to receive strong support from the Office of Science throughout the planning horizon. The basic research efforts will target critical scientific and technical hurdles in hydrogen production, storage, and distribution aimed at the long-term viability of a future hydrogen economy.
- The Office of Science will continue to be a pivotal partner in the interagency Climate Change Science Program (CCSP) with a focus on the principal uncertainties of the causes and effects of climate change including the role of clouds, prediction models, the global carbon cycle, and basic research for biological sequestration of carbon in the biosphere.
- The National Leadership Computing Facility will be supported to provide high performance sustained capability to researchers on a peer-reviewed basis. This effort, as well as the enhancement of National Energy Research Scientific Computing Center (NERSC), will play a critical role in maintaining the Office of Science's role in providing cutting-edge supercomputing resources that may lead to solutions of important scientific problems. As computation continues to expand its role as the third pillar for scientific discovery, these efforts will advance research in a wide array of scientific fields.
- A critical component of the Office of Science's contribution to the National Nanotechnology Initiative will be finished in FY 2008 as the last of five planned Nanoscale Science Research Centers (NSRC) is completed and operations of all five NSRCs are supported through the planning horizon. NSRCs are user facilities for the synthesis, processing, fabrication, and analysis of materials at the nanoscale. They are designed to contribute to the nanoscale revolution by collocating multiple research disciplines, multiple techniques, and a wide variety of state-of-the-art instrumentation.
- When completed and operations begin in FY 2006, the Spallation Neutron Source (SNS) will be significantly more powerful (by about a factor of 10) than the best spallation neutron source now in existence in England. The SNS will be used by 1,000-2,000 scientists and engineers annually for research in broad classes of scientific experiments that cannot be done today.
- The Linac Coherent Light Source (LCLS) Project will provide laser-like radiation in the x-ray region of the spectrum that is 10 billion times greater in peak power and peak brightness than any existing coherent x-ray light source, with pulse lengths of femtoseconds—the timescale of atomic motion. Beginning in FY 2006, the Office of Science will support construction of the LCLS, including the necessary Stanford Linear Accelerator Center (SLAC) infrastructure, with operations planned to begin in FY 2009.
- The Genomics: Genomes to Life (GTL) program employs a systems approach to biology at the interface of the biological, physical, and computational sciences to address DOE's energy,

environment, and national security mission needs—will continue to receive strong support. New capabilities will be developed in the Genomics: GTL program for understanding the structure, function, and regulation of multi-protein complexes for DOE-relevant organisms, and of complex, DOE-relevant microbial communities.

- The Office of Science will continue to support research and facilities that help answer the key scientific questions of high energy physics as outlined in the report "The Quantum Universe." Because of its broad relevance, and its unique potential for new discoveries, high priority is given to the planned operations, enhancement, and infrastructure for the Tevatron program at the Fermi National Accelerator, and the B Factory program at the SLAC. The first full year of the Neutrinos at the Main Injector (NuMI)/Main Injector Neutrino Oscillation Search (MINOS) (NuMI-MINOS) neutrino experiment will get underway at Fermilab in FY 2006, and will be the most precise neutrino oscillation experiment in the world today. First particle collisions at the Large Hadron Collider (LHC) are scheduled to begin in FY 2007, with the US as a major participant in the design, fabrication, and operation of the two large detectors, A Toroidal LHC Apparatus (ATLAS) and Compact Muon Solenoid (CMS). New research and development (R&D) activities focused on the most promising new experimental opportunities for the study of neutrinos, dark matter, and dark energy will be supported.
- The Office of Science will support a nuclear physics program with world-leading roles to better understand: the structure of the nucleon; the properties of hot, dense nuclear matter; the structure of nucleonic matter and possible new physics beyond the Standard Model; and the fundamental theories, models and computational techniques that address these scientific topics.

External Key Factors

The Office of Science programs are closely coordinated with the activities of other federal agencies (e.g., National Science Foundation, National Aeronautics and Space Administration, National Institute of Standards and Technology, U.S. Department of Agriculture, Department of Interior, and National Institutes of Health). Office of Science programs also promote 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, environmental remediation, national security, and future energy sources.

Many of the basic research programs of the Office of Science are closely coordinated with activities in the other federal science agencies. This is particularly true in such areas as:

- High energy physics
- Nuclear physics
- Fusion
- Astro-particle physics
- High energy density physics

- Advanced scientific computing
- Climate change
- Genomics
- Biomedical engineering
- Materials
- Chemical sciences
- Geosciences
- Bioremediation

In addition, an increasing number of scientific programs (e.g. ITER, Large Hadron Collider, climate change, and the Human Genome Project) are conducted in concert with international organizations. All of the large scale Office of Science facilities have international researchers among their peer reviewed users.

External factors that affect the programs and performance include:

1. evolving scientific opportunities that sometimes revolutionizes disciplines;
2. results of external program reviews and international benchmarking activities of entire fields or subfields, such as those performed by the National Academy of Sciences;
3. strategic and programmatic decisions made by other (non-DOE) Federal agencies and by international entities; and
4. evolution of commercial markets (e.g. high performance computing and networking hardware and software).

Office of Environmental Management

The mission of the Office of Environmental Management (EM) is to clean up contaminated sites and dispose of radioactive waste left behind as a byproduct of nuclear weapons production, nuclear powered naval vessels and commercial nuclear energy production.

Overview

Fifty years of nuclear weapons production and energy research generated millions of gallons of radioactive waste, thousands of tons of spent nuclear fuel and excess nuclear materials, and significant quantities of contaminated soil and water. The EM program was established in 1989 to cleanup the legacy waste from these operations and dispose of it in a manner protective of the environment, the workers, and the public.

Over the last four years, the program delivered significant risk reduction and cleanup results while ensuring the cleanup is safe for the workers, protective of the environment and respectful of the taxpayer. The program, once focused on managing risk, is demonstrating the success in reducing risk through our focus on safety, meeting commitments, and delivering results. These results are providing important and valuable benefits to the public, our communities, and for the generations that follow.

In FY 2001 EM was projecting its mission completion date to be 2070. The current goal is to complete the EM cleanup program no later than 2035, an acceleration of 35 years.

Major FY 2006 Transfers and Completions

In FY 2006, EM proposes to transfer responsibility for the Laboratory for Energy Related Health Effects (LEHR) to the Office of Legacy Management for long-term response.

In addition, EM will transfer environmental scope, funding, and associated Federal personnel beginning in FY 2006 for the Pantex Plant, Sandia National Laboratory, Lawrence Livermore National Laboratory (Main Site and Site 300), Nevada Test Site, Kansas City Plant, and the Separations Process Research Unit to the National Nuclear Security Administration (NNSA). The environmental transfer activities include legacy waste treatment, storage, and disposal. Also included is environmental remediation for sites where NNSA will have continuing operations, as well as newly-generated waste at the Lawrence Livermore National Laboratory and the Oak Ridge Y-12 National Security Complex. Responsibility for newly-generated waste at other NNSA sites was transferred by prior agreements. In addition, the realignment includes the waste disposal facilities at the Nevada Test Site.

Additionally, in 2006, the following seven geographic sites are scheduled to be completed, bringing the total number of completed sites to 86 out of 107[1].

1. Rocky Flats Environmental Technology Site in Colorado;
2. Miamisburg Environmental Project in Ohio;
3. Fernald Environmental Project in Ohio;
4. Lawrence Berkeley National Laboratory in California
5. Stanford Linear Accelerator Center in California;
6. Ashtabula Environmental Management Project in Ohio; and
7. Columbus Environmental Management Project – West Jefferson in Ohio.

Complementing these EM site cleanup completions and closures, the following sites, whose cleanup was previously funded by EM, will complete cleanup in FY 2006 under the management of the NNSA.

1. Kansas City Plant in Missouri;
2. Lawrence Livermore National Laboratory – Main Site in California; and
3. Sandia National Laboratory in New Mexico.

Strategic, General and Program Goals

The Department's Strategic Plan identifies four strategic goals (defense, energy, science, and the environment) plus seven subordinate general goals. The EM program supports the following:

Environmental Strategic Goal: To protect the environment by providing a responsible resolution to the environmental legacy of the Cold War and by providing for the permanent disposal of high-level radioactive waste.

Environmental Management: Accelerate cleanup of nuclear weapons manufacturing and testing sites, completing cleanup of 108 contaminated sites by 2025.

[1] As noted in the text, in FY 2006, environmental cleanup responsibility for the following seven sites is proposed to be transferred from the Office of Environmental Management (EM) to the National Nuclear Security Administration (NNSA): Pantex Plant, Sandia National Laboratory, Lawrence Livermore National Laboratory (Main Site and Site 300), Nevada Test Site, Kansas City Plant, and the Separations Process Research Unit. As a result of the proposed transfers, the number of EM sites projected to be completed in 2006 has been revised from 10 to 7 [Sandia National Laboratory, Lawrence Livermore National Laboratory (Main Site), and the Kansas City Plant are scheduled to be completed in 2006]; the number of sites for which EM has cleanup responsibility has been reduced from 114 to 107; and the number of sites to be completed by the end of 2006 is now projected to be 86 (this number includes the Salmon Site, which was not completed as targeted in FY 2003 and is projected to be completed in FY 2005) versus 89

These goals are supported by the Office of Environmental Management by:

Targeting 86 geographic sites to be cleaned up by the end of FY 2006 and 95 geographic sites to be cleaned up by the end of FY 2012[2].

With the proposed transfer of seven EM sites to NNSA in FY 2006, the number of sites EM is responsible for closing by 2025 becomes 102 rather than 108. Six of the seven sites to be transferred to NNSA are scheduled to be completed by 2025. Only the Nevada Test Site will remain. Together, EM and NNSA support this goal in the Strategic Plan.

Note:

In pursuing its mission of accelerated risk reduction and cleanup, the program also maintains the necessary infrastructure at EM sites to the extent that infrastructure is needed to perform cleanup operations and activities.

[2] As a result of the seven sites proposed for transfer from EM to NNSA, 89 has been revised to 86 and 100 has been revised to 95.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

Planning Profile (*)
(thousands of dollars)

	FY 2005 Comparable Appropriation	FY 2006 Cong Request	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate
Defense Site Acceleration Completion						
2006 Accelerated Completions	1,209,844	1,016,508	293,083	-	-	-
2012 Accelerated Completions	2,192,913	1,943,139	2,089,685	1,726,542	1,578,236	1,243,692
2035 Accelerated Completions	2,013,018	1,915,454	2,011,221	2,059,049	2,281,408	2,343,997
Safeguards and Security	262,942	287,223	277,997	240,933	241,275	175,478
Technology Development and Deployment	59,726	21,389	60,161	58,958	57,779	57,779
	5,738,443	5,183,713	4,732,147	4,085,482	4,158,698	3,820,946
Defense Environmental Services						
Community and Regulatory Support	54,324	62,032	57,275	57,511	59,124	60,008
Federal Contribution to the UE D&D Fund	459,296	451,000	452,000	-	-	-
Non-Closure Environmental Activities	101,250	87,368	219,317	174,461	156,931	208,213
Program Direction	250,834	230,931	237,868	223,510	227,483	152,711
	865,704	831,331	966,460	455,482	443,538	420,932
Non-Defense Site Acceleration Completion						
2006 Accelerated Completions	36,687	14,954	7,270	-	-	-
2012 Accelerated Completions	112,471	128,950	144,602	111,041	51,057	15,117
2035 Accelerated Completions	8,158	28,496	28,802	28,802	33,878	42,552
	157,316	172,400	180,674	139,843	84,935	57,669
Non-Defense Environmental Services						
Community and Regulatory Support	89	90	90	90	48	48
Environmental Cleanup Projects	45,715	46,113	46,140	46,118	46,124	46,156
Non-Closure Environmental Activities	243,162	131,331	175,287	142,825	136,657	72,249
	288,966	177,534	221,517	189,033	182,829	118,453
Uranium Enrichment Decontamination and Decommissioning Fund						
	495,015	591,498	469,202	439,000	439,000	469,000
Subtotal, Environmental Management	7,545,444	6,956,476	6,570,000	5,309,000	5,309,000	4,887,000
Offsets	(491,804)	(451,000)	(452,000)	-	-	-
Total, Environmental Management	**7,053,640**	**6,505,476**	**6,118,000**	**5,309,000**	**5,309,000**	**4,887,000**

* Basis for Outyear Discretionary Estimates – Funding levels are planned resources. Detailed recommendations for FY 2007 and subsequent years will be developed in the preparation of FY 2007 and subsequent budgets.

Decision Criteria

In January 2001, a *Top-to-Bottom Review* of the EM program was performed. The Review was completed in February 2002. The primary finding of the report was that the EM program was focused on risk management rather than risk reduction. The report recommended transforming the EM program to focus on accelerating risk reduction and cleanup.

In June 2004, the Office of Environmental Management issued *Closure Planning Guidance* to safely complete cleanup of the EM program by 2035 while fully protecting the environment, at a total project cost of no more than $142 billion (FY 2003 constant dollars). It establishes clear cleanup objectives, goals, and performance expectations for each organizational element within Environmental Management. It also documents and integrates corporate reforms undertaken since the publication of the *Top-to-Bottom Review*. All objectives, goals, and performance expectations are defined and measurable so that Environmental Management is accountable for completing cleanup.

The *Closure Planning Guidance* serves as a guide for the 5-year period and will provide consistency as well as linkage among the report of the *Top-to-Bottom Review* team, the Integrated Planning, Accountability, and Budgeting System – Information System (IPABS-IS), and the program's reports to Congress, as well as the Department of Energy's strategic plan. The document contains all the necessary strategy and performance elements needed to carry out the cleanup program within the funding targets provided to each site. Accordingly, the data in the *Closure Planning Guidance* is subject to configuration control under the Environmental Management Configuration Control Board (CCB), and sites are required to report their progress annually in terms of variance from this plan.

In addition, other EM program elements and documents that are defined as essential for monitoring the scope, schedule, and cost of the EM program at the Headquarters level are managed and controlled through the CCB. Essential elements under configuration control include site baselines, performance metrics (e.g., number of transuranic (TRU) waste shipments to the Waste Isolation Pilot Plant (WIPP)), performance incentives and life-cycle costs. Proposals to change an element under configuration control must be submitted to the CCB. Only after a proposal has been approved by the CCB will a change for a controlled element become effective.

Through implementation of this management system EM assured that site end states, performance measures and performance objectives/incentives are aligned and reflect the expectations and outcomes that are critical to the to the successful accomplishment of the EM mission. Through strict configuration control, EM is able to make corporate decisions that will keep the program on track; ensuring that cost, scope and project schedules are managed. When considering a proposed change, the board considers the benefits to the EM program that would result from such a change, the impact of the change on the site's accelerated cleanup strategy, and the effect of the change on EM's overall life-cycle cost.

Program Objectives

Current and planned accomplishments listed below may be impacted by fluctuating requirements such as contractor pension plan contributions that are affected by uncontrollable economic factors. Planned accomplishments also assume that sufficient out-year funding will be made available to meet these program requirements.

Argonne National Laboratory East (ANL-E)

Argonne National Laboratory East is a DOE Office of Science research and development laboratory with a broad program of research in the basic energy and related sciences (such as physical, chemical, material, computer, biomedical and environmental sciences) including operation of several large scientific user facilities. The laboratory is located about 27 miles southwest of downtown Chicago.

Contamination of soil and groundwater occurred as a result of accidental spills, past materials management practices, and former waste disposal practices. Contaminants of concern for soil and groundwater include volatile organic compounds, semi-volatile organic compounds, metals, polychlorinated biphenyl compounds, and a variety of radioisotopes. A number of buildings and research reactors were contaminated with low levels of radioactive materials as a result of normal, past operations.

Corrective actions to address contaminated soils and groundwater were conducted under the site Resource Conservation and Recovery Act permit. All corrective actions were completed at the end of FY 2003, with the exception of such ongoing activities as operation and maintenance of groundwater pumping systems, routine environmental monitoring, and periodic inspection of engineered barriers. At the end of FY 2005, eleven facilities will have been decontaminated and decommissioned, and two facilities will be awaiting cleanup. There are also approximately 50 drums of remote-handled transuranic (RH TRU) wastes to be disposed at WIPP prior to geographic site completion of the Argonne National Laboratory East site.

Current and Planned Argonne National Laboratory-East Accomplishments

Fiscal Year 2006
- Continue ongoing operations, maintenance and monitoring of implemented soil and groundwater remedies
- Complete decontamination and decommissioning (D&D) of the Zero Power Reactor

Fiscal Year 2007
- Initiate D&D of Building 301
- Continue ongoing operations, maintenance and monitoring of implemented soil and groundwater remedies
- Offsite shipment/disposal of RH TRU wastes

Fiscal Year 2008
- Continue D&D of Building 301
- Continue ongoing operations, maintenance and monitoring of implemented soil and groundwater remedies

Fiscal Year 2009
- Complete D&D of Bldg. 301
- EM mission completed
- Transition long-term stewardship activities to the Office of Science

Fiscal Year 2010
- EM activities at this location are scheduled for completion in FY 2009

Brookhaven National Laboratory (BNL)

The Brookhaven National Laboratory site is an Office of Science multi-purpose research and development laboratory located in central Suffolk County on Long Island, about 60 miles east of New York City.

Soil, groundwater, and surface water sediment were contaminated from past operations, resulting in the site being placed on the U.S. Environmental Protection Agency's (EPA's) National Priorities (Superfund) List in 1989. The EM mission at Brookhaven National Laboratory addresses the accelerated cleanup of these contaminated areas. The EM mission also includes the decontamination and decommissioning of several surplus nuclear reactor and non-reactor facilities, and the disposal of legacy waste.

Current and Planned Brookhaven National Laboratory Accomplishments

Fiscal Year 2006
- Initiate post-completion activities including institutional controls, long-term groundwater response actions, environmental monitoring and other stewardship activities

Fiscal Year 2007
- Remove Brookhaven Graphite Research Reactor (BGRR) graphite pile
- Remove High-Flux Beam Reactor (HFBR) reactor vessel

Fiscal Year 2008
- Complete BGRR D&D

Fiscal Year 2009
- Complete HFBR D&D
- EM cleanup mission completed
- Transition long term stewardship activities to the Office of Science

Fiscal Year 2010
- EM activities at this location are scheduled for completion in FY 2009

Carlsbad Field Office

The Waste Isolation Pilot Plant (WIPP) is comprised of surface support buildings, a waste-handling building, four shafts, and the mined underground operations area. The facility is designed for deep geological disposal of defense-generated transuranic waste resulting from nuclear weapons production, dismantlement, and site cleanup. The repository is located in southeastern New Mexico near Carlsbad, 2,150 feet (655 meters) underground in bedded salt. The bedded salt where transuranic waste is being disposed has been stable for over 225 million years and, through extensive computer modeling and experiments, the DOE has successfully demonstrated to the Environmental Protection Agency that the salt will remain stable for at least the next 10,000 years. On March 26, 1999, WIPP received its first shipment of non-mixed contact-handled transuranic waste from the Los Alamos National Laboratory.

The National Transuranic Waste (TRU) Program, implemented through the Carlsbad Field Office, is engaged in a comprehensive approach to accelerate cleanup of TRU waste across the DOE complex by:

- Implementing activities that reduce overall risk by removing the TRU waste from Small Quantity Sites (SQS), in some cases by consolidation and characterization of SQS waste at large quantity sites before disposal at WIPP
- Reducing risk by continuing to dispose of legacy TRU waste
- Removing barriers that impede waste disposal in order to increase the rate and reduce the cost of waste disposal at WIPP
- Implementing strategic initiatives that focus on meeting compliance orders and closure agreements as well as accelerated risk reduction, and streamlined operations

Current and Planned Carlsbad Field Office Accomplishments

Fiscal Year 2006
- Start Oak Ridge National Laboratory (ORNL) CH shipments to WIPP
- Dispose of approximately 10,000 cubic meters of TRU waste received in approximately 1,300 shipments
- Start Remote Handled (RH) waste shipments to WIPP

Fiscal Year 2007
- Dispose of approximately 8,700 cubic meters of TRU waste received in approximately 1,200 shipments
- Make 1,188 shipments of TRU waste to WIPP

Fiscal Year 2008

- First TRUPACT-III unit available
- Dispose of approximately 6,600 cubic meters of TRU waste received in approximately 1,100 shipments

Fiscal Year 2009

- Dispose of approximately 7,300 cubic meters of TRU waste received in approximately 1,300 shipments

Fiscal Year 2010

- Dispose of approximately 8,000 cubic meters of TRU waste received in 1,400 shipments

Idaho National Laboratory (INL)

The Idaho National Laboratory (INL), established as the National Reactor Testing Station in 1949, occupies 890 square miles in the Snake River Plain of Southeastern Idaho. INL has constructed and operated 52 reactors over the years. The laboratory has nine primary facilities as well as administrative, engineering, and research laboratories in Idaho Falls, approximately 50 miles east of the site. Other activities at the laboratory over the last five decades include nuclear technology research, defense programs, and engineering testing and operations to develop, demonstrate, and transfer advanced engineering technology and systems to private industry.

The FY 2005-2010 EM cleanup program focus at Idaho includes putting a new contract in place that continues risk reduction, protection of the Snake River Plain Aquifer, acceleration initiatives and consolidation of the EM footprint. Priorities and objectives will support significantly reducing risk and placing materials in safe storage ready for disposal. Key initiatives during this timeframe include completing the construction of the sodium-bearing waste treatment facility, complete construction and begin transferring spent nuclear fuel (SNF) to the SNF Dry Storage Project facility, accelerating remediation of miscellaneous contaminated areas, cease on-site low-level waste disposal operations, package and disposition to off-site locations all special nuclear material, and issue a Record of Decision under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for the Subsurface Disposal Area. Significant shipments of TRU to WIPP will continue during this time frame.

Current and Planned Idaho National Laboratory Accomplishments

Fiscal Year 2006

- Complete design of the sodium bearing waste treatment facility
- Continue buried waste retrievals as agreed to by DOE and the State of Idaho
- Construct the SNF Dry Storage Project facility

- Meet Idaho Settlement Agreement milestone for TRU shipments to WIPP (annual milestone FY 2006- 2010)
- Complete deactivation of the Water Research Reactor Test Facility building

Fiscal Year 2007
- Complete cleaning and grouting of all pillar and panel vaulted tanks
- Continue buried waste retrievals as agreed to by DOE and the State of Idaho determined by Assistant Secretary
- Submit draft feasibility study for the Subsurface Disposal Area to the state of Idaho and EPA
- Construct the sodium bearing waste treatment facility
- Transfer SNF to Dry Storage Project Facility

Fiscal Year 2008
- Complete construction , readiness review, and initiate operations of a treatment facility for sodium-bearing waste
- Complete cleaning and grouting of the west side of the Tank Farm Facility tanks
- Continue buried waste retrievals as agreed to by DOE and the State of Idaho
- Discontinue contact-handled low-level waste disposal at the Radioactive Waste Management Complex
- Complete shipment of unirradiated Light Water Breeder Reactor fuel to another site
- Develop the draft Record of Decision that will select the remedial approach for the entire Subsurface Disposal Area

Fiscal Year 2009
- Complete shipment of remaining EM special nuclear material to another site(s)
- Continue buried waste retrievals as agreed to by DOE and the State of Idaho
- Discontinue RH low-level waste disposal at the Radioactive Waste Management Complex
- Operate sodium-bearing waste treatment facility

Fiscal Year 2010
- Issue record of decision on calcine treatment path forward
- Continue buried waste retrievals as agreed to by DOE and the State of Idaho
- Cease acceptance of Advanced Test Reactor fuel from the Office of Nuclear Energy, Science, and Technology
- Continue operations of sodium-bearing waste treatment facility

Oak Ridge Reservation (ORR)

The Oak Ridge Reservation (ORR) encompasses about 37,000 acres in east Tennessee and is comprised of three facilities: the East Tennessee Technology Park (ETTP); the Oak Ridge National Laboratory (ORNL); and the Y-12 Plant.

Activities carried out at the 3,300 acre ORNL historically have supported both the defense production operations and civilian energy research effort. This group of facilities requires cleanup resulting from a variety of research and development activities, which were supported by multiple DOE programs over a long period of time. The Oak Ridge National Laboratory currently conducts applied and basic research in energy technologies and the physical and life sciences. Cleanup includes environmental remediation, decontamination and decommissioning of radioactively contaminated facilities, and disposition of legacy low-level, mixed low-level, and transuranic waste. When EM has completed its activities, ORNL will continue its research and development activities under the Office of Science. Melton Valley will be a permanent waste management area.

The ETTP site occupies 1,500 acres adjacent to the Clinch River, approximately 13 miles west of Oak Ridge, Tennessee. It was originally built as a uranium enrichment facility using uranium hexafluoride (UF_6) for Defense Programs. The majority of the 125 major buildings on the site have been inactive since uranium enrichment production ceased in 1985. Environmental Management is the current landlord. The site will be closed by 2008 as part of the Accelerated Cleanup Plan. At closure the site will be available as an industrial park. Some of the facilities and buildings may be transitioned to the private sector as part of the Accelerated Cleanup Project through the reindustrialization program if there is timely private interest.

The Y-12 site is approximately 811 acres and is located about 2 miles southwest of Oak Ridge, Tennessee. The Y-12 site originally was a uranium processing facility and now dismantles nuclear weapons components and serves as one of the nation's store houses for special nuclear materials. The Y-12 site has 15 operable units within three areas; Chestnut Ridge, Upper East Fork of Poplar Creek, and Bear Creek Valley.

Current and Planned Oak Ridge Reservation Activities

Fiscal Year 2006

- Complete K-31 and K-29 facility deactivation
- Begin K-33 facility deactivation
- Complete Melton Valley Interim ROD Remediation Activities
- Complete Melton Valley Solid Waste Storage Area (SWSA) 5 North TRU Trench Remediation
- Complete Contact Handled Transuranic Waste (CH-TRU) processing; start shipping CH-TRU waste to WIPP
- Responsibility for management of newly-generated waste at Y-12 transferred to NNSA
- Complete transfer of all UF_6 cylinders to Portsmouth
- Complete ETTP Zone 1 Remediation

Fiscal Year 2007

- Complete construction of final phase of Environmental Management Waste Management Facility expansion to meet Accelerated Cleanup Plan requirements

- Complete Tank W-1A (Corehole 8) remediation of radioactive contaminated soil
- Approval of ETTP Site Wide Record of Decision
- Complete capping of SWSA 5 and SWSA 6

Fiscal Year 2008
- Complete all remediation activities at the David Witherspoon, Inc. site
- Complete disposition of all remaining legacy waste on the Oak Ridge Reservation
- Complete ETTP Zone 2 Remediation
- Demolition of all EM facilities including K-25/27 buildings at ETTP completed

Fiscal Year 2009
- Complete RH TRU solids processing
- Start Bethel Valley groundwater source action

Fiscal Year 2010
- Complete RH TRU sludge processing
- Start Bear Creek Valley S-3 ponds remedial actions
- Issue Approved Action Memorandum for Y-12 Alpha IV D&D

Ashtabula Closure Project

The Ashtabula Closure Project site, located in Ashtabula, Ohio, is owned and operated by the RMI Titanium Company. The site, originally 43 acres with 32 facilities, is contaminated with both radiological and hazardous materials resulting from previous metals extrusion operations for the DOE. The Ashtabula Closure Project requires D&D of buildings and the remediation of contaminated soils and groundwater in conformance with a U. S. Nuclear Regulatory Commission decommissioning plan to allow unrestricted use of the site.

The clean up of the Ashtabula site includes remediation of 32 contaminated facilities, disposition of equipment, and remediation of affected land areas and groundwater. To date, all major production facilities (21) have been demolished, resulting in the disposition of approximately 584,000 m^3 of radioactive remediation generated waste. Final site decommissioning will be through remediation and disposal of soil and debris in licensed, off-site disposal facilities consistent with the Ashtabula Decommissioning Plan approved by the State of Ohio.

Final site remediation by DOE will allow the Ohio Department of Health to release the site to the owner, RMI Titanium Company, for unrestricted use. Groundwater remediation may proceed as part of a long-term stewardship program.

The remediation contract with the site owner, RMI Titanium Company, was terminated in December 2003. Discussions with RMI have been ongoing regarding continued cleanup at Ashtabula.

Current and Planned Ashtabula Closure Project Accomplishments

Fiscal Year 2006
- Complete environmental restoration activities and return to site owner

Fiscal Years 2007 - 2010
- EM activities at this location are scheduled for completion in FY 2006

Columbus Closure Project

The Columbus Closure Project comprises two geographic sites (King Avenue and West Jefferson) located in and near Columbus, Ohio. Research and development work was performed at these facilities for DOE and its predecessor's agencies. The 14 affected buildings and grounds are privately owned by Battelle Memorial Institute. The Columbus Closure Project consists of 15 radioactively contaminated facilities and 2 release sites, of which 12 facility cleanups were completed by the end of FY 2001. The original scope of decontamination activities at King Avenue has been completed.

Cleanup of the Columbus West Jefferson site includes decontamination and demolition of three large radiological buildings including JN-1 High Energy Hot Cell Facility, JN-2 Critical Assembly Building, and JN-3 Reactor Building. Site remediation also includes closure of related external areas (contaminated filter beds and buried utilities) as well as packaging, transportation, and disposal of transuranic waste, low-level waste and contaminated soils and debris. The end-state objective is to safely remediate Battelle facilities to levels of residual contamination allowing future use of the site without radiological restrictions by the end of FY 2006 or sooner, thereby releasing DOE from all future liability. All future use decisions will be made by the site owner, Battelle.

Current and Planned Columbus Closure Project Accomplishments

Fiscal Year 2006
- Complete closure for connecting areas and filter beds
- Complete closure of JN-1 High Energy Hot Cell Facility
- Complete off-site disposition of TRU
- Terminate NRC license and complete DOE EM responsibilities

Fiscal Years 2007 - 2010
- EM activities at this location are scheduled for completion in FY 2006

Miamisburg Closure Project

The Miamisburg Closure Project encompasses the Mound Plant, which is located on 306 acres in Miamisburg, Ohio, 10 miles south of Dayton. The plant was built in the late 1940s to support research and development, testing, and production activities for the Department's defense nuclear weapons

complex and energy research programs. The mission continued until 1994, when these activities were transferred to other DOE facilities. The mission involved production of components that contained tritium, plutonium, and other radioisotopes, and processing large quantities of high explosives. As a result of these past operations, the buildings, soil, and groundwater are contaminated with radioactive and hazardous chemicals.

The clean up of the Mound site includes the remediation of soils contaminated with volatile organic compounds (VOC's) and radionuclides, demolishing buildings and transferring buildings and the site to Miamisburg Mound Community Improvement Corporation (MMCIC).

By the end of FY 2006, the site will have shipped all contaminated waste to off site disposal facilities, completed all demolition and soil remediation activities, and prepared buildings for transfer. Additionally, 179 acres will be ready for transfer to the MMCIC. The FY 2006 focus will be the soil remediation activities and verification that the site is cleaned up in accordance with the risk-based end state vision that has been agreed to with the regulators

Current and Planned Miamisburg Closure Project Accomplishments

Fiscal Year 2006

- Complete low-level waste (LLW) Shipments
- Complete all facilities demolition
- Complete Cleanup of all Potential Release Sites
- Acquire Record of Decision (ROD) Approval For Final Parcel
- Declare Physical Completion

Fiscal Years 2007 - 2010

- EM activities at this location are scheduled for completion in FY 2006

Fernald Closure Project

The Fernald Closure Project site encompasses approximately 1,050 acres, located 17 miles northwest of Cincinnati, Ohio. High purity uranium metal products were produced at Fernald for DOE and its predecessor agencies from 1951 to 1989. Thorium was also processed, on a smaller scale. Uranium processing operations at Fernald were limited to a fenced, 136 acre tract known as the Production Area. In November 1989, the Environmental Protection Agency placed the Fernald site on the National Priorities List, and in April 1990, DOE and the U.S. and Ohio Environmental Protection Agencies entered into a Consent Agreement (since amended) for site remediation.

The cleanup of the Fernald site includes the remediation of material from Silos 1, 2, and 3; remediation of contaminated soils; decontamination and demolition of buildings; and restoration of the site in accordance with the risk-based end state vision that has been agreed to with the regulators. The focus in FY 2005 and FY 2006 will be the remediation activities and verification that the site is cleaned up.

By the end of 2006, the site will have disposed of all contaminated waste to off site disposal facilities or into the On Site Disposal Facility (OSDF) and completed all building decontamination and demolition activities, except for the removal of the Converted Wastewater Treatment facility (CWWT).

The primary components of the ongoing remedial action include the excavation of the waste pit contents, waste processing by sorting, crushing or shredding as required, treatment by thermal drying as required to meet the disposal facility waste acceptance criteria for moisture management of DOE tender(s) and off-site disposal at a permitted commercial disposal facility. The Fernald site will be transferred to the Office of Legacy Management (LM) in FY 2007 for long term stewardship.

Current and Planned Fernald Closure Project Accomplishments

Fiscal Year 2006

- Complete D&D of Silos and Silos Treatment Facility
- Complete Area 7 silos general area excavation (Silos Treatment Facility excavation)
- Complete caps at the OSDF
- Prepare for transfer to Office of Legacy Management

Fiscal Years 2007 - 2010

- EM activities at this location are scheduled for completion in FY 2006

West Valley Demonstration Project

The West Valley Demonstration Project (WVDP) is located at the Western New York Nuclear Service Center near West Valley, New York, 35 miles south of Buffalo. The center was developed by a private company to process commercial spent nuclear fuel to extract plutonium and uranium and operated from 1966 to 1972. The WVDP Act (Public Law 96-368) was enacted in 1980 and directed the DOE to carry out a high-level waste solidification demonstration project. The principal operation at West Valley thus far has been the solidification of liquid high-level waste into borosilicate glass using vitrification. With vitrification treatment operations complete, the Project has transitioned into its next major phase which is decontamination, shipment of project-generated waste off-site for disposal, and decommissioning.

Cleanup of the West Valley Demonstration Project includes off-site disposition of all project-generated low-level and transuranic waste, and decontamination and decommissioning of all project facilities used during the high-level waste solidification effort. Project facilities will be decontaminated and decommissioned consistent with U. S. Nuclear Regulatory Commission (NRC) prescribed criteria and a Record of Decision for Decommissioning and/or Long-term Management of the WVDP which is currently being developed by DOE and New York State Energy Research and Development Authority as joint lead agencies.

Once the high level waste tanks and Project facilities have been decommissioned, DOE will have satisfied all mandates of the West Valley Demonstration Project (WVDP) Act of 1980 (Public Law 96-368).

Current and Planned West Valley Demonstration Project Accomplishments

Fiscal Year 2006
- Initiate dismantlement of project facilities no longer needed to support safe site operations
- Initiate D&D for former spent nuclear fuel reprocessing facility
- Complete disposition of legacy LLW
- Award contract for disposition of WVDP TRU

Fiscal Year 2007
- Initiate disposition of WVDP TRU
- Publish Environmental Impact Statement (EIS) for Decommissioning and/or Long-term Stewardship

- Continue dismantlement of project facilities no longer needed to support safe site operations
- Continue D&D of former spent nuclear fuel reprocessing facility

Fiscal Year 2008
- Continue dismantlement of project facilities no longer needed to support safe site operations
- Continue D&D of former spent nuclear fuel reprocessing facility
- Continue disposition of WVDP TRU

Fiscal Year 2009
- Continue dismantlement of project facilities no longer needed to support safe site operations
- Continue D&D of former spent nuclear fuel reprocessing facility
- Complete disposition of WVDP TRU

Fiscal Year 2010
- Complete dismantlement of project facilities no longer needed to support safe site operation
- Complete D&D of former spent nuclear fuel reprocessing facility

Paducah Gaseous Diffusion Plant

The Paducah Gaseous Diffusion Plant (PGDP), located just outside Paducah, Kentucky, is owned by DOE. The plant, which occupies about 750 acres of the approximately 3,600-acre site, began operations in the mid-1950s to supply enriched uranium to meet both Government and commercial nuclear fuel needs. The United States Enrichment Corporation (USEC), a publicly traded company, leases facilities at the site for commercial uranium enrichment purposes. In accordance with a June 2002 Memorandum of Agreement between USEC and DOE, the PGDP will continue operations at least until USEC deploys advanced uranium enrichment technology.

The PGDP mission was to produce low-assay enriched uranium for use as commercial nuclear reactor fuel. In 1993, uranium enrichment operations were turned over to the USEC. While USEC operates the

enrichment program, the Department is the site "landlord" that owns the physical plant and is responsible for the environmental cleanup. The overall environmental cleanup strategy at PGDP is based on taking near-term actions to control or eliminate ongoing sources of contamination along with continued investigation of other potential sources. In FY 2003, DOE signed a Letter of Intent with the Commonwealth of Kentucky that includes completion milestones for groundwater in 2010, soils in 2015, surface water in 2017, and burial grounds in 2019. FY 2005 through FY 2010 represents a critical time period for continued preparation and progress. In addition, construction on a depleted uranium hexafluoride ($DUF_{6)}$ conversion facility at PGDP began the summer of 2004, and Uranium Disposition Services, LLC (UDS) is under contract to complete construction and operate the facility for five years.

Current and Planned Paducah Gaseous Diffusion Plant Accomplishments

Fiscal Year 2006

- Complete disposal of all outside DOE Material Storage Areas (DMSAs)
- Continue processing and disposal of scrap metal
- Initiate C-400 groundwater remedial action
- Initiate remedial investigation/feasibility study for burial grounds
- Continue construction of DUF_6 conversion facility

Fiscal Year 2007

- Complete scrap metal removal
- Continue decontamination and decommissioning of C-410 Complex
- Complete mixed low-level waste
- Initiate operations of the DUF_6 conversion facility

Fiscal Year 2008

- Complete remedial investigation/feasibility study for burial grounds
- Continue decontamination and decommissioning of C-410 Complex

Fiscal Year 2009

- Complete C-400 groundwater remedial action
- Complete decontamination and decommissioning of West End Smelter
- Continue operations of DUF_6 conversion facility
- Issue Record of Decision for burial grounds
- Initiate remedial investigation for soils

Fiscal Year 2010

- Complete disposal of all DMSAs
- Complete remedial investigation for soils
- Complete Southwest Plume/Source

- Complete disposal of Toxic Substances Control Act (TSCA) legacy waste
- Initiate remedial action for burial grounds

Portsmouth Gaseous Diffusion Plant

The Portsmouth Gaseous Diffusion Plan, which occupies a 3,700-acre site located in Piketon, Ohio (approximately 22 miles north of Portsmouth and 75 miles south of Columbus), is owned by DOE. The Portsmouth mission was to enrich uranium for naval and commercial reactors through the gaseous diffusion process. The United States Enrichment Corporation (USEC) leases facilities at the site for commercial operations. The USEC ceased enrichment operations at Portsmouth in June 2001, and DOE placed the facility in cold standby condition, capable of being restarted within 18 to 24 months to produce 3 million separate work units of enriched uranium.

Since environmental cleanup began, all initial assessments required under the Resource Conservation and Recovery Act (RCRA) have been completed, all groundwater plumes contained onsite, and several hazardous and solid waste units remediated. FY 2005 through FY 2010 represents critical years for the environmental cleanup program at Portsmouth with completion scheduled for 2012. The primary objectives of the cleanup program during this time period will be to install the last remaining approved remediation at the X-701B Area (land sites and groundwater), to continue operations of groundwater treatment facilities in support of installed remedies, and to remove all currently stored legacy waste streams (RCRA low-level waste, TSCA low-level waste, and low-level waste). The EM program will also perform facility decontamination and decommissioning on identified inactive facilities and complete disposition of currently stored highly enriched uranium through a joint venture with NNSA, Y-12 and Nuclear Fuel Services. All of these objectives will be conducted in accordance with applicable laws, regulations, DOE Directives, permits, agreements and Orders. In addition, construction of a depleted uranium hexafluoride (DUF_6) conversion facility at Portsmouth began July 2004, and Uranium Disposition Services, LLC (UDS) is under contract to complete construction and operate the facility for five years.

Current and Planned Portsmouth Gaseous Diffusion Plant Accomplishments

Fiscal Year 2006

- Continue construction of DUF_6 conversion facility
- Complete disposition of centrifuges and centrifuge components
- Complete RCRA closure of X-7725 facility
- Complete installation of X-701B Oxidant Injection System and begin operations
- Complete shutdown of Cold Standby operations and transition to preliminary decontamination and decommissioning
- Complete receipt of all DUF_6 cylinders from Oak Ridge

Fiscal Year 2007

- Complete necessary Resource Conservation and Recovery Act closure in X-7725

- Complete cleanout of Gas Centrifuge Enrichment Plant
- Continue operation of X-701B Oxidant Injections System
- Initiate operations of the DUF_6 conversion facility
- Continue D&D activities

Fiscal Year 2008

- Complete legacy waste disposition
- Complete inactive facility removal
- Complete highly enriched uranium (HEU) disposition activities
- Continue D&D activities

Fiscal Year 2009

- Continue operation of X-701B Oxidant Injections system
- Continue operations of DUF_6 conversion facility
- Continue D&D activities

Fiscal Year 2010

- Complete operations of X-701B Oxidant Injections system
- Initiate installation of X-701B phytoremediation
- Initiate design of X-701B soils final caps
- Continue D&D activities

Richland Operations Office (Hanford Site)

The Richland Operations Office manages the Department's Hanford Site, except for the High-Level Waste Tank Farms, in Southeastern Washington State. The 560 square mile site is bounded on the north by over 50 miles of the Columbia River, known as the Hanford Reach.

Hanford was established in secrecy during World War II to produce plutonium for the nation's nuclear weapons. Peak production years were reached in the 1960s when nine production reactors were in operation along the river. The last reactor to be decommissioned was the N-Reactor and its spent nuclear fuel in the K-Basins is now being relocated to higher ground in the central plateau, known as the 200 Area. The Plutonium Finishing Plant (PFP) is one of the last production facilities that remains operational - but only to process and stabilize remaining plutonium materials. Research and development is conducted by Pacific Northwest National Laboratories in the 300 Area. Support facilities are located in the 1100 Area, most of which have been turned over to the local community. Soil and groundwater contamination has resulted from past operations, placing the site on the National Priorities (Superfund) List.

The main focus for the FY 2005 – FY 2010 Richland Operations Office EM Cleanup Program is material stabilization and disposition with the movement of 2,100 metric tons of degrading spent nuclear fuel; stabilization and packaging of 50 cubic meters of radioactively contaminated sludge; and

plutonium (Pu) legacy holdup completions. D&D work is also being performed on the K-East (KE) and K-West (KW) basins, the Plutonium Finishing Plant (PFP) complex, and other surplus facilities. Central Plateau remediation is initiated and substantive remediation will occur in the 100 and 300 areas. Ongoing Hanford low-level waste and mixed low-level waste disposal facility operations and waste management services continue in support of Hanford site cleanup.

Current and Planned Richland Operations Office Accomplishments

Fiscal Year 2006

- Complete wash, dry and storage of Fast-Flux Test Facility (FFTF) spent fuel
- Complete Environmental Impact Statement and Record of Decision for the decommissioning and dismantlement of the FFTF
- Retrieve 1,800 m^3 of TRU
- Complete design basis threat (DBT) implementation
- Complete remedial actions for the 100 HR-3 H Area chromium plume
- Conduct D&D of PFP
- Complete interim safe storage (cocooning) of H Reactor
- Complete removal of K-West and K-East Basin sludge

Fiscal Year 2007

- Conduct D&D of PFP
- Complete removal of K-East Basin structure
- Complete remedial actions for the 100 B/C Area
- Complete remedial action for three high Environmental Priority Sites in the 300-FF-2 Operable Unit
- Retrieve 2000 m^3 of TRU waste

Fiscal Year 2008

- Complete sludge treatment
- Complete Central Plateau RODs
- Complete remedial investigations of 200 Area waste sites
- Retrieve 2,500 m^3 of TRU waste

Fiscal Year 2009

- Complete FFTF sodium drain
- Complete remedial actions for the 100-F Area
- Complete removal of K Basins and their contents

Fiscal Year 2010

- Retrieve 12,200 m^3 of retrievably stored waste (Cumulative)
- Complete transition and dismantlement of the 216-Z-9 Crib Complex

- Complete demolition of thirteen surplus facilities in the 300 Area (including 324/327)
- Complete remedial actions for the six waste sites in the 300-FF-2 Operable Unit

Office of River Protection

In order to more effectively manage the River Protection Project and in response to Section 3139 of the *Strom Thurmond National Defense Authorization* Act for Fiscal Year 1999, the Secretary of Energy established the Office of River Protection at the Hanford Site in the State of Washington. The Office of River Protection is responsible for the storage, retrieval, treatment, immobilization, and disposal of radioactive tank waste at the Hanford Site. This includes 177 underground storage tanks (149 single-shell tanks (SSTs) and 28 double-shell tanks (DSTs)), containing approximately 194 mega-curies of radionuclides in more than 50 million gallons of radioactive waste from past processing operations. Multi-year construction of the Waste Treatment and Immobilization Plant (WTP) to process and immobilize the tank waste is ongoing. Waste treatment operations are scheduled to begin in FY 2011 and treatment of all tank waste will be completed by FY 2027.

Current and Planned Office of River Protection Accomplishments

Fiscal Year 2006

- Complete design of the Low Activity Waste (LAW) facility for the WTP
- Fabricate and deliver High Level Waste (HLW) Melters # 1 and # 2 for the WTP
- Complete Integrated Disposal Facility (IDF) construction
- Start initial tank waste supplemental treatment

Fiscal Year 2007

- Complete design of Pretreatment (PT) and High Level Waste (HLW) facilities at WTP
- Complete 9 SST retrievals
- Complete closure of 13 SSTs
- Treat 500K gallons of Contact Handled Transuranic waste (CH TRU)

Fiscal Year 2008

- Move HLW waste melter # 1 into facility at WTP
- Complete construction of LAW, HLW, and Analytical Laboratory facilities at WTP
- Complete 11 SST retrievals
- Complete Canister Storage Building (CSB) modifications
- Complete closure of 10 SSTs
- Treat 633K gallons of (CH TRU)

Fiscal Year 2009

- Begin cold commissioning at WTP
- Complete construction of the PT facility at WTP

- Heat up HLW Melter # 1 at WTP
- Complete 9 SST retrievals
- Complete closure of 11 SSTs
- Ready to deliver waste feed to WTP

Fiscal Year 2010

- Complete integrated cold chemical runs in HLW facility at WTP
- Begin hot commissioning at WTP
- Complete closure of 9 SSTs
- Initiate Remote Handled Transuranic waste (RH TRU) Packaging System

Rocky Flats Environmental Technology Site

The Rocky Flats Environmental Technology Site is located about 10 miles northwest of Denver, Colorado, on about 11 square miles at the base of the Rocky Mountains. The Atomic Energy Commission in 1951 established the Rocky Flats Plant with a mission to manufacture nuclear weapons components from materials such as plutonium, beryllium, and uranium. When operations ceased, large amounts of plutonium, plutonium compounds, and metallic residues remained at the various site facilities. Significant volumes of hazardous and radioactive waste generated during production operations were also present throughout numerous buildings and soil was contaminated, resulting in the site being placed on the National Priorities List.

In 1991, EM acquired the Rocky Flats Plant and the site transitioned to a new mission: cleaning up the contamination and waste from past production activities. It was at this time that the Rocky Flats Plant became the Rocky Flats Environmental Technology Site. By 2006, all site facilities will be demolished, all waste removed and contamination reduced to acceptable levels. The site will then become a National Wildlife Refuge**.** During the period FY 2005-2010, the Rocky Flats Environmental Technology Site will focus on completing shipment and disposal of all remaining site wastes; D&D of all remaining site facilities; final site remediation; completing negotiation of a post-closure Rocky Flats Cleanup Agreement; and, transition of the site from EM to the Office of Legacy Management (LM). The LM will assume management of the site beginning in FY 2007, and continuing for those lands not transferred as part of the Rocky Flats Wildlife Refuge.

Current and Planned Rocky Flats Environmental Technology Site Accomplishments

Fiscal Year 2006

- Complete final low-level/low-level mixed waste disposal
- Complete D&D of all remaining radiological nuclear facilities
- Complete final site remediation and closure contract closeout
- Transition site from EM to the Office of Legacy Management
- Complete site regulatory completion

Fiscal Year 2007
- Transition portions of site to U.S. Fish and Wildlife Service

Fiscal Years 2008 - 2010
- EM activities at this location are scheduled for completion in FY 2007

Savannah River Site (SRS)

The Savannah River Operations Office manages this complex which covers 310 square miles encompassing parts of Aiken, Barnwell, and Allendale counties in South Carolina, bordering the Savannah River. The Savannah River Site was completed by the mid-1950s to produce and reprocess nuclear materials for the manufacture of military weapons.

The Savannah River Site now has 13 separate areas including ongoing mission activities for the NNSA. They include: five isotope production areas, which are permanently shutdown; heavy water processing facilities; two radiochemical reprocessing facilities (with one scheduled to begin deactivation in 2004); waste management facilities, including tank farm areas and the Defense Waste Processing Facility for vitrifying high-level waste; administrative offices, laboratories and technical shops. The site also has Savannah River National Laboratory which supports research and development associated with spent nuclear materials processing; and low-level waste disposal, reactor fuels, and solid waste disposal areas.

The Savannah River Site (SRS) is a key DOE industrial complex dedicated to the accelerated reduction of risks through safe stabilization, treatment, and disposition of legacy nuclear materials, spent nuclear fuel, and waste. Accelerated risk reduction, with a continued strong emphasis on protecting the environment and health and safety of workers and the public, is a primary objective of the SRS EM Cleanup Project. With this aggressive focus on reducing risk, SRS can realize completion of the EM cleanup mission by 2025. Accomplishing this will require minimizing the lifecycle cost of operations and implementing improvements in how projects and contracts are managed.

The scope of this accelerated cleanup project is the stabilization and disposition of all EM-owned nuclear material; receipt and disposition of spent nuclear fuel; completion of the removal and disposition of waste from all SRS waste tanks and closure of the tanks; safe treatment and disposition of low-level, hazardous, mixed low-level and transuranic waste; decommissioning of all SRS EM facilities; and remediation of groundwater plumes and soil contamination.

Current and Planned Savannah River Site Accomplishments

Fiscal Year 2006
- Complete deactivation of F Canyon and FB Line
- Complete disposition of neptunium solutions (the last of the Defense Nuclear Facilities Safety Board (DNFSB) 94-1 materials to be stabilized)
- Complete processing of H Canyon unirradiated Mk-22 tubes

- Begin conceptual design for the plutonium disposition facility
- Initiate construction of Salt Waste Processing Facility
- Complete construction and start operation of Glass Waste Storage Building #2
- Initiate low curie salt disposition
- Complete disposition of legacy low-level, hazardous, and mixed wastes
- Complete P Area Reactor Seepage Basin remedial action
- Achieve field start for final area closure of R Area
- Produce 250 canisters of vitrified HLW

Fiscal Year 2007

- Commence operation of the Modular Cesium Removal Unit
- Close HLW Tanks 18 and 19
- Initiate construction of the plutonium disposition facility
- Produce 250 canisters of vitrified HLW
- Complete preliminary design for the Plutonium Disposition Facility
- Meet F/H Area groundwater corrective action RCRA Permit/Cleanup Goals (Four Mile Branch)
- Begin conceptual design for the spent nuclear fuel Treatment and Storage Facility

Fiscal Year 2008

- Begin conceptual design of the high-level waste Canister Shipping Facility
- Complete disposition of legacy TRU
- Produce 250 canisters of vitrified HLW
- Start final design and construction for the Plutonium Disposition Facility
- Complete implementation of groundwater corrective action strategies at all mixed waste management facility plume areas in RCRA permit
- Complete dynamic underground stripping operations in A and M Areas
- Initiate construction of the spent nuclear fuel Treatment and Storage Facility

Fiscal Year 2009

- Commence operation of the Salt Waste Processing Facility
- Complete operation of the Modular Cesium Removal Unit
- Initiate construction of the high-level waste Canister Shipping Facility
- Produce 230 canisters of vitrified HLW
- Close three HLW tanks

Fiscal Year 2010

- Commence operation of the high-level waste Canister Shipping Facility
- Commence operation of the spent nuclear fuel Treatment and Storage Facility
- Complete M Area remediation and deletion from the National Priorities List
- Produce 230 canisters of vitrified HLW

- Close three HLW tanks
- Meet F/H Area groundwater corrective action RCRA permit/cleanup goals for the Four Mile Brach seep line

Energy Technology Engineering Center (ETEC)

The Energy Technology Engineering Center (ETEC) is located approximately 30 miles north of Los Angeles, California between the populous Simi and San Fernando Valleys. The facility occupies 90 acres of the Santa Susana Field Laboratory, which is owned and operated by Boeing North American Incorporated. The site was opened in the 1950s and supported research for DOE and its predecessor agencies in nuclear research and energy development projects. The cleanup of the site involves the remediation of contaminated groundwater, decontamination and decommissioning of several radiological facilities, deactivation and clean up existing sodium facilities, and the characterization and off-site disposal of radiological and hazardous waste. Upon completion of cleanup in FY 2007, the land and existing facilities will be returned to the Boeing Company.

Current and Planned ETEC Accomplishments

Fiscal Year 2006

- Complete RCRA Facility Investigation phase of the RCRA corrective action
- Start demolition of Radioactive Materials Handling Facility (RMHF)
- Complete demolition of the Sodium Pump Test Facility

Fiscal Year 2007

- Complete demolition of RMHF
- Complete radiological cleanup of the site

Fiscal Years 2008 - 2010

- EM activities at this location are scheduled for completion in FY 2007

Laboratory for Energy-Related Health Research (LEHR)

The Laboratory for Energy-Related Health Research (LEHR) site is a 15-acre site located at the University of California at Davis, California. Research at the laboratory focused on the health effects from chronic exposure to radionuclides, i.e. Strontium-90 and Radium 226, using animal subjects to simulate radiation effects on humans. The Department terminated the research program and closed the laboratory in 1988. Those areas of the site contaminated by the DOE-sponsored research are being cleaned up. This involves the remediation of contaminated soil, the removal and disposal of waste material, the decontamination of several buildings, and the removal and cleanup of dog pens, septic systems, treatment systems, and trenches. The cleanup activities are to be completed in FY 2005.

Current and Planned Laboratory for Energy-Related Health Research Accomplishments

Fiscal Year 2006
- Transition site from EM to the Office of Legacy Management

Fiscal Years 2007 - 2010
- EM activities at this location are scheduled for completion in FY 2005

Moab Site

This project covers remediation of the Moab Site Project, which involves 8.9 million cubic yards of contaminated mill tailings and mill debris, contaminated groundwater, and vicinity properties in Moab, Utah, consistent with the Uranium Mill Tailings Radiation Control Act standards to protect the groundwater, Colorado River, human health and the environment. An Environmental Impact Statement (EIS) will evaluate alternatives for remediation, with a focus on capping the tailings in place or relocation to a commercial facility or DOE-constructed repository. Vicinity properties contaminated with mill tailings as a result of past construction practices will be remediated and contaminated materials disposed of in conjunction with the mill site cleanup. For baseline planning purposes it is assumed that surface remediation will be completed by capping the tailings pile-in-place with a soil and rock cover. Contaminated soils around the mill site will be excavated and consolidated on the pile. A combination of active remediation and possibly institutional controls will be used to achieve surface water compliance.

Current and Planned Moab Site Accomplishments

Fiscal Year 2006
- Complete geotechnical investigations and detailed design of final remedial action
- Initiate construction of long-term ground water remedial action

Fiscal Year 2007
- Complete construction of long-term ground water remedial action

Fiscal Year 2008
- Complete closeout of Vicinity Properties Program

Fiscal Year 2009
- Continue Site remediation

Fiscal Year 2010
- Continue Site remediation

Los Alamos National Laboratory (LANL)

The Los Alamos National Laboratory (LANL) is managed by the National Nuclear Security Administration, Los Alamos Site Office, and encompasses over 43 square miles in northern New Mexico. It is divided into 47 technical areas that are used for scientific sites, experimental areas, waste disposal locations, roads and utilities, and safety and security buffers. LANL and its subcontractors employ approximately 13,000 people. Radiological, hazardous and high explosive wastes have contaminated the soils and groundwater as a result of the development and production of nuclear weapons, beginning during World War II.

The Environmental Management Program at Los Alamos National Laboratory is composed of environmental restoration, legacy waste management and D&D of the Tritium System Test and Assembly facility.

The primary legacy waste management activities include storage, treatment, and disposal of transuranic and mixed low-level waste. Within the currently defined EM scope for environmental restoration, there are approximately 1,800 release sites at LANL requiring cleanup and/or regulatory closure. Under the accelerated cleanup plan legacy waste removal has been accelerated to 2010 and completion of cleanup corrective actions to 2015. It is anticipated that responsibility for the remaining cleanup work will be transferred to the NNSA in FY 2007.

Current and Planned Los Alamos National Laboratory Accomplishments

Fiscal Year 2006

- Complete remedy at Material Disposition Area (MDA) H
- Initiate voluntary corrective actions within Technical Areas (TA) 0,10,21,31 and 45
- Complete voluntary corrective actions for Building 16, the airport landfill and the "340 sumps"
- Complete remedy at Solid Waste Management Unit (SWMU) 73-002, the ash pile
- Complete cleanup of SWMU 16-003(o), the fish ladder
- Resume retrieval of legacy TRU waste

Fiscal Year 2007

- Airport Landfill Mesa Top Remedy Completion
- Complete corrective actions for the "260 Outfall" and remedies for surface system and alluvial groundwater
- Complete cleanup of the SWMU 16-008(a)
- Characterize legacy TRU waste from Decontamination Volume Reduction System

Fiscal Year 2008

- Complete canyon investigations and assessments for remedial actions in Pajarito Watershed

- Complete corrective actions/remedies in Bayo canyon (Technical Area 10)
- Begin disposal of hot cell liners

Fiscal Year 2009

- Complete canyon investigations and assessments for remedial actions in Sandia Watershed
- Complete corrective actions in the Middle Mortandad/Ten Site Aggregate (Technical Areas 4, 5, 35, 52, 63)
- Initiate D&D of Tritium System Test and Assembly facility

Fiscal Year 2010

- Complete remedy at MDA C
- Complete remedy at MDA T
- Complete disposal of legacy waste

Lawrence Berkeley National Laboratory (LBNL)

The Lawrence Berkeley National Laboratory (LBNL) is operated by the DOE Office of Science and managed under contract by the University of California. The 200-acre LBNL site is located adjacent to the University of California in Berkeley. The Laboratory is a multipurpose research facility where SC continues to have an on-going DOE mission. Activities conducted at LBNL have included nuclear and high-energy physics, accelerator development; materials and biomedical research; and research in chemistry, earth sciences, and molecular biology. In the course of performing DOE missions, a number of chemicals were used or produced as wastes during the laboratory's 62-year operation. These chemicals include volatile organic compounds, fuels, waste oils, polychlorinated biphenyls, Freon, metals acids, and lead and chromate-based paints. Additionally, radionuclides, primarily tritium, have also been used or generated as waste at LBNL.

The activities performed under this environmental management project at LBNL are directed toward the investigation and clean up of past releases of hazardous and radioactive waste in soil and groundwater. These activities are being completed under the purview of the RCRA and the Atomic Energy Act (AEA). LBNL has completed its RCRA Facility Investigation for 181 release sites to determine the amount and extent of contamination. Pilot testing to evaluate different remedial systems for use at LBNL was completed in FY 2004. The results have been summarized in the Corrective Measures Study Report, which has been submitted to regulatory agencies for approval. Full-scale remediation systems will be constructed in FY 2005 and FY 2006. The end-state of this project will be the completion of the final remediation systems in FY 2006 and the transfer of long-term surveillance and maintenance responsibilities to the site landlord, the Office of Science beginning in FY 2007. The site landlord will continue surveillance and monitoring of the site until final cleanup objectives have been achieved.

Current and Planned Lawrence Berkeley National Laboratory Accomplishments

Fiscal Year 2006

- Complete implementation of corrective measures
- Transfer long term stewardship responsibilities to Office of Science

Fiscal Years 2007 - 2010

- EM activities at this location are scheduled for completion in FY 2006

Stanford Linear Accelerator Center (SLAC)

The Stanford Linear Accelerator Center (SLAC) site is a 426-acre site located near Stanford University in California where theoretical research in high-energy particle physics is conducted. The site was established in 1962 and is managed by Stanford University for the Department of Energy. During past facility operations and waste management activities, the site was contaminated with volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), petroleum hydrocarbons, lead, and other metals.

The SLAC is on schedule for EM completion in FY 2006. The activities performed at SLAC consist of the investigation and clean up of past releases of hazardous waste in soil and groundwater under the provisions of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). There is no radioactive contamination of either soil or groundwater that requires remediation. After the EM cleanup is completed the Office of Science will assume responsibility for long-term stewardship.

Current and Planned SLAC Accomplishments

Fiscal Year 2006

- Complete construction of required groundwater treatment systems
- Complete remediation of soil sites in baseline
- Transfer long term stewardship responsibilities to the Office of Science

Fiscal Years 2007 – 2010

- EM activities at this location are scheduled for completion in FY 2006

Kansas City Plant

The Kansas City Plant is part of a Federal complex located 12 miles south of downtown Kansas City, Missouri. The plant was originally built for aircraft engine production during World War II, and during the 1950's it was acquired by the Atomic Energy Commission (AEC) for production of non-nuclear components for nuclear weapons, which resulted in the contamination of the soils and groundwater with hazardous waste.

The EM mission includes 43 release sites, 42 of which have been completed. Remaining EM scope includes completion of the final release site following regulator approval of a remedy, mitigation of PCB releases from the storm water discharge system, and operation and maintenance of groundwater treatment systems. The cleanup mission is scheduled to be complete in FY 2006. Institutional controls and groundwater treatment and monitoring will continue beginning in FY 2007.

Current and Planned Kansas City Plant Accomplishments

Fiscal Year 2006

- NNSA assumes responsibility for remaining cleanup work and long-term stewardship

Fiscal Years 2007 -2010

- EM activities at this location are scheduled for completion in FY 2006

Lawrence Livermore National Laboratory (LLNL)

The Lawrence Livermore National Laboratory (LLNL) is a multi-disciplinary research and development laboratory with a DOE mission focused on national defense. LLNL consists of two non-contiguous geographic locations in northern California. The Livermore Site is approximately 1 square mile and is located 40 miles east of San Francisco, near the City of Livermore. Site 300 is comprised of about 11 square miles and is located 15 miles southeast of the Livermore Site. Both the Livermore Site and Site 300 are on the Environmental Protection Agency's National Priorities List.

The LLNL is a multi-program laboratory operated by the University of California (UC) for DOE. The EM Project at LLNL is comprised of four elements: the Livermore Site Environmental Restoration (ER) Subproject, the Site 300 Environmental Restoration Subproject, the Newly Generated Waste Program, and the Legacy Waste Subproject. The project objectives are to safely treat, store, and dispose of radioactive and hazardous wastes from ongoing (new) and past (legacy) operations as well as to identify existing contamination from past operations, control contaminated ground water migration, and effectively remediate soil and ground water where contaminants exceed regulatory limits to protect human health, the environment, and restore beneficial uses of natural resources.

Current and Planned Lawrence Livermore National Laboratory Accomplishments

Fiscal Year 2006

- Waste Management and environmental restoration responsibilities transfer to the NNSA

Fiscal Years 2007 - 2010

- EM activities at this location are scheduled for completion in FY 2006

Nevada Site Office

The Nevada Site Office (NSO) manages the Nevada Test Site (NTS), which is located 65 miles northwest of the city of Las Vegas and encompasses approximately 1,375 square miles, an area larger than the state of Rhode Island. In December 1950, President Truman established the NTS as the continental location for conducting nuclear tests. For over 40 years, the primary mission of the NSO was to conduct tests of both nuclear and conventional explosives in connection with the research and development of nuclear weapons. Field testing was conducted primarily at the NTS, although tests were also conducted at the Nevada Test and Training Range. Both atmospheric tests (100) and underground nuclear tests (828) were conducted at on the NTS. Underground nuclear tests were also conducted at eight other sites in five states (Alaska, Colorado, Mississippi, Nevada, and New Mexico). Underground nuclear testing ceased in October 1992, although a readiness posture is maintained at the NTS as required by Presidential directive. The site is currently used for a wide range of dynamic experiments and training related functions.

EM activities at the NTS and off-site locations are widespread, geographically diverse, and are primarily the result of nuclear weapon tests. In addition to the surface cleanup of contaminated soil and industrial-type sites, the regional groundwater flow and transport parameters need to be determined and modeled to establish a contaminant boundary and monitoring network (where necessary) to ensure contaminated groundwater does not impact the public. In addition, the NTS is designated as a regional disposal site for low-level and mixed low-level waste generated as a result of cleanup activities across the DOE complex. Currently, 24 waste generators are approved to dispose low-level radioactive waste at the NTS. Disposal at WIPP of legacy TRU waste stored at the NTS is scheduled for completion in FY 2007.

Current and Planned Nevada Site Office Accomplishments

Fiscal Year 2006

- Waste Management and environmental restoration responsibilities for NTS transfer to the NNSA.

Fiscal Years 2007 - 2010

- EM activities at this location are scheduled for completion in FY 2006

Pantex Plant

The NNSA Pantex Site Office manages the Pantex Plant, a 10,500 acre site, located approximately 17 miles northeast of Amarillo, Texas. Pantex was established in 1942 to build conventional munitions during World War II. In 1945, the Atomic Energy Commission reclaimed the plant to assemble nuclear weapons. Pantex continues with an active mission to support the nuclear weapons stockpile for the DOE NNSA. Historical waste management operations at the Pantex Plant

contaminated soils and portions of the upper or perched aquifer. Consequently, in 1994, the plant was placed on the U.S. Environmental Protection Agency's National Priority List (Superfund) of contaminated waste sites.

The Pantex Plant environmental remediation program includes both an environmental restoration project, and a deactivation and decommissioning project, and follows DOE-EM Accelerated Cleanup Plan guidance. These projects are scheduled for completion in FY 2008.

Current and Planned Pantex Plant Accomplishments:

Fiscal Year 2006

- Responsibility for the environmental restoration program transfers to NNSA

Fiscal Years 2007 - 2010

- EM activities at this location are scheduled for completion in FY 2006

Sandia National Laboratories (SNL)

The Sandia National Laboratories (SNL), New Mexico, comprises 2,820 acres within the boundaries of the 118 square mile Kirtland Air Force Base, is located 6.5 miles east of downtown Albuquerque and is managed by the NNSA. The SNL was established in 1945 for nuclear weapons development, testing, and assembly for the Manhattan Engineering District and this mission continued under the AEC and DOE. Beginning in 1980, the mission shifted toward research and development for non-nuclear components of nuclear weapons. Subsequently, the mission was expanded to research and development on nuclear safeguards and security, and multiple areas in science and technology.

The cleanup project consists of soil and minor groundwater contamination by radioactive and hazardous materials resulting from past research, development, and testing operations. EM activities are conducted under RCRA authority administered by the State of New Mexico. Cleanup of over 260 release sites with contaminated soil and three groundwater areas will be completed by FY 2006.

Current and Planned Sandia National Laboratory Accomplishments

Fiscal Year 2006

- Remaining cleanup work responsibility transferred to NNSA

Fiscal Years 2007 - 2010

- EM activities at this location are scheduled for completion in FY 2006

Separations Process Research Unit (SPRU)

The Separations Process Research Unit (SPRU) located in Schenectady, New York, as part of the Knolls Atomic Power Laboratory, is an inactive complex that requires facility decontamination and decommissioning and environmental cleanup. The SPRU facilities were originally a small-scale pilot plant utilized to further develop and research the process to separate Plutonium and Uranium from irradiated fuel. The facility was built in 1949 and operated from 1950 to 1953. This facility was operated under the direction of the U. S. Atomic Energy Commission. The property is currently under the cognizance of the Office of Naval Reactors, Schenectady Naval Reactors Field Office (SNRO). The SPRU facilities consist of the main buildings, Buildings G2 and H2, the tank vaults, and small support structures and land areas.

The cleanup project objectives are to characterize and remove the chemical and radiological contamination in the land surrounding the sites where waste was stored, address groundwater contamination, and to characterize, decontaminate, dismantle, and demolish the nuclear facilities.

Current and Planned SPRU Accomplishments

Fiscal Year 2006

- Cleanup work responsibility transfers to NNSA

Fiscal Years 2007 - 2010

- EM activities at this location are scheduled for completion in FY 2006

External Key Factors

The following external factors could affect the ability of the Environmental Management program to achieve these strategic and program goals.

Regulatory Requirements: Compliance with environmental laws and regulations, agreements with states and federal regulator, and legal decisions drive the Department's cleanup approaches. Laws and regulations are subject to change, agreements with regulators may require renegotiation and legal decisions can alter strategic frameworks.

Cleanup Standards: The end state for cleanup at many sites is not fully determined. The extent of cleanup affects cost, schedule and scope of work.

Technology: Suitable cleanup technologies do not always currently exist and the development and deployment of innovative technologies could help reduce risk, lower cost, and accelerate cleanup.

Uncertain Work Scope: Uncertainties are inherent in the environmental cleanup program due to the complexity and nature of the work. There are uncertainties in the knowledge of the types of contaminants, their extent, and the concentrations.

Commercially Available Options for Waste Disposal: Accomplishment of accelerated risk reduction and site closure is dependent upon the continued availability of commercial options for low level and mixed low level waste disposal.

Contractor Benefits: Contractor pension plan contributions and post retirement health benefits that are affected by uncertain economic factors.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

Appendix
Laboratory Plans

Laboratory Plans were prepared only for Laboratories that have either the Office of Science, the Office of Environmental Management or the National Nuclear Security Administration as the Lead DOE Program Secretarial Office.

This Appendix provides supporting information to the five year budget plans for the Department of Energy's laboratories for which the Office of Science (SC), the National Nuclear Security Administration (NNSA), or the Office of Environmental Management (EM) serve as the Lead Program Secretarial Office (LPSO). The Laboratories selected to be presented in this Appendix are listed on the National Science Foundation's FY 2004 Master List of Federal Funded Research Development Centers (FFRDCs). For each Laboratory contained in this Appendix, there is:

- A primary mission statement as it relates to the Laboratory's LPSO
- A statement of secondary missions to support other DOE program offices and other Federal agencies
- A listing of the Laboratory's core competencies and facilities available to support the Department of Energy (DOE) missions
- Resource requirements to support the missions.

Introduction

The DOE manages 16 FFRDCs that have been justifiably referred to as among the "crown jewels" of the U.S. scientific enterprise. These FFRDCs are more commonly referred to as national laboratories and have been a major national success story, contributing scientific advances in nuclear energy, nuclear medicine, advanced computation, genomics, materials science, chemistry, physics, and other areas that have resulted in 35 Nobel Prizes and thousands of industrial patents since DOE's inception in 1977. No other organization in the world builds, operates and manages such a diverse array of technical talent and large-scale scientific instruments.

Managing the national laboratories and ensuring that they achieve critical DOE and national objectives is a complex undertaking. Effective laboratory management is essential for DOE to achieve its critical missions in national security, environmental restoration, energy security, and scientific discovery. The DOE Federal program managers determine which scientific and technological programs the national laboratories should pursue and closely evaluate their progress toward mission accomplishment. Decisions associated with activities at the national laboratories reflect the following key management principles:

- Federal Direction of Program Goals: Program goals for the national laboratories are established by DOE Federal program managers. In recent years, the two major Program Secretarial Offices that manage most of the national labs – SC and NNSA – have taken steps to ensure that Federal oversight is clearly articulated and managed. For example, SC is reorganizing to improve line accountability from the field and flatten the organization. In addition, SC is changing its laboratory appraisal process to emphasize program goals and accountability. Along these same lines, the NNSA completed its reengineering in 2004, which established clear roles and responsibilities between DOE Headquarters and Site Offices.

- Competition for Resources: DOE's national laboratory complex is run as a competitive system, with each laboratory vying for scarce Federal resources. Competition leads to the cancellation of poorly performing programs and the start of major new initiatives, such as SC's five Nanoscale Science Research Centers

- Federal Oversight of Laboratory Performance: Peer review, annual laboratory appraisals, and other mechanisms are utilized by DOE Federal program managers to monitor laboratory progress being made toward DOE and national goals. Each national laboratory agrees to clear performance goals that are codified in a contract that is evaluated on an annual basis by Federal program managers.

The National Academies of Science recently completed an evaluation of the Department's real property management. Their report, *Intelligent Sustainment and Renewal of Department of Energy Facilities and Infrastructure*, recognizes the progress the Department has made and that it is on the right path to improve the management of its real property portfolio. The report also highlights continuing challenges and the need for further steps in various areas to ensure that prudent management of real property is fully integrated into decision-making at every level. Included are areas such as addressing deferred maintenance though recapitalization, a training and qualification program for facilities professionals, and identification of best practices and additional guidance that sets standards and expectations for the management of real property assets. The Department is committed to addressing the recommendations by the National Academies' to improve and enhance the Department's real property management processes and procedures.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Ames Laboratory in Ames, IA, is managed by the Iowa State University of Science and Technology

Lead Program Secretarial Office Office of Science

Primary Mission

Ames Laboratory contributes to the Department's Science mission by providing key advances in materials science research, especially in materials synthesis and characterization, of benefit to DOE missions.

Secondary Missions Program Directed (single mission) Laboratory

Core Competencies Supporting Missions

- Materials science: focused on synthesis and processing of rare-earth materials with unique purity, crystal structure and desirability, and to finding new synthetic routes to known and unknown materials; synthesis, characterization and modeling of new materials; theoretical research in condensed matter physics.

- Chemical sciences: chemical kinetics and reactivity of transition metal complexes; new synthetic routes to inorganic catalytic materials using organometallic precursors and molecular "stepping stones;" spectroscopic and phenomenological studies of catalysts and advanced materials; other research in biological solar energy conversion and the explanation of the structure, energetics and dynamics of chemically reactive systems in terms of their fundamental atomic, molecular and electronic constituents.

Facilities Supporting Missions (*Facilities are responsibility of LPSO, unless otherwise noted.)*

- The **Materials Preparation Center (MPC)** is recognized for its unique capabilities in the preparation, purification, and characterization of rare-earth, alkaline-earth, and refractory metal materials for preparing ultra high-purity and well-characterized metals, alloys, compounds, and single crystals.
- The **Materials Referral System and Hotline (MRSH)** provides access to information on materials gathered from more than 2,000 companies nationwide.
- The **Scalable Computing Laboratory** focuses on parallel computing, and on software, hardware, and management research in the construction and use of inexpensive clusters of PC computers to achieve supercomputing performance.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

The planning levels shown below are for NNSA only.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[3]	22,510	21,116	——	——	——	——
Environmental Management	——	——	——	——	——	——
National Nuclear Security Administration	260	260	265	270	270	270

[3] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Argonne National Laboratory (ANL), Argonne, IL, is managed by the University of Chicago

Lead Program Secretarial Office Office of Science

Primary Mission

ANL contributes to the Department's Science mission by delivering science-based solutions to the Nation's energy, environmental, and security needs.

Secondary Missions

- The EM mission at ANL involves the cleanup of contaminated groundwater, sediments, and soils - a result of past laboratory operations. These remedial actions, designed to reduce risk to human health and the environment, are in compliance with the corrective action requirements of the Resource Conservation and Recovery Act Part B Permit issued by the Illinois Environmental Protection Agency in 1997. In addition, the EM mission includes the decontamination and decommissioning of several surplus reactor facilities, and the disposal of Transuranic (TRU) waste.
- The EM end-state for ANL will be reached when all the corrective actions have been implemented and accepted by the regulators, the TRU waste has been disposed, and the remaining surplus reactor facilities in the EM program have been decontaminated and decommissioned (expected in FY 2009). Continuing operation and maintenance activities will be transferred to SC, the landlord organization, whose mission will be ongoing after EM mission completion.

Core Competencies Supporting Missions

The ANL is noted for its user facilities which support more than 2,300 scientists each year, and for its fundamental and applied research in: materials and chemical sciences, nuclear physics, renewable and traditional energy technologies, environmental sciences, and national security. Competencies include:

- Fundamental science and engineering expertise in:
    - Materials sciences
    - Chemistry
    - Atomic, high-energy and nuclear physics
    - Multidisciplinary nanoscience and nanotechnology
    - Structural biology, functional genomics, and bioinformatics
    - Environmental science and technology
    - Applied mathematics and computer science
- Design, construction, and operation of accelerator-based user facilities that enable world-class research.

- Design, development, and evaluation of advanced nuclear energy systems and proliferation-resistant nuclear fuel cycle technologies for a safe, environmentally sound energy future.

Facilities Supporting Missions (*Facilities are responsibility of LPSO, unless otherwise noted.)*

- **Advanced Photon Source (APS).** Most powerful U.S. source of "hard" x-rays for research—basic and applied—across many disciplines, including materials science, physics, chemistry, biological and life science, earth and environmental science, and medical applications.
- **Structural Biology Center.** Nation's fastest and most powerful user facility for advanced protein crystallographic research in support of biomedical, pharmaceutical, and biotechnology goals; located at the APS.
- **Intense Pulsed Neutron Source.** Nation's most productive facility of its kind for studying sample structures and dynamics, for materials science and other fields; responsible for instrument development for the Spallation Neutron Source being build at Oak Ridge National Laboratory.
- **Argonne Tandem-Linac Accelerator System (ATLAS).** Nation's leading center for research on nuclear structure, reaction mechanisms, and stellar nucleosynthesis using stable heavy-ion beams, up to uranium.
- **High-Voltage Electron Microscope Tandem Accelerator Facilities.** Electron microscopes uniquely set up to study the effects of ion beam irradiation -- nation's only facility for measuring effects at atomic scales as they occur.
- **Cloud and Radiation Testbed.** Unique, highly instrumented research complexes for studying atmospheric phenomena. First site, "Southern Great Plains," including Atmospheric Boundary Layer Experiments, was built and operated by Argonne; oversight was extended to Alaska and Pacific sites.
- The **Engine Research Facility** for diesels and the **Advanced Powertrain Test Facility** for hybrid-vehicles support the Office of Energy Efficiency and Renewable Energy (EERE) in studying vehicle system technologies.
- **Electrochemical Analysis and Diagnostics Laboratory.** Facility supporting the EERE in developing the next generation of storage batteries and fuel cells.
- **Center for Nanoscale Materials** (co-funded with state of IL) scheduled for operation by FY 2008, this facility will be attached to the APS. This nanoscience research center will focus research in advanced magnetic materials, complex oxides, nanophotonics, and bio-inorganic hybrids.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

The planning levels shown below are for EM, and NNSA only.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[4]	257,003	258,631	——	——	——	——
Environmental Management	785	10,487	10,726	437	449	——
National Nuclear Security Administration	28,178	35,876	31,177	29,813	30,413	32,887

[4] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Brookhaven National Laboratory (BNL), Upton, Long Island, NY, is managed by the Brookhaven Science Associates, Inc.

Lead Program Secretarial Office Office of Science

Primary Mission

The BNL contributes to the Department's Science mission by carrying out basic and applied research in long term programs at the frontiers of science, and delivering science-based solutions to the Nation's energy, environmental, and security needs.

Secondary Missions

- Soil, groundwater, and surface water sediment were contaminated from past operations at BNL, resulting in the site being placed on the U.S. Environmental Protection Agency's (EPA's) National Priorities (Superfund) List in 1989. The EM mission addresses the accelerated cleanup of these contaminated areas, as well as the decontamination and decommissioning of several surplus nuclear reactor and non-reactor facilities, and the disposal of legacy waste.
- The EM end-state for BNL is the construction and operation of 17 groundwater treatment systems, soil and Peconic River sediment cleanup, legacy waste disposal, and surplus nuclear facility decontamination and decommissioning (except for the High Flux Beam Reactor) by the end of FY 2005. The decontamination and decommissioning of the High Flux Beam Reactor is expected to be completed by the end of FY 2009. Continuing activities such as groundwater monitoring, groundwater treatment system operations and maintenance, as well as landlord responsibilities for the decontaminated and decommissioned reactor and non-reactor facilities are expected to transfer to SC, the landlord organization, in FY 2009.

Core Competencies Supporting Missions

The BNL is noted for the design, construction and operation of large-scale, cutting edge research facilities that support thousands of scientists nation-wide, and for its fundamental research into the nature of nuclear matter at high energy and density, nanomaterials, and biological and climate sciences. Specific competencies include:

- High Energy and nuclear physics
- The chemistry and physics of materials and condensed matters
- Chemical energy sciences
- Bio-medical and imaging sciences
- Research, design and engineering of advanced accelerators
- Research in advanced detector systems

- Energy and environmental sciences and technologies
- Systems analysis and modeling

Facilities Supporting Missions (*Facilities are responsibility of LPSO, unless otherwise noted.)*

- **The Relativistic Heavy Ion Collider (RHIC)**, the largest facility for nuclear physics in the U.S. and the most powerful source of heavy ion collisions in the world. RHIC operations offer the potential for new discoveries about the nature of matter that existed during the early universe and insight into the building blocks of the nucleon.
- **The National Synchrotron Light Source (NSLS)** is a user facility providing high intensity x-ray, ultraviolet and infrared light to 85 beamlines. NSLS provides more than 60% of the nation's current synchrotron capacity. Researchers in applied sciences, chemical sciences, materials and life sciences from 350 institutions use the NSLS, and it serves as a test bed for "proof of principal" experiments on new source concepts.
- **The Accelerator Test Facility (ATF)** is a unique user facility for the development of new accelerator concepts. Current R&D effort will form the basis of the next evolution of light sources with the development of short wavelength free electron lasers.
- **Alternating Gradient Synchrotron** is a proton/heavy ion accelerator which has generated three Nobel Prizes and pivotal physics discoveries.
- **Scanning Transmission Electron Microscope**, used to reveal the structure and function of proteins, nucleic acids, and other macromolecules, and to image single heavy atoms.
- **Booster Applications Facility**, designed to use heavy ion beams for space radiation studies.
- **The Laser Electron Accelerator Facility (LEAF)**, using technology developed at the ATF, provides very short (7 picoseconds) pulses for basic studies of fast reactions.
- **The Center for Imaging and Neuroscience (CIN)** provides three imaging modalities for studies of the brain; *Positron Emission Tomography (PET), Magnetic Resonance Imaging (MRI),* and *Single Photon Emission Computed Tomography (SPECT).* The current activities include research on aging, addiction, and normal brain function.
- **The Free Air Carbon Dioxide Enrichment (FACE)** facility**,** to study effects of enhanced CO2 on plants in their natural environment.
- **Center for Functional Nanomaterials**, scheduled for construction start in 2005, will provide researchers with state-of-the-art capabilities to focus on understanding chemical & physical response of nanomaterials to make functional materials such as sensors, activators, and energy conversion devices.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

The planning levels shown below are for EM, and NNSA only.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[5]	312,016	312,581	——	——	——	——
Environmental Management	42,316	34,328	28,272	31,493	6,084	——
National Nuclear Security Administration	61,124	60,266	60,823	58,889	51,227	49,594

[5] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Fermi National Accelerator Laboratory (FNAL), Batavia, IL, is managed by the Universities Research Association, Inc.

Lead Program Secretarial Office Office of Science

Primary Mission

The FNAL contributes to the Department's Science mission by delivering the facilities and resources necessary to understand the fundamental nature of matter and energy and to conduct research at the frontiers of high energy physics and related disciplines.

Secondary Missions Program Directed (single mission) Laboratory

Core Competencies Supporting Missions

Discoveries at FNAL during its 35 year history have helped to define the growing understanding of the fundamental nature of the universe and how it works. Competencies include:

- Operation of the world's highest-energy physics user facility
- Accelerator research, design, construction, and operation
- Superconducting magnet research, design, and development
- Particle detector design and operation
- High-performance computing and networking
- Construction and management of scientific and technical projects
- Scientific training and education

Facilities Supporting Missions *(Facilities are responsibility of LPSO, unless otherwise noted.)*

- The **Tevatron**, currently the world's most powerful particle accelerator, creates millions of high-energy proton-antiproton collisions per second to allow physicists to study the smallest things human beings have ever seen—and their relationship to the evolution and structure of the universe. Two components of the Tevatron are of note:
    - The **Antiproton Source**, the largest supply of antimatter in the world, used for proton-antiproton collisions and research on antimatter.
    - The large collider detectors, **CDF** and **DZero**. Each serves an international collaboration of over 650 physicists from universities, national laboratories and research institutes.
- **MiniBooNE**, a 65-member neutrino oscillation experiment, to either confirm or disprove the Standard Model view of neutrino physics.
- **NuMI/MINOS**, a long-baseline neutrino oscillation experiment to study the phenomenon of neutrino mass. The experiment uses a beam of neutrinos from FNAL is aimed at a neutrino detector 400 miles away in the Soudan Iron Mine, half a mile underground in northern Minnesota.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[6]	308,045	307,605	____	____	____	____
Environmental Management	____	____	____	____	____	____
National Nuclear Security Administration	____	____	____	____	____	____

[6] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Lawrence Berkeley National Laboratory (LBNL), Berkley CA, is managed by the University of California

Lead Program Secretarial Office Office of Science

Primary Mission

The LBNL contributes to the Department's Science mission by delivering science-based solutions to the Nation's energy, environmental, and science needs.

Secondary Missions

- The EM program mission at LBNL is to investigate and clean up the past releases of hazardous and radioactive waste in the soil and groundwater, as well as to provide compliant storage, treatment, and off-site disposal of legacy hazardous and radioactive waste. EM mission completion is scheduled at the end of FY 2006 and long-term remedial actions are to transfer to SC, the site landlord, in FY 2007.

Core Competencies Supporting Missions

The LBNL is noted as a world center for particle accelerator and detector innovation and design; provider of high-performance computing tools for scientific applications; a national leader in microscopy and the characterization and fabrication of nanostructured materials; and for its ability to exploit computation, bioinformatics, cutting-edge imaging technologies and structural cell biology to understand the complexity of biological systems. Specific competencies include:

- Computational science and engineering
- High energy and nuclear physics
- Bioscience and biotechnology
- Characterization, synthesis, and theory of materials
- Advanced technologies for energy supply and energy efficiency
- Chemical dynamics, catalysis, and surface science
- Research, design and engineering of advanced accelerators
- Research in advanced detector systems
- Environmental assessment and remediation

Facilities Supporting Missions *(Facilities are responsibility of LPSO, unless otherwise noted.)*

- **Advanced Light Source**: One of the world's brightest sources of ultraviolet light, soft x-rays and a powerful source of higher energy x-rays. This device serves as an excellent probe of the electronic properties of atoms, molecules, surfaces and condensed matter, and a powerful tool for determining the structure of macromolecules.

- **National Energy Research Scientific Computing Center and the Energy Sciences Network**: Provides leading-edge computational resources, science and services; and a national network for the scientific community.
- **Joint Genome Institute** (joint with Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and Oak Ridge National Laboratory): Bringing together the expertise and resources of four DOE national laboratories in genome mapping, DNA sequencing, technology development, and information sciences to advance new sequencing and other high-throughput, genome-scale and computational technologies and provide high-quality genome sequencing data to the greater scientific community.
- **88-Inch Cyclotron**: A variable-energy cyclotron that can produce heavy-ion beams of elements throughout the periodic table for research and applications. These beams allow for testing of electronic components for radiation "hardness" to cosmic rays that is supported by the National Reconnaissance Office and the U.S. Air Force.
- **National Center for Electron Microscopy**: a facility housing several of the world's most advanced microscopes (one angstrom, high-voltage, spin polarized low energy, and atomic resolution electron microscopes) and tools for micro characterization of materials.
- **Molecular Foundry** scheduled for operation by FY 2008, this will be a nanoscience research center focusing on the interface between soft materials (living systems) and hard materials (i.e. carbon nanotubes).

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

The planning levels shown below are for NNSA only.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[7]	339,571	308,889	——	——	——	——
Environmental Management	4,096	3,960	——	——	——	——
National Nuclear Security Administration	3,041	2,650	2,675	2,701	2,727	2,754

[7] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Oak Ridge National Laboratory (ORNL), Oak Ridge TN, is operated by UT-Battelle, LLC

Lead Program Secretarial Office Office of Science

Primary Mission

The ORNL contributes to the Department's Science mission by delivering science-based solutions to the Nation's energy, environmental, and security needs.

Secondary Missions

- The EM activities require cleanup resulting from a variety of research and development activities, which were supported by multiple DOE programs over a long period of time. Cleanup includes environmental remediation, decontamination and decommissioning of radioactively-contaminated facilities, and disposition of legacy low, mixed low-level, and transuranic waste.
- The NNSA provides technical and engineering support for securing and disposing of surplus nuclear materials that helps NNSA prevent the proliferation of weapons of mass destruction.

Core Competencies Supporting Missions

The ORNL is noted for its basic and applied research in energy technologies, nuclear physics, computing, materials science, and neutron science. Competencies include:

- Neutron science
- Energy
- High-performance computing
- Complex biological systems
- Advanced materials
- National security

Facilities Supporting Missions *(Facilities are responsibility of LPSO, unless otherwise noted.)*

- **The High Flux Isotope Reactor (HFIR),** among the world's most powerful research reactors, with unique capabilities for isotope production, neutron scattering research, materials irradiation, and neutron activation analysis.
- **The Holifield Radioactive Ion Beam Facility,** the nation's only dedicated facility for studies of nuclear structure and nuclear astrophysics with unstable nuclei (radioactive or exotic beams) providing access to an elite group of reactions that occur in stellar explosions.
- **Center for Computational Sciences (CCS),** one of the world's most powerful unclassified computing centers, with a peak computational power of 4.5 teraflops, massive storage, high-speed

networks, and exceptional external connectivity. The CCS also houses the Leadership Class Computing Facility, awarded in May 2004.

- **Center for Comparative and Functional Genomics**, serves as a national focal point for high-throughput genetic studies using mice. This facility creates and genetically characterizes new mutant strains of mice that serve as important models of human genetic diseases and for understanding gene function especially as they relate to the genetic information found on human chromosomes 5, 16, and 19 (DOE's chromosomes in the International Human Genome Project). Also develops high-throughput tools and strategies to characterize these mutant strains of mice.
- Extensive materials research at the **High Temperature Materials Laboratory** (collaborative research on advanced ceramics and alloys), the **Surface Modification and Characterization Research Center** (fundamental studies of ion-solid interactions and ion beam processing for advanced thin-film science and technology), and the microanalytical facilities available through the **Shared Research Equipment Program**.
- **The Buildings Technology Center** supports the Office of Energy Efficiency in research associated with energy-efficient building technologies and systems.
- **The Center for Structural Molecular Biology**, linking neutron science, biological mass spectroscopy, and high-performance computational tools.
- **The National Transportation Research Center** supports the Office of Energy Efficiency to provide access to unique facilities and capabilities through a public/private partnership.
- **The Spallation Neutron Source**, the world's most powerful facility for pulsed neutron scattering research is under construction and scheduled for full scale operations by FY 2007.
- **Center for Nanophase Materials** scheduled for operations to begin in FY 2006, this will be a nanoscience research center focusing on integrating nanoscale science research with: neutron science; synthesis science; and theory, modeling and simulation.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

The planning levels shown below are for EM, and NNSA only.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[8]	420,942	392,582	——	——	——	——
Environmental Management	37,846	34,301	40,459	40,287	144,996	148,201
National Nuclear Security Administration	171,172	181,854	195,857	176,442	163,318	163,598

[8] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Pacific Northwest National Laboratory (PNNL), Richland, WA, is managed by Battelle Memorial Institute

Lead Program Secretarial Office Office of Science

Primary Mission

The PNNL contributes to the Department's Science mission by delivering science-based solutions to the Nation's energy, environmental, and security needs.

Secondary Missions

- The PNNL applies fundamental sciences to support NNSA with its mission to prevent the proliferation of weapons of mass destruction and ensure compliance with international arms control treaties.
- The Department of Homeland Security is in the early stages of making significant use of the laboratory's unique capabilities to address its mission needs.

Core Competencies Supporting Missions

The PNNL is noted for its capabilities in environmental and molecular biology, and its understanding of radiological science and radio engineering -- the latter a cornerstone of its national security contributions. Competencies include:

- Chemical and molecular sciences
- Computational science and information sciences technology
- Materials science and engineered applications
- Environmental and climate science
- Environmental microbiology, geochemistry, and subsurface science
- Process science and engineering
- Nuclear science and engineering technology
- Advanced energy systems science and engineering
- Advanced scientific instrumentation

Facilities Supporting Missions (*Facilities are responsibility of LPSO, unless otherwise noted.)*

- **The William R. Wiley Environmental Molecular Sciences Laboratory (EMSL),** a national user facility for high-performance computing, high-field nuclear magnetic resonance spectroscopy, mass spectrometry, and surface science.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

The planning levels shown below are for NNSA only.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[9]	118,113	111,500	——	——	——	——
Environmental Management	——	——	——	——	——	——
National Nuclear Security Administration	107,451	123,078	143,574	137,053	123,320	131,440

[9] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Princeton Plasma Physics Laboratory (PPPL), Princeton NJ, is managed by Princeton University

Lead Program Secretarial Office Office of Science

Primary Mission

The PPPL contributes to the Department's Science mission by developing the fundamental theoretical, experimental and technological understanding needed to make fusion energy practical and affordable.

Secondary Missions Program Directed (single mission) Laboratory

Core Competencies Supporting Missions

The PPPL is a collaborative national center for plasma and fusion science, conducting world-class research along the broad frontier of plasma science and providing the highest quality of scientific education. Competencies include:

- Experimental analysis of stability and confinement of fusion plasmas
- Plasma theory and computational physics for fusion and other applications
- Physics and engineering design and operation of experimental plasma fusion facilities
- Computer engineering, including data acquisition, instrumentation, and control systems
- Physics and technology of plasma applications to advance industrial technologies
- Environmental, safety, and health aspects of the operation and removal of experimental fusion devices

Facilities Supporting Missions *(Facilities are responsibility of LPSO, unless otherwise noted.)*

- **The National Spherical Torus Experiment (NSTX)** began operation in FY 1999. The spherical torus is an innovative fusion plasma confinement system, with the proven capability to confine stable plasmas at high beta (ratio of plasma pressure to magnetic field pressure). Research on NSTX will considerably broaden the scientific scope of high temperature plasma physics.
- **U.S. participation in the ITER Burning Plasma Physics Experiment.** PPPL, in partnership with Oak Ridge National Laboratory, is leading the U.S. efforts in this collaborative international science endeavor which is currently the subject of intensive negotiations targeted at producing the first fusion experiment capable of sustained production of fusion energy. It is a necessary step toward the ultimate realization of fusion power as a viable alternative to current sources.
- The **National Compact Stellarator Experiment (NCSX)** is currently under fabrication by PPPL (lead) and Oak Ridge National Laboratory for planned operation beginning in FY 2008. This innovative magnetic confinement experiment is the product of years of theoretical analysis and computer modeling. It is predicted that by confining the plasma within a highly optimized set of

external coils, a very robust, stable plasma will result that is naturally capable of continuous operation at high temperatures and densities. The results of the experiment will greatly enhance our understanding of toroidal confinement for devices such as ITER and its successors.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[10] [11]	77,210	115,856	____	____	____	____
Environmental Management	____	____	____	____	____	____
National Nuclear Security Administration	____	____	____	____	____	____

[10] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

[11] The Princeton Plasma Physics Laboratory numbers include funding for the ITER MIE project that will be managed by the United States ITER Project Office at PPPL. Nearly all of these funds will be passed through PPPL to laboratories, universities, and industrial firms. We anticipate that nearly all of these other institutions will be selected through a series of competitive, peer reviewed selection processes; making it impossible for them to be identified at this time.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Stanford Linear Accelerator Center (SLAC), Stanford, CA, is managed by Leland Stanford, Jr., University

Lead Program Secretarial Office Office of Science

Primary Mission

The SLAC contributes to the Department's Science mission by providing scientists access to intense, high-energy electron and photon beams, to further our understanding of high energy physics, chemistry, biology, and medicine.

Secondary Missions Program Directed (single mission) Laboratory

The FY 2006 Budget marks the beginning of a transition for SLAC from a single-mission laboratory with primary operational support from the High Energy Physics program to a multiple-mission laboratory with primary operational support from the Basic Energy Sciences program. This transition will take place over the course of several years, and is expected to be complete—in a budgetary sense—before the end of the planning horizon.

NOTE: Although SLAC is a Program Directed (single mission) Laboratory, there is an EM cleanup activity in progress. During past facility operations and waste management activities, the SLAC site was contaminated with volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), petroleum hydrocarbons, lead, and other metals. EM is currently remediating contaminated soil and groundwater, and removing old PCB transformers, underground storage tanks, and other materials. Cleanup of site contamination is expected to be completed in Fiscal Year 2006 at which time the cleaned areas will be returned to SC, the landlord organization, for site research and scientific use.

Core Competencies Supporting Missions

SLAC provides accelerators, detectors, instrumentation, and support for national and international research programs in particle physics and scientific disciplines that use synchrotron radiation. Competencies include:

- High-energy physics
- Advanced accelerator research
- Synchrotron radiation research
- Particle astrophysics
- Particle detector design, construction, and operation
- High-performance computing and networking
- Scientific training and education

Facilities Supporting Missions *(Facilities are responsibility of LPSO, unless otherwise noted.)*

- The world's largest linear accelerator (or linac), the **Klystron Gallery**, capable of delivering energy up to 50 billion volt (50 GeV) electron (including polarized electron) and positron beams. Programmatic support to operate the linac will gradually be transferred from High Energy Physics to Basic Energy Sciences during the planning horizon.
- The **B Factory**, a state-of-the-art asymmetric electron-positron collider and associated particle detector for research on B mesons. The **BaBar collaboration** at the B Factory consists of approximately 600 physicists and engineers from 75 institutions in 10 countries using a specialized detector (named BaBar) to study the millions of B mesons produced by the **PEP-II storage ring**. The B Factory is expected to cease user operations near the middle of the planning horizon.
- A 3 GeV electron storage ring, **SPEAR**, for production of ultraviolet and x-ray for use in synchrotron radiation research.
- The **Linac Coherent Light Source (LCLS)** will be the world's first x-ray free electron laser when it becomes operational in 2009. Pulses of x-ray laser light from LCLS will be many orders of magnitude brighter and several orders of magnitude shorter than what can be produced by any other x-ray source available now or in the near future. These characteristics will enable frontier new science in areas that include discovering and probing new states of matter, understanding and following chemical reactions and biological processes in real time, imaging chemical and structural properties of materials on the nanoscale, and imaging non-crystalline biological materials at atomic resolution

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[12]	266,771	309,294	____	____	____	____
Environmental Management[13]	2,480	3,500	____	____	____	____
National Nuclear Security Administration	____	____	____	____	____	____

[12] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

[13] EM cleanup activities are to be completed in Fiscal Year 2006.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Thomas Jefferson National Accelerator Facility (TJNAF), Newport News, VA, is managed by the Southeastern Universities Research Association, Inc.

Lead Program Secretarial Office Office of Science

Primary Mission

The TJNAF contributes to the Department's Science mission by providing a national nuclear physics user facility for scientific research using continuous beams of high-energy electrons to elucidate the underlying quark and gluon structure of nucleons that form atomic nuclei.

Secondary Missions Program Directed (single mission) Laboratory

Core Competencies Supporting Missions

- Delivering insights into the quark-gluon structure of nuclei, nucleons, and mesons, in particular, the strong interaction confinement regime.
- Research, development, and production of superconducting radiofrequency (srf), energy recovery linacs, polarized beams and related accelerator technologies, including free electron lasers.
- Developing unique scientific/ technical tools, including computing of the scale needed to support demanding theoretical calculations (Lattice Quantum Chromo Dynamics calculations).
- Applying the laboratory's particle detection capabilities to new types of medical instrumentation and diagnostic technology.
- Implementing innovative community outreach programs to enhance K–12 science and mathematics education.

Facilities Supporting Missions *(Facilities are responsibility of LPSO, unless otherwise noted.)*

- **The Continuous Electron Beam Accelerator Facility (CEBAF)** provides continuous wave electron beams to three end stations simultaneously with:
    - energies from 0.5 to 6 GeV
    - currents from 100 pA to 200 μA
    - polarization approaching 80%
- Three end stations, each with a set of complementary experimental equipment.
    - **Hall A** has a pair of superconducting, high-resolution magnetic spectrometers optimized for precision electron scattering coincidence experiments.
    - **Hall B** houses **the CEBAF Large Acceptance Spectrometer (CLAS)**, a detector that supports studies of both electron and monochromatic photon-induced reactions.

- **Hall C** contains a pair of moderate resolution spectrometers (one capable of high momentum particle detection and the second optimized for the detection of short-lived reaction products) and provides additional space and infrastructure for supporting major experiment setups optimized for specific measurements that cannot be carried out using available instruments.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[14]	88,081	80,862	____	____	____	____
Environmental Management	____	____	____	____	____	____
National Nuclear Security Administration	____	____	____	____	____	____

[14] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Sandia National Laboratories (SNL), Albuquerque, NM, Sandia Corporation, a subsidiary of Lockheed Martin Corp.

Lead Program Secretarial Office National Nuclear Security Administration

Primary Mission

The SNL has a primary role in the NNSA mission for assuring the safety, security and reliability of the nation's nuclear weapons stockpile and the prevention of the spread and use of nuclear weapons, as well as other weapons of mass destruction.

Secondary Missions

- Soil and minor groundwater contamination by radioactive and hazardous materials resulted from past research, development, and testing operations at SNL. EM activities are conducted under Resource Conservation and Recovery Act authority administered by the State of New Mexico. The EM cleanup of over 260 release sites with contaminated soil and water will be completed in FY 2006. The NNSA will assume responsibility for the remaining cleanup work and subsequent long-term stewardship activities in FY 2006.

- The SNL contributes to the Department's Science mission by providing research that bolsters the Laboratory's core competencies and contributes special expertise to solving important national problems. This includes research in: fusion energy sciences; scientific computing; basic energy sciences – materials, geosciences, engineering sciences, and nanoscience; and biological and environmental research.

Core Competencies Supporting Missions

The SNL is responsible for the non-nuclear components and systems engineering for all nuclear weapons and is a key point of contact with the Department of Defense in the areas of weapons requirements, systems design, logistics, surveillance, training, and dismantlement. Competencies include:

- Computational and information sciences
- Microelectronics and photonics sciences
- Materials and process sciences
- Engineering sciences
- Pulsed-power sciences

Facilities Supporting Missions (*Facilities are responsibility of LPSO, unless otherwise noted.)*

The SNL occupies nearly 9,000 acres on the Kirtland reservation and has additional facilities in Livermore, California (400 acres), Kauai, Hawaii (120 acres) and Tonopah, Nevada (600 square miles). The SNL has 25 user facilities available for use by approved U.S. industry, universities, academia, other laboratories, state and local governments, and the scientific community.
They include:

- **Combustion Research Facility** is a SC facility that conducts a broad range of basic and applied research and development in combustion science and technology, aimed at improving the nation's ability to use and control combustion processes.
- **Explosives Components Facility**, a state-of-the-art facility that provides a full range of chemical, material, and performance analysis capabilities for energetic materials and explosive components.
- **Intelligent Systems and Robotics Center**, which contains the Robotic Manufacturing Science and Engineering Laboratory, a 73,000-square-foot facility built to bring together all of Sandia's robotics researchers in an environment conducive to technology transfer.
- **Primary Standards Facility**, which develops and maintains primary standards that are traceable to national standards and calibrates and certifies customer reference standards.
- **Shock Technology and Applied Research Facility**, a state-of-the-art facility which can provide a full range of projectile/ target interactions.
- **Center for Integrated Nano Technologies** is a SC facility scheduled for operation by FY 2008 and will be a nanoscience research center jointly located at SNL and LANL which will focus on exploring the path from scientific discovery to integration of nanostructures into the micro & macro worlds.
- **The Microsystems and Engineering Sciences Applications (MESA) Complex** at SNL Albuquerque is a proposed state-of-the-art national complex that will provide for the design, integration, prototyping and fabrication, and qualification of microsystems into weapon components, subsystems, and systems within the stockpile.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

The planning levels shown below are for NNSA only.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[15]	70,283	55,193	———	———	———	———
Environmental Management	———	———	———	———	———	———
National Nuclear Security Administration	1,360,283	1,257,389	1,292,749	1,426,706	1,454,415	1,499,678

[15] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Lawrence Livermore National Laboratory (LLNL), Livermore, CA, is managed by the University of California

Lead Program Secretarial Office National Nuclear Security Administration

Primary Mission

The LLNL has a primary role in the NNSA mission for assuring the safety, security and reliability of the nation's nuclear weapons stockpile and the prevention of the spread and use of nuclear weapons, as well as other weapons of mass destruction.

Secondary Missions

- The LLNL is on the EPA's National Priorities List. Environmental restoration activities at the LLNL sites are directed at controlling contaminated groundwater migration, and identifying and effectively remediating soil and groundwater where contaminants (volatile organic compounds) exceed regulatory limits. The Livermore Site is considered one operable unit and Site 300 has eight operable units. Waste management activities are directed at compliant storage, treatment, and off-site shipment for disposal of both legacy and newly generated hazardous and radioactive waste. Cleanup activities for the Livermore site are scheduled to be completed by the end of FY 2006 and at Site 300 by the end of FY 2008. The NNSA will assume responsibility for remaining cleanup work and subsequent long term stewardship beginning in FY 2006.

- The LLNL contributes to the Department's Science mission by providing research that bolster the Laboratory's core competencies and contribute special expertise to solving important national problems. For example, bioscience research both contributes to the national security mission and leverages the Laboratory's physical science and engineering capabilities while contributing to efforts such as the artificial retina. Other research areas include: fusion energy research; lasers and electro-optics; computer science and simulation; materials science; astrophysics and space science; and accelerator technology.

Core Competencies Supporting Missions

The LLNL is a design laboratory that supports DOE's integrated program of surveillance, including efforts to better predict aging phenomena, assessment (validated by simulation experiments), and refurbishment of stockpile components. Principle activities include stockpile surveillance, stockpile refurbishment, and integrated program management. Competencies include:

- Physics
- Computing
- Biology

- Engineering
- National Security
- Lasers and Optics
- Chemistry and Materials Science
- Energy and Environment

Facilities Supporting Missions *(Facilities are responsibility of LPSO, unless otherwise noted.)*

The LLNL is located on a one-square-mile site in Livermore, California; with a larger (10 square miles) remote explosives testing site (Site 300) situated 18 miles east of the main Livermore site. Major User Facilities include:

- **National Ignition Facility** (NIF) is the largest, most energetic laser in the world—with 60 times more energy than any laser in existence. The NIF is scheduled for completion in FY 2008. By 2010, expect to complete the first attempt to demonstrate ignition on the NIF.
- **Center for Applied Scientific Computing** conducts collaborative scientific investigations that require the power of high-performance computers and the efficiency of modern computational methods.
- **Center for Microtechnology**, where broad spectrums of microtechnologies are used to develop microsystems for specific applications ranging from communications to field instrumentation to medicine.
- **Forensic Science Center** houses a variety of state-of-the-art analytical tools ranging from gas chromatograph–mass spectrometers to ultratrace chemical and DNA techniques.
- **Center for Accelerator Mass Spectrometry** houses the most versatile and productive accelerator mass spectrometry facility in the world. It provides an exceptionally sensitive technique for measuring concentrations of isotopes in small samples, typically less than 1 milligram, and the relative abundance of isotopes at low levels.
- **Site 300 Experimental Test Facility** is a high-explosives firing facility.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

The planning levels shown below are for NNSA only.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[16]	48,063	38,924	———	———	———	———
Environmental Management	———	———	———	———	———	———
National Nuclear Security Administration	1,170,624	1,067,633	1,110,483	1,104,179	1,125,619	1,145,061

[16] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Los Alamos National Laboratory (LANL), Los Alamos, NM, is managed by the University of California

Lead Program Secretarial Office National Nuclear Security Administration

Primary Mission

The LANL has a primary role in NNSA mission for assuring the safety, security and reliability of the nation's nuclear weapons stockpile and the prevention of the spread and use of nuclear weapons, as well as other weapons of mass destruction.

Secondary Missions

- As a result of the development and production of nuclear weapons, beginning during World War II radiological, hazardous and high explosive wastes have contaminated the soils and groundwater at LANL. Within the currently defined EM scope for environmental restoration, there are approximately 1,800 release sites at LANL requiring cleanup and/or regulatory closure as well as legacy waste management which include storage, treatment, and disposal of transuranic and mixed low-level waste. Under the accelerated cleanup plan legacy waste removal has been accelerated to 2010 and completion of cleanup corrective actions to 2015. It is anticipated that responsibility for the remaining cleanup work will be transferred to the NNSA in FY 2007
- The LANL contributes to the Department's Science mission by providing research that bolsters the Laboratory's core competencies and contributes special expertise to solving important national problems. The LANL engages in a wide spectrum of fundamental and strategic research such as materials science, neutron and accelerator science, high-performance computing, biosciences; nuclear physics, high-energy physics, and astrophysics; fusion energy; computation, modeling, and simulation; and biological and environmental research.

Core Competencies Supporting Missions

The LANL is a design laboratory for the safety and reliability of the nuclear explosives package in the Nation's nuclear weapons. The LANL possesses unique capabilities in neutron scattering, enhanced surveillance, and plutonium science and engineering. Competencies include:

- High-performance computing
- New and exotic advanced materials
- Bioscience and biotechnology
- Earth and environmental science
- Physics and theory

Facilities Supporting Missions (*Facilities are responsibility of LPSO, unless otherwise noted.)*

The LANL is located on approximately 25,000 acres, adjacent to the town of Los Alamos, New Mexico, which is approximately 25 miles northwest of Santa Fe. LANL is home to more than 50 cross-disciplinary user facilities including:

- **Los Alamos Neutron Science Center (LANCE)**, is the nation's most powerful source of pulsed particles.
    - **The Manuel Lujan Jr. Neutron Scattering Center** at the LANCE is a SC user facility focusing on nuclear physics research.
- The **Dual Axis Radiographic Hydrotest facility (DARHT)** supports the NNSA Science Campaign to provide models, scientific understanding, and experimental data necessary to develop certification methodologies to execute the Directed Stockpile Work and other campaign missions.
- **Center for Integrated Nano Technologies** is a SC facility scheduled for operation by FY 2008 and will be a nanoscience research center jointly located at SNL and LANL which will focus on exploring the path from scientific discovery to integration of nanostructures into the micro and macro worlds.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

The planning levels shown below are for EM, and NNSA only.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[17]	64,874	57,049	——	——	——	——
Environmental Management	117,199	142,699	129,227	112,944	113,908	78,469
National Nuclear Security Administration	1,555,516	1,571,001	1,686,186	1,749,050	1,825,763	1,803,539

[17] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.

Department of Energy
Strategic Highlights
FY 2006–FY 2010

FFRDC Title Savannah River National Laboratory (SRNL), Aiken, SC, is managed by Westinghouse Savannah River Co., LLC.

Lead Program Secretarial Office Office of Environmental Management

Primary Mission

Conduct applied research and development to meet the science and technology needs of the Savannah River Site (SRS) and the Nation.

Secondary Missions

- The SRNL contributes to the Department's mission by providing research in actinide chemistry, vitrification, materials sciences, remote systems, and modeling to support Department missions.

- The SRNL supports NNSA's mission by providing project management, material, control, and accountability, and physical protection technical expertise for several International Radiological Threat Reduction (IRTR) project teams.

Core Competencies Supporting Missions

The SRNL provides experience, technical expertise and facilities for waste processing, environmental remediation, non-proliferation technologies and national security projects.

- Chemical and Radiochemical Processing
- Environmental Science and Technology
- Analytical Chemistry
- Engineered Specialty Systems
- Materials Science
- Hydrogen and Tritium Science and Technology
- Sensor Development
- Computational science and advanced computing

Facilities Supporting Missions (*Facilities are responsibility of LPSO, unless otherwise noted.)*

The SRNL's laboratory facilities are maintained consistent with applicable standards and requirements to support site missions. The facilities are generally sound. Critical renovations have been planned and implemented to maintain facility habitability and operability.

- **The SRNL Technical Area complex**, located in the Upper 700-A Area, at the northern boundary of the site, consists of numerous laboratories, office and storage facilities totaling 635,000 sq. ft., including 118,000 sq. ft. of radiological controlled space. The main laboratories are located in

Building 773-A, a Hazard Category 2 facility that is designed and rated to handle various quantities of radioactive and non-radioactive materials. Many laboratories in the Technical Area are state-of-the-art design and have unique capabilities to perform the site's national defense mission. These facilities include: atmospheric technology, underground radioactivity measurement facility, ultra low-level radioactivity measurement facility, SRNL standards laboratory, chemistry and analytical laboratories, glove box facilities and intermediate cells, high-level shielded cells, robotics laboratory, thermal fluids laboratory, scientific glass shop, and scientific computing resource center. An on-site technical library supports research scientists and engineers.

- **The lower 700 Area**, a short distance from the SRNL Technical Area Complex, has facilities that house much of the scientific engineering, and materials fabrication shops and offices. Facilities include electronics fabrication shops, test and evaluation facilities, engineering facilities, and metallographic facilities.
- **Aiken County Technical Laboratory (ACTL) at the Savannah River Research Campus (SRRC)** is a county-owned facility from Aiken County, SC leased by SRNL. This facility houses research laboratories for SRTC's environmental biotechnology and immobilization technology groups, which provide unique resources to augment SRNL Technical Area facilities. Currently under development on the **SRRC is a hydrogen technology research laboratory**, a world-class facility for hydrogen storage, separation, production, and materials development work.
- Another innovative facility being planned is the **SUNRISE teaching reactor center**. SUNRISE, a consortium of universities, industrial members, and federal laboratories, seeks to advance nuclear education by building a teaching reactor near SRNL on the SRS.

Five Year Planning Profile

The following information is presented for planning purposes only and does not constitute financial or contractual commitments by the federal government.

The planning levels shown below are for EM and NNSA only.

(dollars in thousands)

Funding Organization	FY 2005	FY 2006 Request	FY 2007	FY 2008	FY 2009	FY 2010
Science[18]	___	___	____	____	____	____
Environmental Management	50,900	49,700	45,000	39,300	33,900	33,900
National Nuclear Security Administration	385,074	282,162	18,300	20,400	22,500	25,000

[18] SC's national laboratory complex is run as a competitive system. Information as to what portion of the SC FY07-10 funding identified in the Five Year Budget Plan will be used at a specific Laboratory is not known pending the results of these future competitions.